CITY OF SOUTH PORTLAND, MAINE

2022 STORMWATER MANAGEMENT PLAN

Plan Submittal Date: March 31, 2021
Maine DEP Approval Date: _____, 2021

MS4 General Permit Effective July 1, 2022
Initially Submitted to Maine DEP: 3/31/21
Updated based on permittee specific DEP Order on: _____

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1. INTRODUCTION

1.1 Overview of Regulatory Program

The City of South Portland (hereafter "the City") 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 City 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" in their municipal boundaries. 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 (hardscaped 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 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 City of South Portland became regulated in 2003 based on the 2000 census.

Once the MS4 General Permit regulates a community, only the Urbanized Area portions of the City 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 can be added to the regulated area only after a new MS4 General Permit is issued. Once the MS4 General Permit regulates an Urbanized Area, it cannot be removed from regulation, even if a subsequent census identifies it is no longer classified as an Urbanized Area. So 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 City, 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

Thirty municipalities in the State of Maine are subject to the 2022 MS4 General Permit. There are also two transportation agencies which are subject to their own MS4 General Permit, and eight state/federal agencies that are subject to a third MS4 General Permit (which are called "nested" MS4s). 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 City of South Portland is a member of the Casco Bay 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 the Southern Maine Community College and University of Southern Maine, which are also regulated as MS4s under a separate permit. This coalition is facilitated by the Cumberland County Soil and Water Conservation District (CCSWCD), which also assists in completing some of the permit requirements under contract to the coalition.

Similarly, the Bangor area MS4s have 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, all of the stormwater working groups are working cooperatively as identified in this plan.

In implementing the 2022 MS4 General Permit, the City of South Portland relies on the ISWG to complete some requirements, hires third party-consultants to implement some requirements and implements 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) has required that the regulated MS4s develop and implement a Stormwater Management Plan (SWMP) to coincide with the effective dates of the General Permit.

This SWMP describes how the City 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 required to be addressed in this Plan are:

1. Education/Outreach Program
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination 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 City must: define appropriate BMPs; designate the 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.

Prior MS4 General Permits also required the SWMP to 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 City must address several impaired waters requirements. Sections 1.4 and 1.5 describe the water quality status in the City, 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 Stormwater Management Plan and determine if the City is controlling pollutants to the "Maximum Extent Practicable". The term "Maximum Extent Practicable" is defined in the Clean Water Act. The term means available and feasible considering cost, existing technology, and logistics based on the overall purpose of the project. Effectively, the City is allowed to consider these concepts as they select Best Management Practices (BMPs) to meet permit requirements but the Maine DEP decides if the City is meeting the "Maximum Extent Practicable" standard.

This SWMP is not an enforceable document. Therefore, some flexibility is built in to the BMPs so communities can engage in an adaptive management approach to mitigate or eliminate the discharge of pollutants to and from their regulated small MS4s. This approach allows the City to adjust BMPs throughout the Permit Cycle if needed based on evaluations of effectiveness, changing conditions, specific local concerns, or changes in other circumstances. Some SWMP Modifications require DEP review and approval and public notice. Section 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 (a.k.a. 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 Maine 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 water's impairment, unless the DEP has determined the MS4 discharge is not causing or contributing to the impairment.

The Fact Sheet that was issued with the 2022 MS4 General Permit also contained a recommendation for MS4s to consult with the Maine DEP Division of Environmental Assessment regarding impaired waters that do not have approved TMDLs. The City followed this recommendation and consulted with Maine DEP to develop strategies identifying root causes of impairments and practices reducing pollutant discharges potentially contributing to the impairments.

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 City's MS4. Section 1.4.3 describes recent progress by the City on addressing any impairments which 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 through 469).

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

- Lakes 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 Volunteer Lake Assessment 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, and United States Geologic Survey.

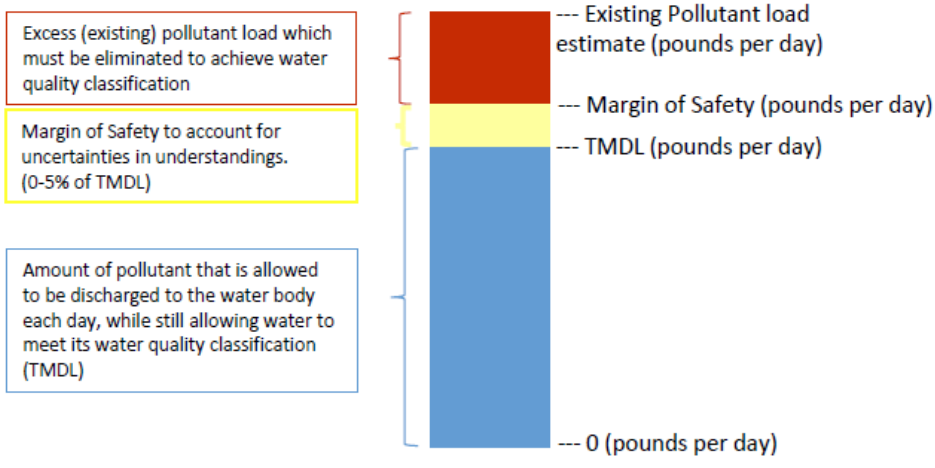
Every two years, the DEP publishes a report and list documenting the results of the assessments, and identifying which waters are meeting their designated classifications, and which are considered impaired. The report and list are called the Integrated Water Quality Report, and are generally referred 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 TMDL (Total Maximum Daily Load) 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, the most current 303(d) list approved by the EPA is from the 2016 data. The Maine DEP has indicated they will issue a combined 2018/2020 303(d) list sometime in 2021.

A TMDL document identifies the source(s) of the impairments 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 South Portland Water Quality Status

The following is a summary of the waters in the City's Urbanized Area that receive point source discharges from the City's MS4 and each waterbody's TMDL and impairment status. Table 1 shows the waters where the City has MS4 discharges and their impairment status. The Table shows the number of MS4 outfalls (in parentheses) that discharge to each waterbody as of March 2021.

Table 1: Status of Waterbodies Receiving MS4 Discharges – South Portland, Maine

Water bodies with MS4 discharges (# outfalls)	Maine DEP classification and numeric designation	DMR Area	Completed TMDLs (EPA approval date shown)	Urban Impaired Stream (Chapter 502)	Non-TMDL listing in 2016 303(d) list	Watershed Management Plan / Other Water Quality Document
Barberry Creek (16)	Class C ME0106000105_610R09 EPA Cat 4-A	NA	Barberry Creek TMDL (July 2006)	Yes	NA	No WMP SoPo WQ monitoring & geomorphic assessment
Kimball Brook (1)	Class C ME0106000105_610R06 EPA Cat 4-A	NA	IC TMDL (Sept. 2012)	Yes	NA	Trout Brook WMP (Dec. 2012)
Long Creek - including Clark's Pond (128)	Class C ME0106000105_610R03 EPA Cat 4-B	NA	MEPDES Permit #MEG190000 (April 2015)	Yes	EPA Cat 4-B	Long Creek WMP (July 2009)
Red Brook (8)	Class C ME0106000105_610R07 EPA Cat 5-D	NA	IC TMDL (Sept. 2012)	Yes	NA	Red Brook WMP (June 2011) & CFUP
Trout Brook - including Mill Creek (27)	Class C ME0106000105_610R05 EPA Cat 4-A	NA	Trout Brook TMDL (Sept. 2007)	Yes	NA	Trout Brook WMP (Dec. 2012)
Anthoine Creek (12)	Marine NPS Priority List	13-A1	Bacteria TMDL revision pending	NA	NA	DMR, DEP & FOCB WQ monitoring
Fore River (24)	Class SC DEP ID 804-7 EPA Cat4-A(b) & 5-B-1(a)	13-A1	Bacteria TMDL revision & Nutrient TMDL pending	NA	NA	DMR, DEP & FOCB WQ monitoring
Willard Beach (6)	Marine NPS Priority List	13-A1	Bacteria TMDL revision pending	NA	NA	MHB WQ monitoring

Casco Bay (10)	DEP ID 804	Class SC 13-A1	Bacteria TMDL revision pending	NA	NA	DMR, DEP & FOCB WQ monitoring
Gamblers Arm Brook (12)	Class C	NA	NA	No	NA	No
Tributary to Nonesuch (4)	Class C	NA	NA	No	NA	No
Calvary Pond (14)	GPA (<10 acres)	NA	NA	NA	NA	No

Figure 1 shows the locations of the fresh waters and their status according to the 2016 303(d) list. Figure 2 shows the status of marine waters according to the Department of Marine Resources.

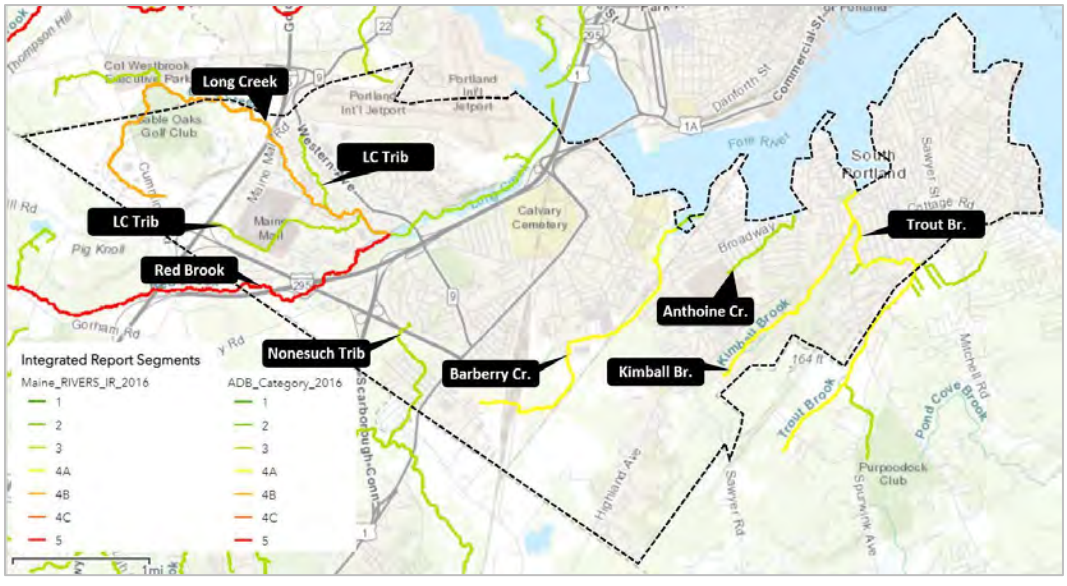


Figure 1: Fresh Water Impairment Status (Map Source: Maine DEP Draft Integrated Report Segments – 2016)

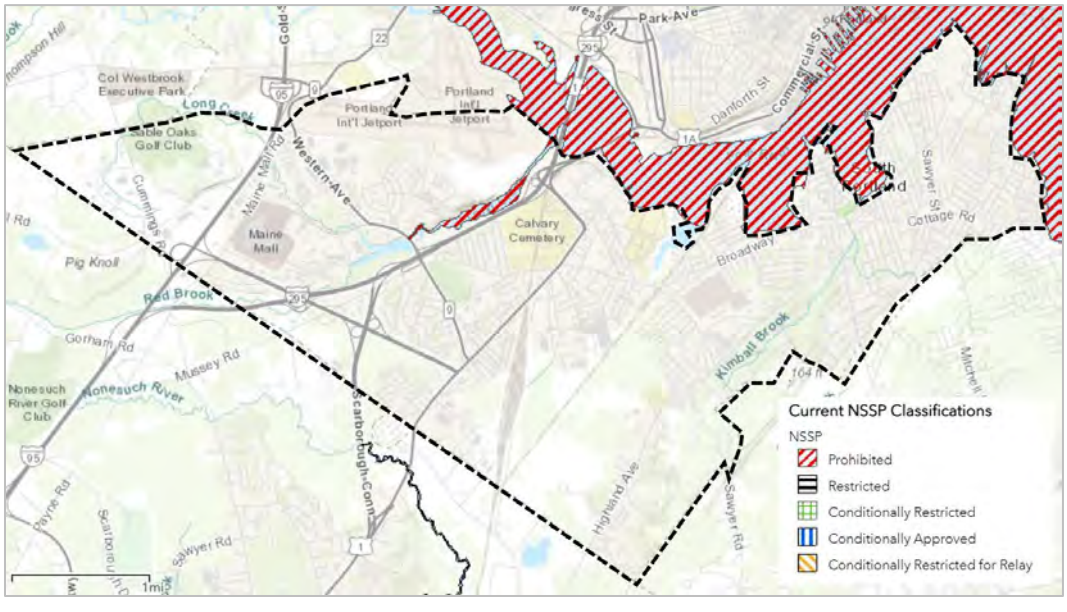


Figure 2: DMR Pollution Area 13 (Map Source: Maine DMR Public Health Map Web App)

The following documents were reviewed in making these determinations:

- Barberry Creek TMDL & Trout Brook TMDL (July 2006 & September 2007, respectively)
- Long Creek Watershed Management Plan (July 2009)
- Statewide Bacteria TMDL (September 2009)
- Residual Designation Pursuant to Clean Water Act Region 1 for Long Creek (October 2009)
- Red Brook Watershed Management Plan (June 2011)
- Impervious Cover TMDL for Kimball and Red Brooks (September 2012)
- Trout Brook Watershed Management Plan (December 2012)
- Long Creek General Permit (April 2015)
- Final 2016 Maine Integrated Water Quality Report and Appendices (a.k.a. Maine 303(d) list)
- Chapter 502 Direct Watersheds of Lakes Most at Risk from New Development and Urban Impaired Streams (May 2018 amendment)
- Nutrient Pollution in Casco Bay, Maine State of the Science and Recommendations for Action (June 2019)
- Nonpoint Source Priority Watersheds List – Marine Waters (December 2020)
- Maine Healthy Beaches – Beach Status and Data

Table 1 shows the City has five Urban Impaired Streams, and several marine/estuarine waters that are listed on the 303(d) list for bacteria impairments. Note that the bacteria impaired waters were previously listed in the 2009 Bacteria TMDL, but were re-categorized in 2016 to be category 5-B.1 (Needs TMDL) until Maine DEP re-issues the Bacteria TMDL. Also note that DEP is currently considering the development of a nutrient (nitrogen) TMDL for the Fore River.

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 City has done in recent years to improve water quality in these waters.

1.4.3.1 Discharges to Waters with TMDLs

Barberry Creek

DEP prepared an individual TMDL for Barberry Creek in July 2006. The TMDL addresses an ~1.3 mile segment encompassing a 786 acre watershed as delineated at the time. This Class C stream begins in a heavily industrialized area and then flows through a wooded landscape adjacent to the City's capped landfill and a densely developed residential area before discharging to the Fore River. In the middle section of the stream, approximately 225' of it is culverted along the edge of the Hannaford property while approximately 750' of the lower section of the stream is culverted where it crosses under Broadway. The area just below the DEP-delineated UIS watershed consists of an approximately 17-acre impoundment flanked by the Forest City Cemetery to the west, oil tank farms to the north and south, and a densely developed residential area to the east (Figure 3).

The TMDL identifies aquatic life as the impaired use for Barberry Creek with "Urban NPS" (i.e., adverse

impacts from stormwater runoff) as the potential impairment source. DEP further identified numerous specific pollutant stressors including toxics (a host of metals), in-stream habitat impairment through extensive channelization, increased fine sedimentation and low baseflow due to the significant amount of impervious cover (IC) in the watershed (the TMDL estimated 23%). The TMDL uses IC as a surrogate measure for the complex mixture of stormwater pollutants. Consequently, DEP established a 12% IC target equating to the disconnection of ~87 acres of impervious area and identified reductions for lead and zinc, which are representative of other metals commonly present in urban stormwater runoff. Because Barberry Creek is also a UIS, the 2022 MS4 General Permit requires the City to implement three structural and/or non-structural BMPs to mitigate the impairments over the five-year permit cycle.

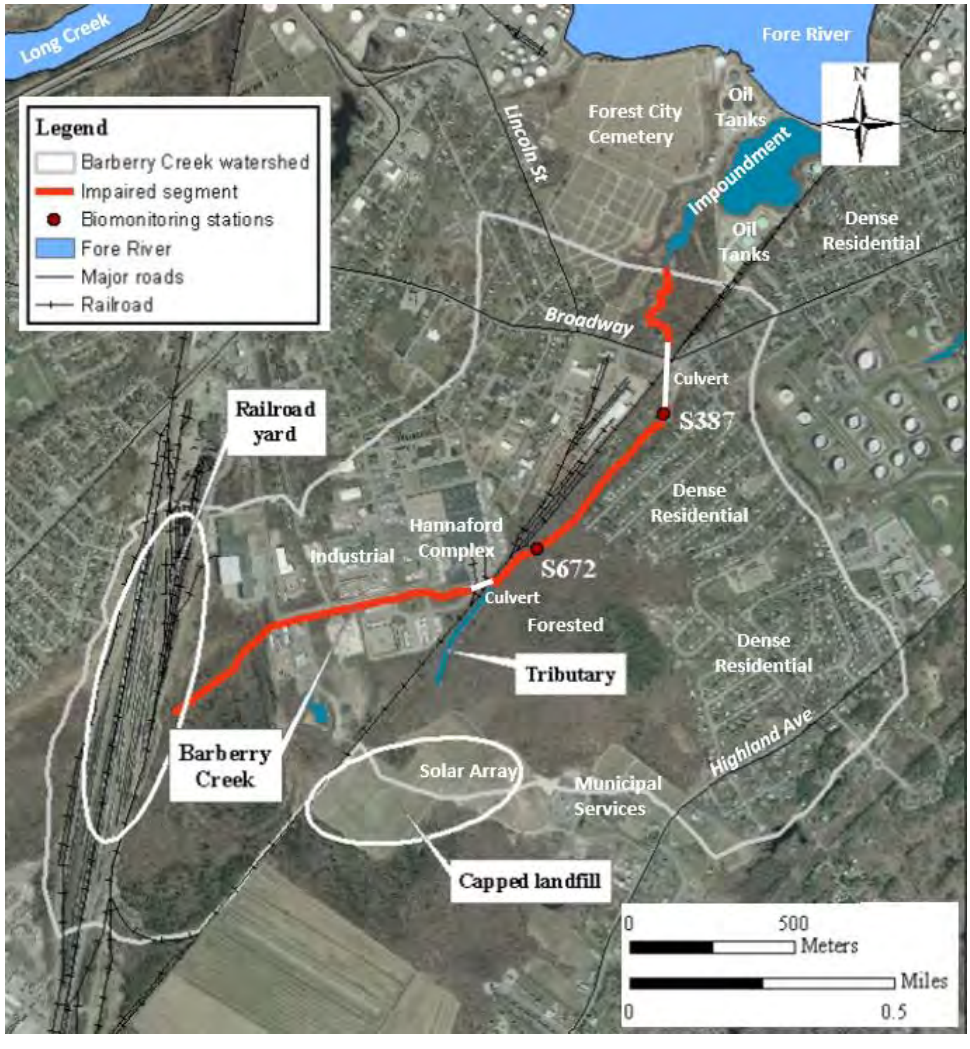


Figure 3: Barberry Creek Watershed (map adapted from 2006 DEP TMDL)

Kimball Brook

Kimball Brook is a Class C stream that was included in the statewide IC TMDL completed in 2012. The TMDL assessment applies to a 1.55-mile stream segment in South Portland discharging as a tributary to Trout Brook, which empties into the Fore River and Casco Bay. Kimball Brook begins in a wetland area

just east of Fickett Street and flows parallel to Highland Ave through several narrow wetland areas. It then passes under Stillman Street into Hinckley Park's two consecutive ponds after which it continues through ~210' of culvert under Ocean Street (ME Route 77) into a medium density residential area into another culvert (~535') before entering Trout Brook near Mahoney Middle School. The Kimball Brook watershed covers approximately 346 acres in the City of South Portland and the Town of Cape Elizabeth (Figure 4).

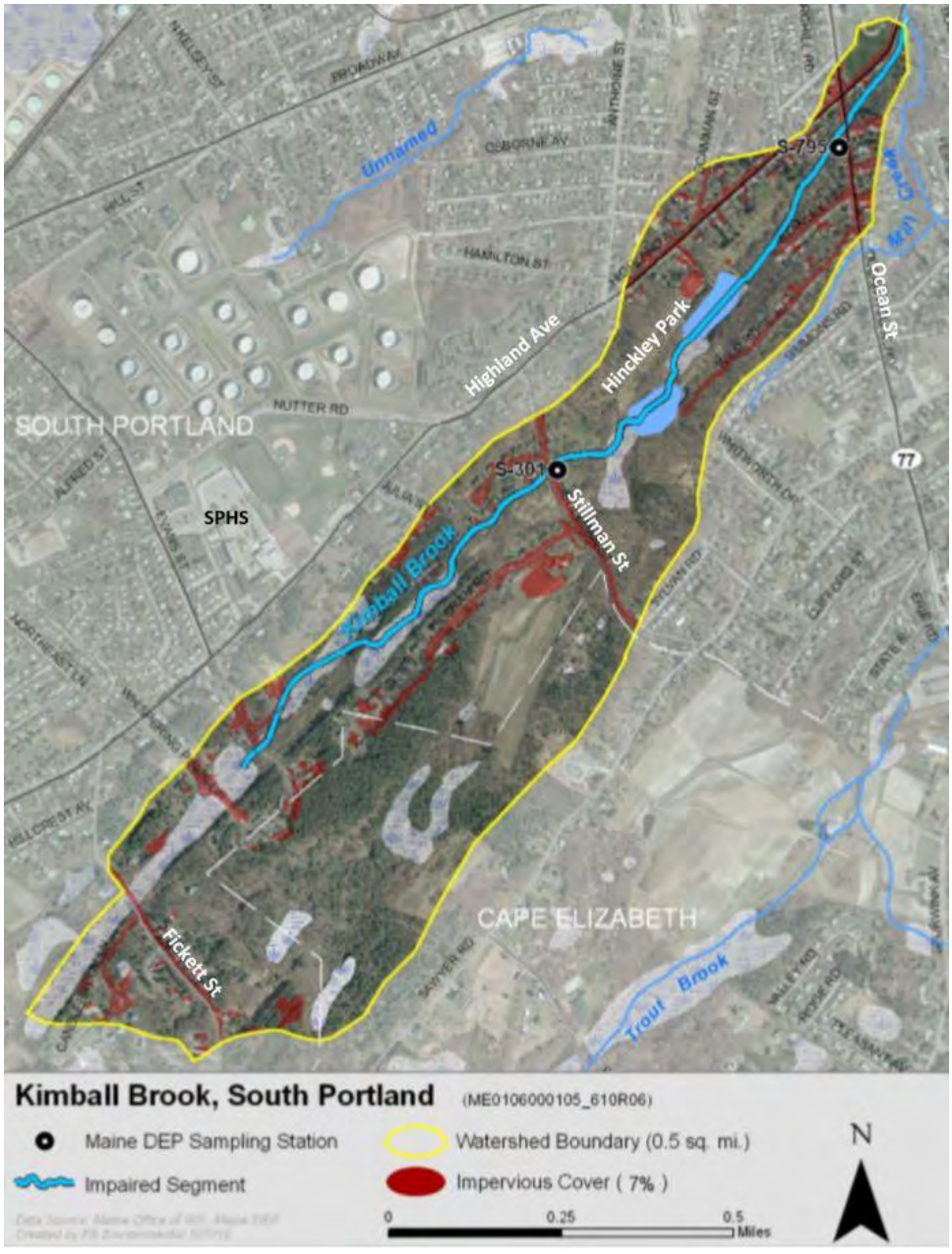


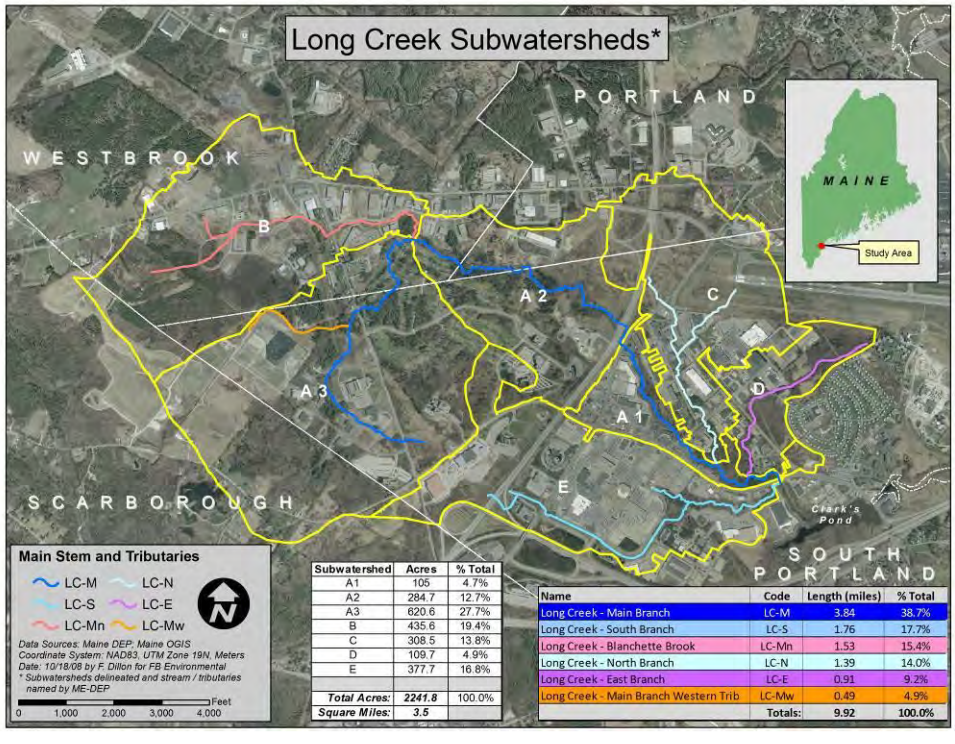
Figure 4: Kimball Brook watershed (map adapted from 2012 DEP IC TMDL)

The IC TMDL identifies aquatic life as the impaired use for Kimball Brook and uses IC as a surrogate for

a host of adverse impacts associated with alterations to the surrounding landscape, including polluted stormwater runoff, erosion and habitat loss. The TMDL also identifies the presence of iron precipitate in the stream that results in the formation of a bright orange floc that may inhibit colonization by aquatic macroinvertebrates in the stream substrate. While no formal investigations have identified the iron source(s), anecdotal evidence suggest that it may be originating from iron rich ledge and possibly eroding soils. The IC TMDL estimates that ~7% of the Kimball Brook watershed consists of impervious cover and specifies a target IC of 4% to attain water quality standards. This reduction equates to the disconnection of ~11 acres of impervious areas. Because Kimball Brook is also an UIS, the 2022 MS4 General Permit requires the City to implement three structural and/or non-structural BMPs to mitigate the impairments over the five year permit cycle.

Long Creek

Long Creek is a low gradient stream with four primary branches. Its headwaters originate in Westbrook and flow through the Maine Mall area of South Portland. The main stem and its tributaries in Westbrook are designated as Class B while the portions located in South Portland, Scarborough and Portland are designated as Class C. All of the tributaries join the main stem before Red Brook joins it above Clark's Pond, which includes a dam below which lie the Fore River and Casco Bay (Figure 5).



Subwatershed	Acres	% Total
A1	105	4.7%
A2	284.7	12.7%
A3	620.6	27.7%
B	435.6	19.4%
C	308.5	13.8%
D	109.7	4.9%
E	377.7	16.8%
Total Acres:	*2241.8*	100.0%
Square Miles:	*3.5*	

Name	Code	Length (miles)	% Total
Long Creek - Main Branch	LC-M	3.84	38.7%
Long Creek - South Branch	LC-S	1.76	17.7%
Long Creek - Blanchette Brook	LC-Mn	1.53	15.4%
Long Creek - North Branch	LC-N	1.39	14.0%
Long Creek - East Branch	LC-E	0.91	9.2%
Long Creek - Main Branch Western Trib	LC-Mw	0.49	4.9%
	Totals:	9.92	100.0%

Figure 5: Long Creek watershed (map from 2009 Long Creek Watershed Management Plan)

The watershed is ~3.5 square miles and consists of a variety of land cover types from undeveloped forested areas to densely developed commercial, industrial and institutional land uses. The Long Creek Watershed Management Plan (WMP) estimated overall IC to be ~38% (ca. 2004) and there have since been several significant development projects in the watershed. Some subwatersheds currently exceed 50% IC. Consequently, Long Creek and its tributaries do not meet water quality standards for aquatic

life, habitat, dissolved oxygen and toxics (metals).

In 2009, the Environmental Protection Agency exercised Residual Designation Authority (RDA) requiring stormwater permits for designated discharges in the Long Creek watershed. The resulting permits, a collaboration between EPA and DEP, require a DEP permit for any property in the watershed with one or more acres of IC. This precedent-setting use of RDA led to the establishment of the Long Creek Watershed Management District (LCWMD) and a corresponding annual fee of $3,000 per acre of IC. The LCWMD is a quasi-municipal entity charged with implementing a WMP that was developed concurrently with and largely in response to RDA. (In 2007, the City received a DEP 319 grant to develop the WMP). Even though Long Creek is an UIS, the 2022 MS4 General Permit does not require the City to implement three structural or non-structural BMPs because of the separate regulatory process invoked by EPA and DEP specifically for the Long Creek watershed (i.e., RDA).

Red Brook

Red Brook is Class C stream in Scarborough and South Portland that was included in the 2012 IC TMDL. It is ~7.15 miles long and is a tributary to Clark's Pond / Long Creek, which flows to the Fore River and Casco Bay. Red Brook generally has a low gradient, and in most locations has streambeds dominated by fine sediments (i.e., sands, silts and clays). The Red Brook watershed encompasses ~3.2 square miles in Scarborough, South Portland and a small section of Westbrook. The watershed has a complex mix of land uses including residential, industrial, retail commercial and forestland. It also includes a one-mile section of the Maine Turnpike, I-295, other local and state roads and a regional waste incinerator and associated landfill. Parts of Red Brook were relocated to facilitate the construction of I-295 in the early 1960s (Figure 6).

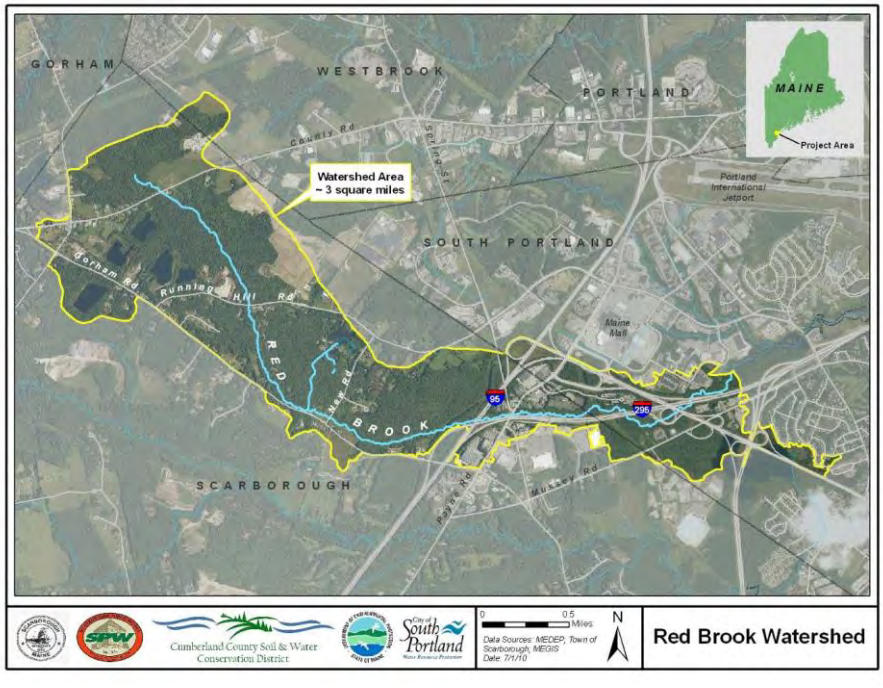


Figure 6: Red Brook watershed (map from 2011 Red Brook Watershed Management Plan)

Red Brook is a Class C stream that does not meet designated aquatic life uses (including fish primarily due to legacy PCB contamination). The IC TMDL estimates that ~11% of Red Brook's watershed consists of impervious area and specifies a target IC of 8% to attain water quality standards. This reduction equates to the disconnection of ~62 acres of IC. Because Red Brook is also an UIS, the 2022 MS4 General Permit requires the City to implement three structural and/or non-structural BMPs to mitigate the impairments over the five year permit cycle.

Trout Brook

The Trout Brook watershed encompasses ~1.77 square miles (not including the Kimball Brook subwatershed nor the lower tidally influenced segment in Mill Creek Park). The TMDL applies to a 0.9-mile segment from Ocean Street (Route 77) to the Highland Avenue bridge in South Portland. The centerline of about 0.5 miles of this segment forms a portion of the boundary between South Portland and Cape Elizabeth. This segment is identified as Class C while the upstream segment (in Cape Elizabeth) is Class B and was excluded from the TMDL. However, DEP now considers the entirety of Trout Brook (~2.9 miles) as impaired, including the tidally influenced waters downstream from the Highland Avenue bridge to Mill Creek into the Fore River (Figure 7).

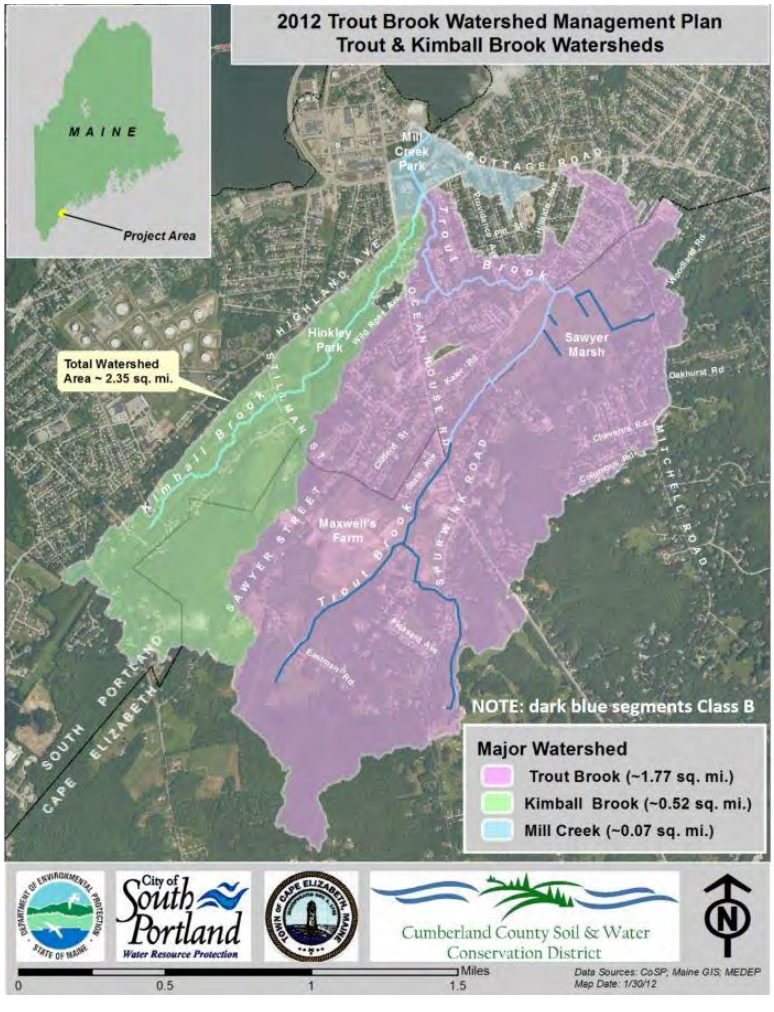


Figure 7: Trout Brook watershed (map from 2012 Trout Brook Watershed Management Plan)

DEP has designated all of the freshwater segments as impaired for aquatic life uses with the primary impairment sources originating from urban stormwater. The watershed consists of ~15% IC and the TMDL specifies a target of 11% to attain water quality standards. This IC reduction equates to ~44 acres of impervious areas. Because Trout Brook is also an UIS, the 2022 MS4 General Permit requires the City to implement three structural and/or non-structural BMPs to mitigate the impairments over the five year permit cycle.

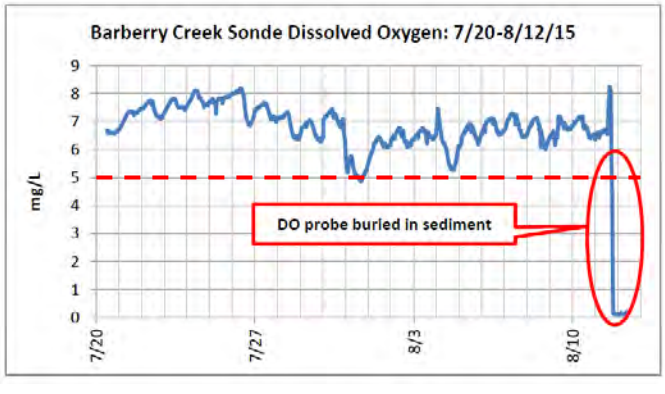
1.4.3.2 Discharges to Urban Impaired Streams

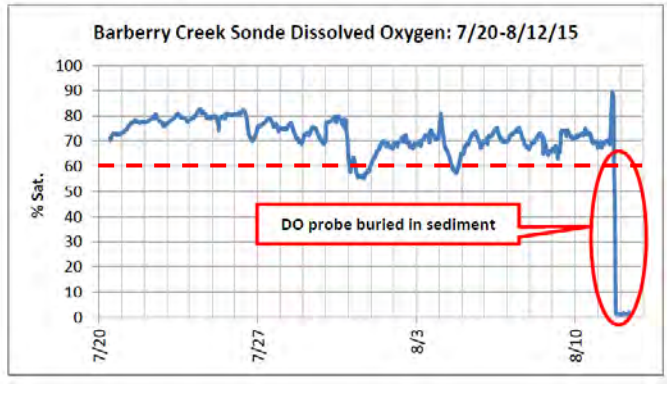
This section describes the historical activities that have been undertaken and the current status of proposed and planned projects, which support the selection of three BMPs and their Measurable Goals as described in Section 2.7. Activities for each UIS are summarized chronologically below.

Barberry Creek

While Barberry Creek is the only UIS for which a WMP has not been developed, the City has done a considerable amount of work to assist in characterizing water quality there. In collaboration with the Casco Bay Estuary Partnership (CBEP), which loaned YSI 6000 series multi-parameter data sondes, and the Friends of Casco Bay (FOCB), which provided essential technical support for sonde calibration and data transfer, water quality was continuously monitored at or near DEP site S387 during base flow summer conditions from 2015-17. The sondes measured temperature, conductivity, specific conductance and dissolved oxygen – (in ppm and % saturation) every 15 minutes for periods of ~3 weeks. Since Barberry Creek largely consists of wide and shallow conditions – particularly in the area adjacent to DEP site S387, there were occasions when the sonde was either out of the water or partially buried in sediment. However, most deployment periods yielded consistently continuous results.

CBEP YSI 6000 series data sonde deployed in Barberry Creek – note shallow depth (August 2015)





The graphs above are from a representative deployment period in 2015. Dissolved oxygen results across all years were very similar and generally complied with Maine's standards for Class C streams (5 ppm & 60% saturation). Specific conductance was also measured to provide some indication about the extent to which chlorides from winter salt applications may be adversely affecting aquatic habitat. EPA has established chronic and acute chloride toxicity limits of 230 ppm and 860 ppm, respectively. (Chronic and acute toxicities are defined as the highest pollutant concentrations that do not result in harmful effects to aquatic communities during indefinite and brief exposure periods, respectively).

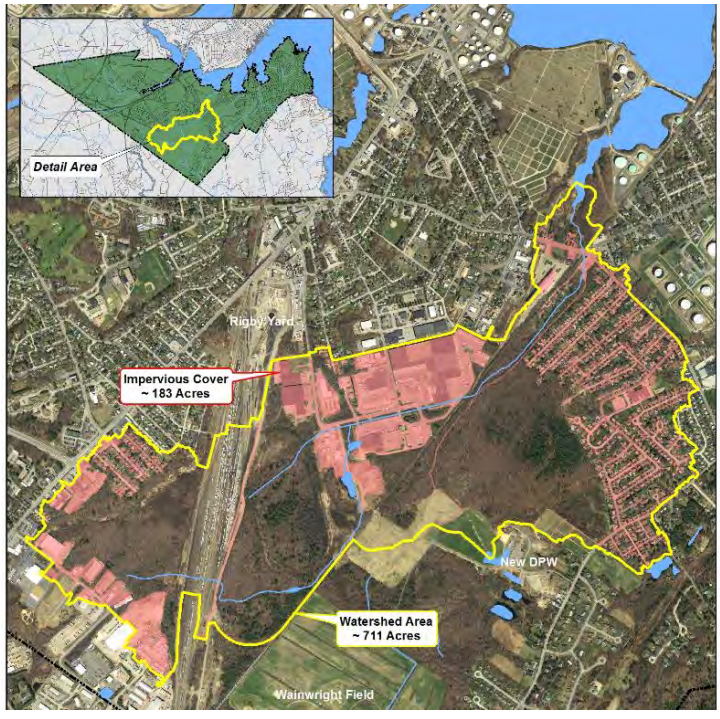
Ideally, the relationship between specific conductance and chlorides would be established for each UIS given the varied conditions in each watershed. However, since direct chloride measurements were not taken in conjunction with specific conductance measurements for Barberry Creek, other UISs in South Portland can provide a rough guide for how these two parameters may be related. In Long Creek, which has a somewhat similar land use composition to Barberry, a specific conductance value of 850 uS/cm equates to EPA's chronic toxicity threshold of 230 ppm while a specific conductance value of 3,070 uS/cm equates to EPA's acute toxicity threshold of 860 ppm. Specific conductance values for Barberry Creek during most deployment periods generally varied between 600 and 800 uS/cm, which would put them close to but not over the chronic chloride toxicity threshold of 850 uS/cm calculated for Long Creek. However, there was a period of several days during the August 2017 deployment when specific conductance readings exceeded 850 uS/cm and approached 900 uS/cm. While concerning, these readings are not particularly surprising given the significant amount of impervious cover in the watershed (the current estimate is ~26%) to which winter salt is almost certainly being applied.

Temperature is also an important water quality indicator. For Maine brook trout, DEP recommends a maximum of 19°C for a weekly average and a maximum of 24°C for a survival of short exposure. Temperatures for Barberry Creek during most deployment periods were below (but approached) 20°C. However, there were brief periods in July and August of 2016 when the temperatures varied between 20°C and 25°C. While the lower reaches of Barberry are fairly well shaded, the upper portions of the watershed have extensive areas of impervious cover that could result in higher temperatures during the hottest and driest periods of the summer – especially given a relatively shallow grade and over-widened channel.

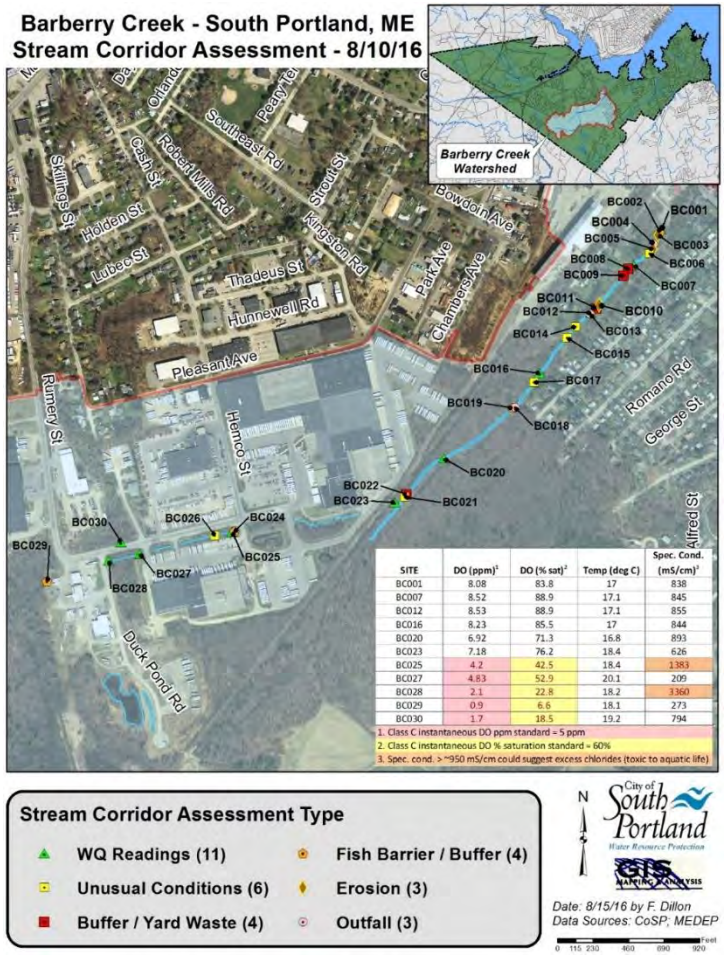
Because a formal Quality Assurance Project Plan (QAPP) was not used for any of the deployments, the data results should be considered for screening purposes only. However, given FOCB's decades-long experience working specifically with YSI data sondes, their highly professional staff, and their use of rigorous QA/QC procedures, the accuracy and reliability of the data are likely very good. Additionally, the City's staff person responsible for deploying/retrieving the sondes and summarizing the data results also had considerable water quality monitoring experience.

In 2015 the City partnered with the Cumberland County Soil & Water Conservation District (CCSWCD) and submitted a DEP 319 grant to develop a WMP for targeted structural and non-structural BMPs based on extensive public outreach and stakeholder engagement. While the proposal was generally well received by DEP, it did not compare favorably with other proposals that were deemed more cost effective for water bodies with higher potentials for restoration.

In the summer of 2015, DEP staff spent a considerable amount of time more accurately delineating the Barberry Creek watershed. This work consisted of a very detailed field assessment to determine and confirm drainages from roof gutter systems and paved surfaces, privately and publicly owned piped infrastructure, and an extensive wetland complex and residential area to the west of the Rigby Yard. It also resulted in the creation of a subwatershed that is separate from DEP's delineation for the Barberry Creek TMDL because it discharges below the official impaired stream segment. After conferring closely with the City's GIS consultant about further refinements, the DEP's delineation was officially adopted for use in all future planning and restoration initiatives, including an updated estimate for the extent of impervious cover in the watershed, which is ~26%.



In August of 2016, the City partnered with DEP on a Stream Corridor Assessment (SCA) to identify riparian conditions in the watershed. The SCA methodology was adapted from protocols established by the Maryland Department of Natural Resources for use in Fulcrum, a cloud-based mobile data collection application. Instantaneous dissolved oxygen measurements did not meet Class C standards at several locations in the upper portion of the study area and conductivity readings were also elevated at a couple of these sites as well. Additionally, numerous locations were identified for inadequate buffers/yard waste, fish passage barriers and excessive erosion, among other potential impacts. Following the assessment, DEP staff commented that Barberry was among the most severely impacted UISs in the entire state.

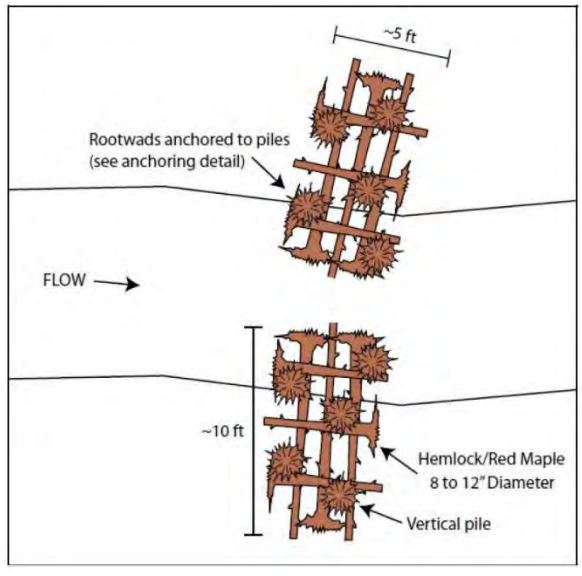


SITE	DO (ppm)[1]	DO (% sat)[2]	Temp (deg C)	Spec. Cond. (mS/cm)[3]
BC001	8.08	83.8	17	838
BC007	8.52	88.9	17.1	845
BC012	8.53	88.9	17.1	855
BC016	8.23	85.5	17	844
BC020	6.92	71.3	16.8	893
BC023	7.18	76.2	18.4	626
BC025	4.2	42.5	18.4	1383
BC027	4.83	52.9	20.1	209
BC028	2.1	22.8	18.2	3360
BC029	0.9	6.6	18.1	273
BC030	1.7	18.5	19.2	794

1. Class C instantaneous DO ppm standard = 5 ppm
2. Class C instantaneous DO % saturation standard = 60%
3. Spec. cond. > ~950 mS/cm could suggest excess chlorides (toxic to aquatic life)

Finally, thanks to the Conservation Commission for receiving a grant from the City's Wetlands Compensation Fund, a geomorphic assessment was completed in the fall of 2020 for the lower reach (~2,500') of Barberry Creek. Discussions earlier in the year between the City, DEP and Field Geology Services established the primary purposes and scope of the assessment, which were twofold:

- Identify the best locations for sediment sampling to determine the types and extent of toxic contaminants
- Develop a restoration concept for improving in-stream habitat and flow depths during base flow conditions



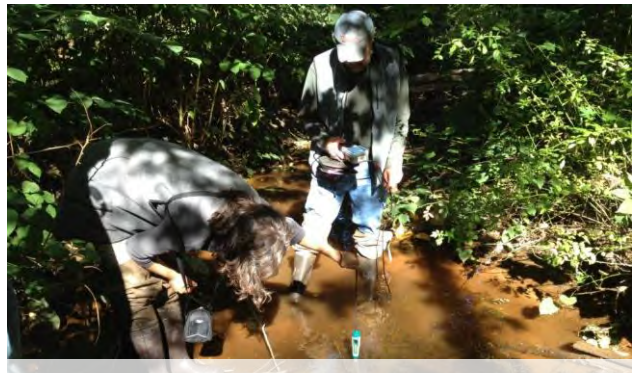
Concept plan for Barberry Creek log constrictors

The assessment accomplished these goals and will be used to address the geomorphic challenges in the lower watershed by informing future potential restoration initiatives, which will be discussed in more detail below.

Kimball Brook

The most significant action undertaken by the City for Kimball Brook, which is a tributary to Trout Brook, was the completion of the Trout Brook WMP in December 2012. While the main emphasis of the WMP was to identify potential impairment sources and restoration recommendations for Trout Brook, there is a fairly extensive discussion in the WMP on these same topics for Kimball Brook. Notably, Kimball Brook does not fit the typical UIS profile, which generally consists of significant amounts of impervious cover in relation to total watershed area. The Center for Watershed Protection has identified ~10% as the IC threshold above which water quality and aquatic habitat begin to decline appreciably (DEP also identifies this threshold as ~10% for Class C streams in Maine).

During the WMP development process, the City invested ~$6K to create a highly accurate GIS data layer for the Trout and Kimball Brook watersheds that identifies numerous IC types (e.g., buildings, driveways, walkways, streets). This data layer estimated an IC of ~7% for Kimball Brook (ca. 2011), significantly below the 10% adverse impact threshold. However, despite this relatively low IC, and as noted in the TMDL and WMP, Kimball Brook does not meet aquatic life standards. While DEP water quality monitoring data does not identify significant dissolved oxygen or conductivity concerns for Kimball Brook, it does implicate iron as a


DEP staff measuring Kimball Brook water quality below Hinckley Park – note reddish tint from iron floc (Sept. 2012)

potential impairment cause. DEP's most striking finding was the recurring abundance of iron floc and prevalence of iron bacteria in the stream. In addition to the toxic impacts of dissolved iron, the iron floc can also physically affect aquatic life by smothering macroinvertebrate habitat and food sources. The high iron levels in the stream are likely due to the naturally high iron levels in the underlying bedrock, eroding soils and groundwater.

Hinckley Park, which resides in the Kimball Brook watershed, is a very popular destination for South Portland residents and visitors from other communities. Dog owners (and their dogs) are a particularly significant user group that is adversely affecting the water quality in Hinckley Park's two ponds, and by extension Kimball and Trout Brooks. Heavy foot (and paw) traffic along the shorelines has resulted in severe soil erosion and sediment loss into the ponds, which are immediately above DEP sampling site S795 (non-attainment for aquatic life). Additionally, dog owners often are not picking up the waste left behind by their dogs. To begin addressing these issues, in 2013 the City applied for and received a grant for ~$20K from the Royal Bank of Canada's Blue Water Project. The funds were used to build a small rain garden to treat runoff from the main parking area (~10,000 s.f.), install infiltration steps and native plantings at a heavily trafficked pond entry point for dogs, and address erosion issues with the application of erosion control mulch to ~800' of trails.

Other initiatives include a number of signs installed throughout Hinckley Park in 2015 to increase public awareness about the adverse effects of pet waste left behind by irresponsible dog owners. Much more significantly, the City invested $140K from the Land Bank in 2016 to secure a conservation easement for a large undeveloped land area consisting of woods, a pond and wetlands in the upper watershed. This 9.3-acre parcel, known as the Dow's Woods Nature Preserve, will be protected in perpetuity as a scenic open space, wildlife habitat and ecological area. It is maintained by the South Portland Land Trust and can only be accessed by foot (pets, motorized vehicles and bicycles are not allowed). Ensuring that this area cannot be developed has important implications for the future of Kimball Brook's water quality. Finally, in collaboration with PetLife (now Loyal Companion), the City has held a number of "April Stools Day" events at Hinckley Park to further emphasize the importance of proper pet waste management. Despite these numerous initiatives and improvements, water quality problems persist. Both ponds experienced cyanobacteria outbreaks in the late summer/early fall of 2019 and 2020 resulting in the posting of warning signs to avoid direct water contact.

Long Creek

Because the Long Creek watershed is regulated under a separate permitting process, the 2022 MS4 General Permit will not require the City to implement three structural and/or non-structural BMPs there. However, the City has undertaken numerous and significant actions for more than a decade to help restore Long Creek and its tributaries. From receiving DEP 319 funding to oversee the creation of the 2009 Long Creek WMP to participating in the Long Creek Watershed Management District (LCWMD), the City has been committed to furthering restoration efforts. Moreover, as a participant in the Long Creek General Permit (LCGP), the City contributes $3,000 per impervious acre per year for just over 20 acres of public roadways it maintains in the watershed. This equates to ~$60K per year – or ~$600K since the LCGP was established in 2010. The City receives credits each billing cycle equivalent to the expenditures for providing enhanced catch basin cleaning and street sweeping services, which it does on a very cost-competitive basis relative to the private sector.

City staff and Councilors have been active members of the LCWMD's Board of Directors since the inception of this quasi-municipal organization in 2010. A City staff person currently serves as the Baord Chair, has been doing so for the past several years, and was instrumental in hiring the LCWMD's first paid Executive Director in 2016. The Chair has also been closely involved in implementing WMP

recommendations through participation on a number of review committees for various structural and non-structural restoration efforts.

SeeBoat measuring conductivity as surrogate for chlorides in Long Creek's South Branch (Oct. 2019)

More recently, the Chair assisted in establishing a pilot project to reduce winter salt use as an outgrowth of a monitoring collaboration with an MIT Ph.D. candidate (and current Northeastern University faculty member). This "data physicalization" project involved the use of a remotely controlled "SeeBoat" outfitted with probes that continuously monitor a variety of water quality parameters, including temperature, pH, turbidity and conductivity. The boat was also equipped with LEDs that change color instantaneously in response to user-defined thresholds for each measured parameter. An article about chlorides in Long Creek for the Maine Water Environment Association's quarterly newsletter was also an outcome of the MIT monitoring collaboration. Most recently, the Chair has been involved in discussions with DEP and EPA about the provisions in the next five-year General Permit for Long Creek. Finally, the City has been involved in annual Long Creek clean up events for the past several years (pre-COVID).

Red Brook

The development of the Red Brook WMP was the most significant restoration initiative with which the City was involved for this UIS. In addition to serving on the project Steering Committee, City staff provided considerable assistance in developing a variety of maps for the WMP. A significant majority of the watershed resides in Scarborough and most of the area in South Portland's portion is comprised of land owned by the Maine Turnpike Authority, Maine Department of Transportation and private entities. Consequently, the WMP's Action Plan does not identify any stormwater retrofit opportunities or erosion problem sites for South Portland.

The WMP's Action Plan also recommends establishing a 75' undisturbed buffer around Red Brook and its tributaries. South Portland's zoning regulations are somewhat consistent with this recommendation by specifying a stream protection overlay zone for Red Brook that restricts the type and extent of development that can occur within 100' of the stream. The WMP Action Plan also recommends establishing stormwater management standards "specific to meet the needs of the watershed." The City's Stormwater Performance Standards (Sec. 27-1536) provide increased protections beyond those required by DEP Chapter 500 and the MS4 General Permit. Any new development or redevelopment projects disturbing 15,000 s.f. or more are required to install stormwater treatment systems and provide annual inspection & maintenance reports to verify these systems are functioning properly. (Ch. 500 &

the MS4 GP requirements apply only to projects disturbing an acre or more).

Scarborough also established a Compensation Fee Utilization Plan (CFUP) for Red Brook in 2014. Per DEP Chapter 500, the CFUP created an account to reduce stormwater impacts of new development or redevelopment projects on Red Brook. As of March 2021, there have been three private projects in South Portland's portion of the Red Brook watershed contributing over $130K to this account:

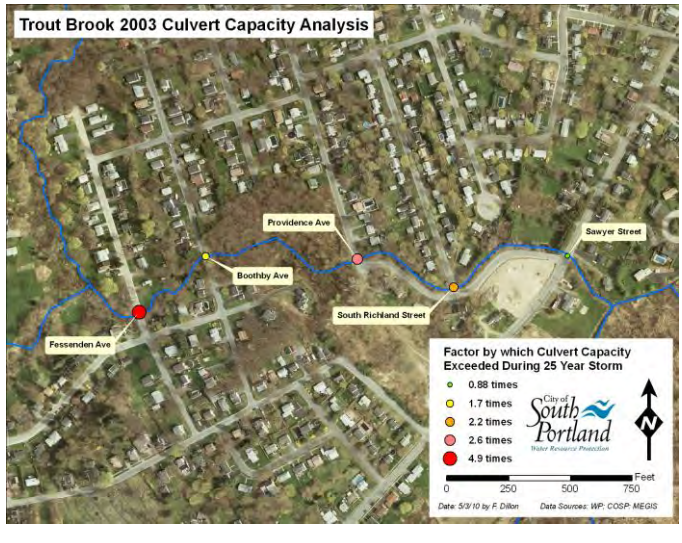
- **350 Clarks Pond**
  (residential development): $57,500
- **50 Postal Service Way**
  (Moody's Collision): $21,425
- **2401 Broadway**
  (commercial development): $53,700

Finally, consistent with the WMP Action Plan's recommendations to "promote community education, public involvement and watershed stewardship," the South Portland Land Trust established the Red Brook / Clarks Pond trail network in 2009 partly for these purposes.

Trout Brook

Thanks to a variety of initiatives (most of them DEP grant funded), the City and numerous partners have expended considerable time and effort to characterize the conditions and water quality / aquatic habitat impacts in the Trout Brook watershed and work towards its eventual restoration. A chronology of the most significant efforts is summarized below.

One of the earliest efforts by the City to formally characterize the conditions of Trout Brook was the Wright-Pierce Culvert Analysis completed in 2003. The project scope was limited to the stream segment between Sawyer and Fessenden Streets and calculated culvert capacities at five locations for 25 year storm events. The hydraulic analysis identified the most significant bottleneck at Fessenden Ave, followed by Providence Ave, South Richland Street, Boothby Ave and Sawyer Street. The purpose of the study was to inform future decisions about culvert upgrades to minimize potential flooding damage.



In 2003, DEP partnered with the South Portland Land Trust to conduct a Nonpoint Pollution Source (NPS) survey of the Trout Brook watershed (funded by a DEP/EPA 319 grant). The primary purpose of this

effort was to "identify potential sources of polluted runoff." NPS survey volunteers identified just under 90 problem sites from a variety of pollutant sources including sediments, nutrients, toxics and bacteria with 39% characterized as having high to severe impacts. The NPS survey also included a stream habitat assessment for several reaches in both Trout and Kimball Brooks. Numerous reaches had compromised habitat for a variety of metrics, including stream bottom/water quality, riparian & streambank conditions and adjacent pollution sources. The survey report offered numerous recommendations to mitigate stream impacts, the most significant of which were increasing the amount of on-site stormwater retention, stabilizing streambanks to reduce erosion and promoting a reduction of new impervious surfaces through local land use regulations, among others.

In 2010, the City received DEP/EPA funding (~$35K) to develop the Trout Brook Watershed Management Plan, which was completed in late 2012. The WMP is the most comprehensive compilation of information about Trout Brook (to date) and provides an informative summary for the most significant assessment efforts, some of which were completed during the WMP development process, to inform restoration recommendations. Since many of these efforts are nicely summarized in the WMP, they won't be repeated again here. Readers interested in learning more can find the WMP on the City's website.

Assessment Type	Completed By	Date
Macroinvertebrate Monitoring	MDEP	1999, 2003, 2004, 2005, 2010
Fish Population Study	MDEP, MIF&W	1999, 2000, 2001, 2003
NPS Watershed Survey	South Portland Land Trust	2003
Culvert Capacity Analysis	Wright Pierce	2003
Urban Streams Project Report Fish Community Fluvial Geomorphology Stream Habitat Water Quality	MDEP	2005
TMDL Study	MDEP	2007
Fish Barrier Assessment	CBEP	2009
Stream Corridor Assessment	CCSWCD, MDEP, City of South Portland	2011
Water Quality Data Collection	CCSWCD, City of South Portland	2010-2012
Terrain Conductivity Assessment	MDEP	2012
Kimball Brook Iron Assessment	MDEP, University of Southern Maine	In progress, 2012

Based on a synthesis of this work, the WMP established a Trout Brook Watershed Action Plan that assigned priorities, responsible parties, potential funding sources, cost estimates and implementation schedules. Key recommendations for the Action Plan are as follows:

- Reduce nutrient loading from the upper watershed
- Reduce chloride loading from the middle watershed
- Improve stream habitat

- Prevent further water quality decline through land conservation and ordinance enforcement
- Conduct community outreach to raise awareness about restoration efforts through stream crossing signs and an Urban Youth Conservation Corps (Urban YCC)
- Continue water quality monitoring efforts in consultation with DEP and involve local schools
- Conduct macroinvertebrate sampling

In the intervening years, the City has worked diligently with various partners to implement many or most of these recommendations, primarily through the acquisition of numerous grants, which are briefly summarized below.

The Casco Bay Estuary Partnership provided a small Habitat Restoration Grant (~$5K) to the City in 2012 to make some modest but meaningful in-stream habitat improvements. With the assistance of DEP and Field Geology Services, the City's construction crew installed a few root wads and opened up a bermed section of streambank in the Trout Brook Nature Preserve so higher flows could access the floodplain. Additionally, staff from CBEP, DEP and the City worked with several volunteers to remove a small cobble dam that was restricting flow and creating a shallow slow moving pool. Both efforts garnered considerable attention from the local news media.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Upstream battle

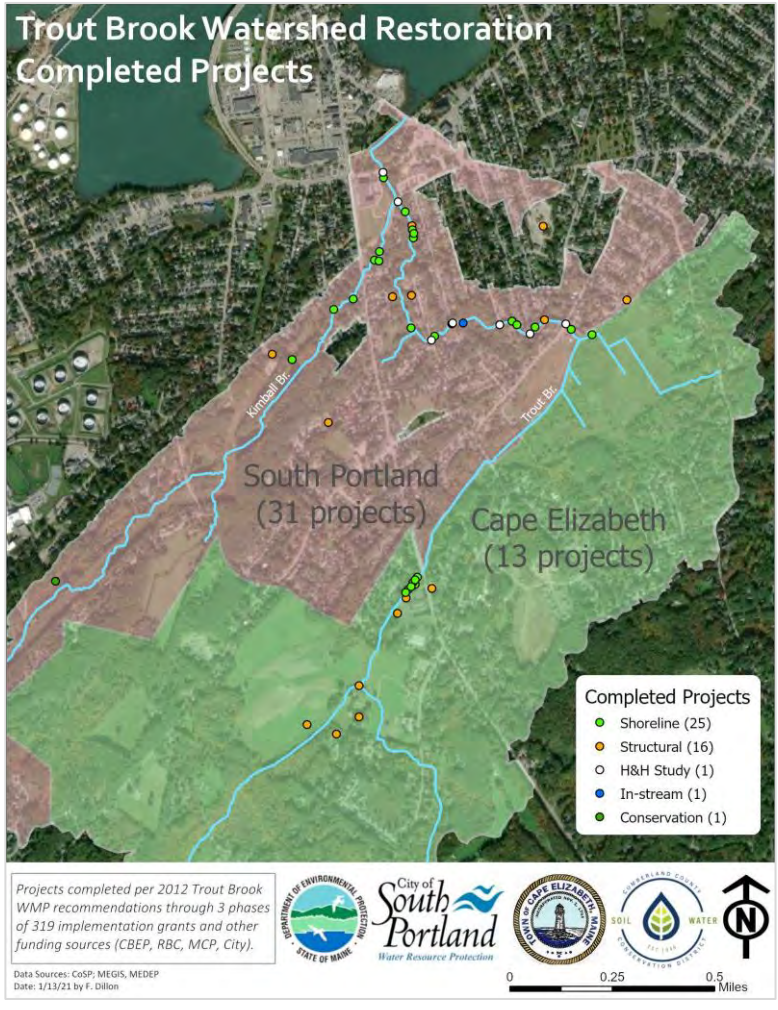
Workers from the city of South Portland and volunteers breached a manmade berm along the bank of Trout Brook on Friday, Sept. 28 to allow the brook to access a floodplain when storms cause the water levels to rise. The work is part of what Fred Dillon of Water Resources Protection called a "modest but meaningful" project to restore the water quality of Trout Brook. (Marc Filippine photo)

Volunteers get hands dirty to help Trout Brook

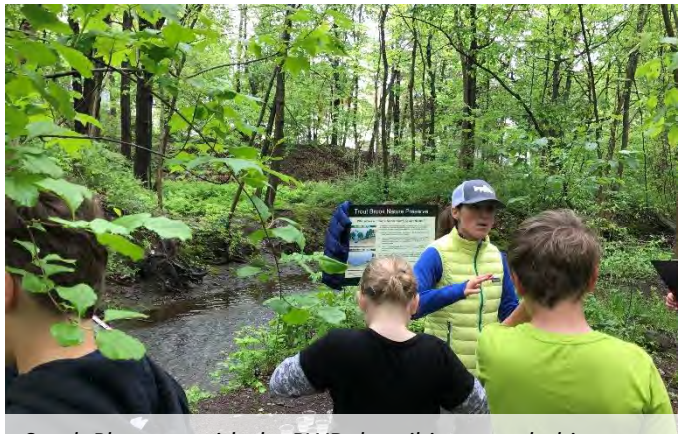
In 2013, the City partnered with the Town of Cape Elizabeth on a DEP/EPA 319 grant (~$70K) to continue implementing recommendations from the WMP. The work completed for this "Phase I" project was significant consisting primarily of riparian buffer plantings for residential properties and targeted residential outreach, both of which were completed by an Urban YCC. Additionally, the project remediated a significant NPS site and provided technical assistance to golf course staff. In 2015, the Cumberland County Soil & Water Conservation District (CCSWCD) received funding from the Casco Bay Estuary Partnership that allowed for riparian buffer planting work to additional residential properties and remediated another NPS site. It also provided funds for the installation of infiltration steps and a residential rain garden (in the public right-of-way). City staff completed part of the installation work for the former and all of the construction and installation work for the latter.

South Portland Collection Systems Division construction crew installing residential rain garden (Nov. 2015)

In 2016, leftover funds from the "Phase II" DEP/EPA grant acquired by Cape Elizabeth (which involved significant work there) were used to install a tree box immediately adjacent to Trout Brook. City staff assisted with design and completed the installation for a StormTree system that was later augmented with two deep-sump hooded catch basins to capture winter sand from the steep hill nearby. Separate from DEP/EPA funds, the City received a Maine Coastal Program Coastal Communities Grant (~$50K) in 2017 to complete a Hydrologic & Hydraulic (H&H) Analysis. The purpose of this project was to provide a basis for enhancing stream connectivity and fish passage for several critical culverts along Trout Brook. In addition to detailed wetlands delineations and hydraulic analyses, preliminary cost estimates were developed for culverts at five key locations. As funding allows, the H&H study findings will enable the City to strategically replace culverts while avoiding unintended consequences, such as flooding or adverse in-stream habitat alterations. In 2019, Cape Elizabeth received "Phase III" funding from DEP/EPA to complete significant improvements in the upper portion of the watershed. When considered altogether, these projects represent significant progress in moving Trout Brook closer to attainment of water quality standards.



Since 2012 the City has been partnering almost every year (except during the COVID pandemic) with the Portland Water District (PWD) on annual trout release events in the Trout Brook Nature Preserve. This highly popular and successful program begins early in the year with elementary and middle school students raising trout from eggs to fry and culminates in the trout release. In preparation for the releases, PWD educators and City staff visit local schools to discuss the various issues associated with landscape changes. Presenters place particular emphasis on how



Sarah Plummer with the PWD describing trout habitat to South Portland elementary students (May 2017)

polluted stormwater runoff can adversely affect trout life cycles and survivability. On release day, students visit the Trout Brook Nature Preserve to participate in a variety of assessment activities before deciding whether water quality and aquatic habitat will allow their trout to survive (students have always decided in the affirmative). These activities include water quality measurements, macroinvertebrate assessments and assessments of the riparian habitat and surrounding land uses (i.e., the "stormwater walk").

CEHS APES students kick netting in Trout Brook for macroinvertebrates (Oct. 2015)

Finally, almost every year since 2013 City staff – usually with DEP assistance – have been conducting annual rapid macroinvertebrate assessments of Trout Brook with Cape Elizabeth High School seniors in the Advanced Placement Environmental Science (APES) class. The assessments are usually preceded by classroom visits from City staff and project partners to introduce basic watershed concepts. It may seem surprising for City staff to be working in the neighboring community of Cape Elizabeth. However, since watersheds often transcend political boundaries (as does Trout Brook), raising awareness about watershed management considerations sometimes requires working across municipal borders and engaging with partners from neighboring communities.

Tom Mikulka describing how to identify macroinvertebrates using a dichotomous key (Oct. 2015)

Retired high school science teacher (and Ph.D. biochemist) Tom Mikulka has been such a partner and has been instrumental in the ongoing success of this effort. In addition to overseeing the field component of the assessment, Tom has also challenged more than a few students to think critically about the importance of applying classroom concepts to "real world" observations in the field. He adapted the macroinvertebrate assessment methodology from the University of Wisconsin Extension Service and further refined it for use in Trout Brook and other streams in the region. Students' biotic index scores have been remarkably consistent from year to year and have coincided with DEP's rock bag results (unfortunately finding nonattainment of water quality standards).

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 City 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 Department of Marine Resources Shellfishing Area 13.

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 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 based on investigations of potential sources. MS4s are already required to conduct investigations of potential illicit discharges under MCM 3 for Illicit Discharge Detection & Elimination (IDDE).

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 or below 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. DEP has not fully specified the root cause of the impairment, but suspects that stormwater is a contributing factor.
2. 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.

1.5 Priority Watersheds

Previous MS4 General Permits required that regulated MS4s identify priority watersheds and apply BMPs to those watersheds. During the previous permit cycle, the City designated Trout Brook and Barberry Creek as its first and second priority watershed, respectively. The 2022 MS4 General Permit no longer contains 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 City of South Portland uses this prioritization to identify where illicit discharge inspections are conducted

first. The City may also use the prioritization for illicit discharge investigations in the event there are 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 are then available to receive grant funding under Sections 308(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". MS4 communities cannot use 319 grant funding to implement any BMPs required by the MS4 General Permit.

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 City's NOI is provided in Appendix B.

30-day Public Notice was provided by both the Maine DEP and the City to allow the public to comment on the SWMP. A copy of the Public Notice provided by the City is contained in Appendix B.

Following review of the SWMP and NOI, and receipt of any public comments, the 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 City at the end of the public comment permit. If no comments are received, DEP provides notice to the City that they are authorized to discharge under the 2022 MS4 General Permit and the permittee specific DEP Order.

Once the DEP issues authorization to discharge, the City 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 B. In addition, the permittee will include all comments received in Appendix C 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 City Website. A copy must also be made available to the public at City Hall. If any of the following entities request a copy, one must be made immediately available to them:

a) USEPA or Maine DEP,

b) Any interconnected or adjacent MS4,
c) Any owner or operator of a water supply company where the MS4 discharges to a water supply watershed, or
d) 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 City will amend the SWMP if the Maine DEP or the City 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 City'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 City'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 City, 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 City, and the City must respond in writing within 30 days of the notice explaining how it will modify the SWMP. The City must then modify the SWMP within 90 calendar days of the City'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 City 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 City's permittee specific DEP Order, based on the implementation of the City'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. Results of information collected and analyzed, including monitoring data, if any, during the reporting period.
c. A summary of the stormwater activities the City intends to undertake pursuant to its Plan to comply with the terms and conditions of the 2022 MS4 General Permit and the City'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 through #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 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 Education/Outreach Campaigns to address stormwater issues of significance:

1. An Outreach to Raise Awareness Campaign targeted at two 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 audiences using a minimum of three (3) outreach tools per year. This campaign will promote and reinforce desirable behaviors designed to reduce stormwater pollution.

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 communities 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 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 communities agreed on which issues of significance to address and what tools and messages might be effective. Each of the BMPs provides a brief introductory section describing the rationale for the selection of the BMP based on the regional and local issues within the ISWG region. 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 City will fulfill the requirements for Public Education/Outreach through participation in the ISWG and the City's provision of funding to the Cumberland County Soil & 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 – Stormwater Program Coordinator (with implementation assistance by 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

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

stormwater issues. The ISWG, Androscoggin Valley Stormwater Working Group (AVSWG), and Southern Maine Stormwater Working Group (SMSWG) coordinate their Think Blue Maine messaging and education efforts to provide consistent messaging in Southern Maine. In addition, the Massachusetts and New Hampshire small MS4s are using similar Think Blue campaigns, so there is some regionally consistent messaging in circulation.

In 2018, the ISWG executed a statewide survey around public awareness of stormwater issues and behaviors that impact stormwater. Ninety-four percent 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 before for education 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 City, 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 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 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

[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.

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 and the baseline target audience.

Measurable Goal 1.1b – the City, through its participation in the ISWG, will raise awareness of developers and contractors by 15% from the Permit Year 1 established baseline audience of developers and contractors about 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 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 operating in the ISWG region over the course of the permit term.
Implementation schedule: A minimum of three 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 – Stormwater Program Coordinator (with implementation assistance by CCSWCD)

The ISWG communities have focused on changing behavior to reduce nutrients into regional waterbodies in their MS4 permit for the past three permit cycles. The ISWG communities will continue their efforts to reduce sources of nutrients by promoting proper dog waste disposal to two 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 sediments, pet waste, septic systems, and fertilizers.
2. The Statewide survey conducted in Permit Year 5 of the previous cycle identified that survey respondents are aware that nutrient sources (including dog waste) are a common stormwater pollutant and respondents expressed a willingness to take action to help reduce stormwater pollution. Eighty-four 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. Several 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 currently still barriers to effectively educating and enforcing these types of ordinances.
6. Dog owners ages 25 to 64 are the least likely age group to pick up after their dog[7]. However, dog owners age 25 to 64 receive their information through different outreach 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 per age group.

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

Measurable Goal 1.2a – the City, through its participation in the ISWG, will work towards changing the behavior of 15% of pet owners from the Permit Year 1 established baseline audience of dog owners so more will properly dispose of their pet waste.

Target audience: Dog owners ages 25 to34 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 the 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 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 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).

[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/

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 of the tools will be implemented each year for the duration of the permit.

Measurable Goal 1.2b – the City, through its participation in the ISWG, will work towards changing the behavior of 15% of pet owners from the Permit Year 1 established baseline audience of dog owners so more will properly dispose of their 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 the 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 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 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 of the tools will be implemented each year for the duration of the permit.

2.1.3 BMP 1.3 – Effectiveness Evaluation

Responsible Party – Stormwater Program Coordinator (with implementation assistance by CCSWCD)

Measurable Goal 1.3a – the City, through its participation in ISWG, will submit an annual report each year of the 2022 MS4 General Permit term documenting 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 City, 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 – Stormwater Program Coordinator (with implementation assistance by CCSWCD)

This BMP describes activities that are not required by the 2022 MS4 General Permit but are being conducted by the City to supplement the Education/Outreach program.

Measurable Goal 1.4a – the City will continue to support the Cumberland County Soil & Water Conservation District's youth education curriculum to community schools as funding allows. Annual reports will include the total number of students reached, which schools were involved, and the lesson topics covered.

Measurable Goal 1.4b – the City will support the regional YardScaping effort to reduce nutrients from entering regional waterways and increase buffers. Annual reports will include the total number of people reached with workshops, partner point of sale locations, and workshop survey data.

2.2 MCM 2 Public Involvement and Participation

The City will fulfill the requirements for Public Involvement and Participation through participation in the ISWG and the City'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.

BMP 2.1 - Public Notice Requirement

Responsible party – Stormwater Program Coordinator (with implementation assistance by CCSWCD)

Measurable Goal 2.1a – the City will follow applicable state and local public notice requirements for their Stormwater Management Plans and Notices of Intent (NOIs) to comply with the MS4 General Permit. Copies of the NOIs and plans will be made available on the City's website. The City will document public meetings related to their stormwater program and attendance of those meetings in their annual report.

Measurable Goal 2.1b – ISWG members have 6 group meetings per year to review issues associated with implementation of the Stormwater Management Plan and MS4 General Permit. These meetings will be publicized through the CCSWCD website, on ISWG member websites, and open to the public.

BMP 2.2 - Public Event

Responsible party – Stormwater Program Coordinator (with implementation assistance by CCSWCD)

Measurable Goal 2.2a – the City 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 City's website, through the City's and CCSWCD's social media accounts, and other City 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 City 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.

2.3.1 BMP 3.1 – Continue to Implement the Non-Stormwater Discharge Ordinance
Responsible Parties – Stormwater Program Coordinator with help from Code Enforcement as needed

Measurable Goal 3.1a – The City implemented a Non-Stormwater Discharge Ordinance on July 13, 2005. The Ordinance is included in the City's Code of Ordinances as Chapter 25. The WRP Director enforces this ordinance with the assistance of the Code Enforcement Officer when needed. This ordinance provides the WRP Director with the authority to issue letters of warning, notices of violation and/or fines. The City will continue to enforce this ordinance throughout the permit cycle.

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

2.3.2 BMP 3.2 – Maintain the Written IDDE Plan
Responsible Party – Stormwater Program Coordinator

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

Measurable Goal 3.2b - The City 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 our IDDE Plan by the end of Permit Year 5 (6/30/2027).

2.3.3 BMP 3.3 - Maintain Storm Sewer System Infrastructure Map
Responsible Parties – Stormwater Program Coordinator with WRP Engineering Division Manager

Measurable Goal 3.3a – the City 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 Water Resource Protection Department staff by June 30 each year.
- The GIS geodatabase is updated when as-built drawings become available for municipal infrastructure.

2.3.4 BMP 3.4 – Conduct Infrastructure Inspections and Monitor Flowing Outfalls
Responsible Parties – Stormwater Program Coordinator with support from Collection Systems Division staff

Measurable Goal 3.4a – The City 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, but the City will continue to attempt to inspect each outfall annually if time and municipal budget allow.
- 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 removals (see BMP 6.4 for details).

Measurable Goal 3.4b – Once per permit term, if an outfall is observed to be flowing during dry weather conditions (i.e., 72 hours or more following a rain event greater than ¼ inch, or ice or snow melt), the flow will be monitored in accordance with the program described in the IDDE Plan (BMP 3.2) using the methods identified in the 2022 MS4 General Permit unless the outfall is determined to be exempt as described in Part IV.C.3.e.vi.

The City will summarize either the monitoring results or the exempt status on the excel spreadsheet used for Measurable Goal 3.5a or in a GIS geodatabase. If the monitoring reveals the outfall has a potential illicit discharge, as described in the IDDE Plan, the outfall will be investigated as required under Measurable Goal 3.5a.

The City's IDDE Plan (contained in Appendix E) describes the information collected electronically during

infrastructure inspections. The City documents the inspections electronically in the GIS.

2.3.5 BMP 3.5 – Conduct Investigations on Suspect Illicit Discharges
Responsible Parties – Stormwater Program Coordinator with help from Code Enforcement as needed

Measurable Goal 3.5a – Whenever WRP 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 Stormwater Program Coordinator will track the status and outcome of the investigations using an excel spreadsheet.

2.3.6 BMP 3.6 – Significant Contributors of Pollutants
Responsible Party – Stormwater Program Coordinator

Measurable Goal 3.6a - During the 2013-2022 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 City has been annually requesting yearly reports from the Portland Water District (PWD) that describe their hydrant flushing dechlorination processes, and the City will continue to make these annual requests for the 2022 MS4 General Permit.

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 City 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 City 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.

The City's Planning Board Regulation #2 is currently the primary regulatory mechanism that establishes erosion and sediment control (ESC) standards for construction projects. It was updated in 2014 following a staff review that included the creation of construction project oversight procedures. This process also resulted in a thorough audit of the City's construction project oversight program by the Cumberland County Soil & Water Conservation District in 2016. CCSWCD recommendations resulted in the creation of a flow chart of the ESC inspection process for use by staff, developers and contractors. In 2017, the City worked closely with ISWG to develop an ESC inspection form that was fully compliant with Chapter 500 and the Maine Construction General Permit. All 3rd party inspectors for qualifying construction projects have been using this form ever since. Finally, the City created a webpage dedicated to erosion sediment control for construction projects that includes numerous links to additional relevant information.

Overall, these various policies and documents address most elements of the Construction Site Stormwater Runoff Control MCM, but some modifications are required to meet the 2022 MS4 General Permit requirements. The following is a summary of the existing requirements that address this MCM:

Planning Board Regulation #2 establishes Level One and Level Two project review requirements. Level One project reviews are more restrictive and consist of the following criteria:

- Project is proposed for land which when disturbed would release sediment into the natural drainage system as a nonpoint source.
- Project site directly abuts a stream, floodplain, or wetlands, or,
- Project is of large enough scope to warrant more careful review of erosion and sedimentation control plan to protect natural and municipal drainage system

Level Two project reviews consist of the following criteria:

- Project does not abut stream channels, wetlands, or floodplains;
- Project site drains through the municipal storm sewer system; or,
- Project does not require review by Planning Board

All Level One projects require ESC Plans while the Planning Board may require ESC plans for Level Two projects to ensure performance standards are met. Any projects not requiring Planning Board review must employ ESC practices consistent with the latest version of DEP's ESC BMP Manuals. South Portland's ordinances can be found at: Charter & Code of Ordinances - City of South Portland, Maine. The following BMPs will be implemented to meet this Minimum Control Measure.

2.4.1 BMP 4.1 – Erosion and Sediment Control Ordinance
Responsible Parties – Community Planner and Stormwater Program Coordinator

Measurable Goal 4.1a – The City's Site Plan Review Procedures (Sec. 27-1421) already require most applications for Site Plan Review to provide 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 City will update the Zoning Ordinance by 7/1/2023 to ensure that the erosion and sediment control provisions are 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 City 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.

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 stormwater system.

2.4.2 BMP 4.2 – Site Plan Review Procedures
Responsible Parties – Community Planner and Stormwater Program Coordinator

Measurable Goal 4.2a – The City'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.

2.4.3 BMP 4.3 – Procedures for Notifying Construction Site Developers and Operators
Responsible Parties – Community Planner and Code Enforcement Officer

Measurable Goal 4.3a – The City will continue notifying developers and contractors of requirements to obtain coverage under the MCGP and Chapter 500 for sites that disturb one or more acres of land using the following methods:

- Providing notices on the Planning Department and Code Enforcement Department webpages
- Requiring check box on building permit for sites that disturb one or more acres of land, and
- In discussions with applicants.

2.4.4 BMP 4.4 – Conduct and Document Construction Site Inspections
Responsible Parties – Community Planner and Stormwater Program Coordinator

Measurable Goal 4.4a – The City will continue implementing its process for construction site inspections which:

- Identifies that third-party inspectors conduct these inspections
- Identifies that the third-party inspector will review any inspection deficiencies with the contractor during or at the conclusion of the inspection to allow for corrective measures to be taken within 1 week and prior to any storm event (rainfall) and that:
    - Inspection reports must be provided to the City within 2 days of the inspection for any sites that require corrective measures.
- Requires monthly inspections during active earth-moving phase of construction
- Requires weekly inspections for projects with ESC BMP deficiencies until these deficiencies have been adequately addressed.
- Requires 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
- Includes use of the construction inspection form provided in Appendix F of this SWMP.

Measurable Goal 4.4b. The City will document construction projects that trigger the ordinance using an excel spreadsheet and GIS data layer each year. The spreadsheet will contain the site's name, number of inspections, and completion status by the end of each permit year. The map will include point locations for each project including the parcel and watershed within which the project occurred. Inspections and associated follow up actions for all projects will be maintained in a shared file folder accessible to all Planning, Codes and Water Resource Protection Department staff involved in the construction project oversight process.

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

The City 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 City's MS4 through implementation of the following BMPs.

The City established Stormwater Management Performance Standards (ordinance Sec. 27-1536) in April 2009 to minimize water quality impacts from development projects that are considerably smaller than those required for the MS4 General Permit (i.e., for projects disturbing from 15,000 s.f. to one acre). A separate Stormwater Manual was also created in 2011 to encourage the use of green infrastructure and Low Impact Development practices.

The following is a summary of how the Stormwater Management Performance Standards relate to MCM 5 requirements. The standards for stormwater management vary depending on the type of project and amount of disturbed area as follows:

Post-Construction Stormwater Management Plans are required for major subdivisions and activities subject to site plan review that involve more than 15,000 square feet of disturbed area.

- Projects requiring Chapter 500 permit must meet the "basic" and "general" standards of Chapter 500 and urban impaired stream and flooding standard, if applicable. Stormwater management plans must also comply with the DEP Stormwater BMP Manual.
- Projects not requiring Chapter 500 permit may either meet Chapter 500 standards or provide for the treatment of 0.5 inches of runoff from 90% of the impervious surfaces on the site, and 0.2 inches of runoff from all disturbed pervious areas of the site using LID design practices and techniques determined by the Planning Board to be appropriate for the site.
    - The treatment techniques used may include those described in Chapter 10 of the DEP Stormwater Manual or the South Portland Stormwater Manual.
- All project plans must include procedures for annual inspection, maintenance and repair of associated stormwater infrastructure.
- All projects are required to submit annual signed certifications that the requirements of the Stormwater Management Plans have been met.
- Stormwater management facilities for projects requiring Chapter 500 stormwater permits must be inspected by qualified 3rd party inspectors

Basic Stormwater Management Plan: minor subdivisions and activities subject to site plan review that are not subject to the requirements for a Post-Construction Stormwater Management Plan.

- Projects must meet the "basic" and "other applicable standards" of DEP Chapter 500 and comply with practices described in the DEP Stormwater Manual; or
- Provide for the treatment of 0.5 inches of runoff from ninety percent (90%) of the impervious surfaces on the site, and 0.2 inches of runoff from all disturbed pervious areas of the site using LID design practices and techniques determined by the Planning Board to be appropriate to the site.
    - The treatment techniques used may include those described in Chapter 10 of the DEP Stormwater Manual or the South Portland Stormwater Manual.

Drainage Plan: activities not subject to site plan review that result in the expansion or alteration of an existing building or structure that increases the amount of impervious surface area by more than 5,000 s.f. or the construction of a new principal building or structure must meet the following requirements:

- The proposed improvements must be designed to minimize the amount of stormwater leaving the site, including consideration to minimize the total area of impervious surface on the site and the use of stormwater management practices to minimize the volume and runoff from the site.

- The use of LID techniques as described in Chapter 10 of the DEP Stormwater Manual or South Portland's Stormwater Manual are encouraged but not required.

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

2.5.1 BMP 5.1 – Promote Strategies to Prevent or Minimize Water Quality Impacts
Responsible Parties – Planner, Code Enforcement Officer & Stormwater Program Coordinator

Measurable Goal 5.1a – The City 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 in the watershed of an Urban Impaired Stream that create 20,000 square feet of impervious cover, or in any other watershed that creates 1 acre or more of impervious cover or is in any watershed where 5 or more acres of land will be developed.

Measurable Goal 5.1b – The City'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.

As summarized above, the City's Stormwater Management Performance Standards (ordinance Sec. 27-1536) require that each applicant consider using LID techniques and submit a narrative description of how stormwater will be managed including any LID techniques that are incorporated into the plan. The City will continue to implement and enforce this requirement.

2.5.2 BMP 5.2 – Maintain Post Construction Ordinance or Similar Measure
Responsible Parties – Planner, Code Enforcement Officer & Stormwater Program Coordinator

Measurable Goal 5.2a – During the 2008-2013 permit cycle, the City passed Stormwater Management Performance Standards (effective April 22, 2009, currently Sec. 27-1536) which require that the owner/operator of any site that disturbs more than 15,000 s.f. certifies to the City annually by July 15th that they have inspected and maintained their stormwater BMPS. The City will continue to track:

- The cumulative number of sites that have post construction BMPs discharging into the permittee' s MS4;
- The number of sites that have post construction BMPs discharging into the permittee'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 City's Post Construction Ordinance (Sec. 27-1536) 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 City' Enforcement Authority within 30 days of completion of the corrective action.
- If it is not possible to correct the deficiency within 60 days, the property owner will coordinate with the Public Works Director 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.

2.6.1 BMP 6.1 – Operations at Municipally Owned Grounds and Facilities
Responsible Parties – Stormwater Program Coordinator

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

Measurable Goal 6.1b – During the previous MS4 permit cycle, the City worked with ISWG to develop and implement Operation and Maintenance (O&M) procedures for the municipal operations listed in the municipal operations inventory that had the potential to cause or contribute to stormwater pollution. The City 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 potential pollutant discharges.

2.6.2 BMP 6.2 – Training
Responsible Party – Stormwater Program Coordinator (with implementation assistance by CCSWCD)

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

Stormwater Pollution Prevention Plan (SWPPP): staff from the Municipal Services Facility (including Public Works, Parks, City Transportation and Fire Department employees), Transfer Station and School Bus Maintenance Facility will be annually trained on good housekeeping & pollution prevention practices consistent with SWPPP requirements.

Operation & Maintenance (O&M) Procedures: staff from the Water Resource Protection, Parks, and Police and Fire Departments will be trained annually on O&M procedures to prevent pollutants from entering the City's stormwater system and/or local water resources.

2.6.3 BMP 6.3 – Continue Street Sweeping Program
Responsible Party – Public Works Director

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

2.6.4 BMP 6.4 – Cleaning of Catch Basins
Responsible Party – Collection Systems Division Manager

Measurable Goal 6.4a – The City will clean all publicly owned catch basins annually and will note any basins with excessive sediment accumulation.

Measurable Goal 6.4b – The City 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.

2.6.5 BMP 6.5 – Maintenance and Upgrading of Storm water Conveyances and Outfalls
Responsible Party – Collection Systems Division Manager

Measurable Goal 6.5a – The City 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 City continues to perform systematic capital upgrades of the storm drain system in correlation with the road paving program for the City. The City also inspects its stormwater treatment systems using qualified third-party inspectors and conducts routine maintenance with City staff.

2.6.6 BMP 6.6 – Stormwater Pollution Prevention Plans (SWPPPs)
Responsible Party – Stormwater Program Coordinator

Measurable Goal 6.6a – The City has SWPPPs for the School Bus Maintenance Facility, Transfer Station and Municipal Services Facility. The latter SWPPP was created during the last Permit Cycle to reflect the creation a newly constructed facility that now houses operations for the Public Works, Parks, City Transportation and Fire Departments. The previous SWPPP for the old Public Works facility was discontinued to reflect these changes. The City will amend all current SWPPPs to comply with the requirements specified in Part IV.C.6.d by 6/30/2022. In addition, the City will amend any SWPPP within 30 calendar days of completion for any of the following circumstances:

- 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 City, local, state or federal officials which

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 City will implement the SWPPP throughout each Permit Year including conducting quarterly facility inspections using the City's form and visual monitoring using the forms contained in Appendix E of the 2022 MS4 General Permit.

2.7 Impaired Waters BMPs

As discussed above, the City's MS4 discharges point sources to five streams classified as Urban Impaired in DEP's Chapter 502 (Figure 8). Because DEP separately regulates Long Creek (and its numerous tributaries) under another permitting process, it is not subject the 2022 MS4 General Permit requirements - including those to implement three structural or non-structural BMPs for UISs. Therefore, the ensuing discussion will summarize how the City intends to meet the "three BMP requirement" for the remaining four UISs (Barberry Creek, Kimball Brook, Red Brook and Trout Brook).

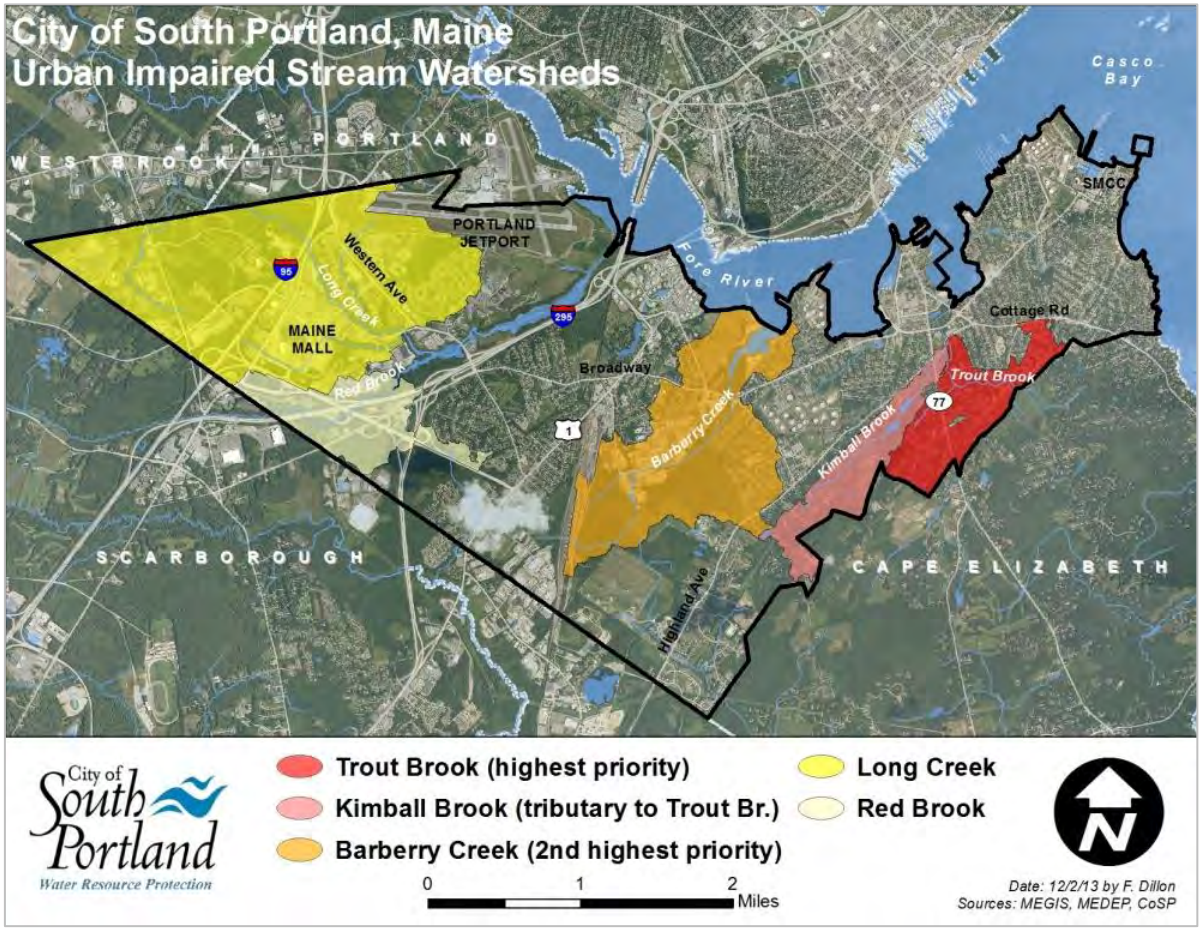


Figure 8: Urban Impaired Stream watersheds in South Portland

The City has been closely involved in helping develop Watershed Management Plans for Red Brook, Trout Brook and Kimball Brook (as part of the Trout WMP). Barberry Creek does not yet have a WMP and there is some question about whether developing one would be worthwhile until the aquatic habitat can be further characterized to determine the extent of legacy contamination and likelihood of attaining water quality standards. The geomorphic assessment completed for Barberry in the fall of 2020 provides some valuable guidance as does a recent consultation with DEP Environmental Assessment staff (February 2021). Therefore, we have some basis for understanding additional actions to mitigate impairments in each of our four UIS watersheds.

Details of the work completed to date are discussed above in Section 1.4 and set the framework for identification of the three BMPs that will be implemented in each UIS to meet the 2022 MS4 General Permit requirements. BMPs 7.1 and 7.2 will be implemented on a City-wide basis and therefore will be the same for all four UISs. BMPs 7.3 and 7.4 (a potential alternate) will also apply to all four UISs but will be implemented differently depending on the specific needs for each UIS.

2.7.1 BMP 7.1 – Implement Landcare Management Ordinance

Responsible Parties – Sustainability Director, Stormwater Program Coordinator, Landcare Management Advisory Committee (LMAC) and CCSWCD

Applicable Urban Impaired Stream Watersheds: Barberry, Kimball, Red & Trout

The recently enacted Landcare Management Ordinance (November 2020) was developed to continue the Council's goal of minimizing the use of potentially harmful lawn care products. It builds upon the Pesticide Use Ordinance enacted in 2016 by including provisions that will restrict the types and amounts of fertilizers that can be applied in South Portland. The ordinance was developed over the course of a year and a half by a diversity of stakeholders comprising the Fertilizer Working Group. The most significant ordinance provisions from an Urban Impaired Stream restoration perspective include the following:

- Synthetic fertilizers are generally prohibited.
- Organic fertilizer on established turf, including residential lawns is allowed only when a comprehensive soil test indicates a need for nitrogen. The fertilizer must be phosphorus-free unless the soil test indicates a need for phosphorus.
- Organic fertilizer on performance turf is allowed, but restricted.
- Organic fertilizer for re-establishment of turf is allowed (with stipulations) and may contain phosphorus without a soil test.
- For new development projects:
    - Organic starter fertilizer containing phosphorus can be applied without a soil test.
    - Topsoil must be 6" deep and contain 5% organic matter with a pH between 6.0 and 6.5.
    - Compacted subsoil must be broken up to a depth of 10" (including the 6" of topsoil).

The intent for all of these provisions is to reduce the likelihood that nutrients (especially nitrogen) enter South Portland's water resources (particularly our UISs) and minimize adverse impacts to the Fore River

and Casco Bay, both of which are exhibiting increasing symptoms of coastal eutrophication.

Measureable Goal 7.1a – In Permit Year 1, City staff will work closely with the Landcare Management Advisory Committee, which is comprised of volunteers with considerable expertise in various organic landcare practices, and the CCSWCD, which implements the highly successful YardScaping program. This group will develop and begin implementing an Education & Outreach (E&O) Plan that helps residents and businesses comply with the new fertilizer ordinance and adopt organic landcare practices. Elements of the E&O Plan will include the following:

- Update Grow Healthy South Portland (GHSP) website and Sustainability Department's Facebook page to include new information/content on ordinance requirements and organic landcare BMPs. The City will hire a web designer and copy editor to assist with this process, which will also include:
    - Adapt or link to existing content from other organizations, such as the CCSWCD, Maine Cooperative Extension, Maine Organic Farmers and Gardeners Association (MOFGA), etc., for use on the GHSP website (with appropriate attribution).
    - Develop series of "how-to" videos and FAQs.
- Work with CCSWCD to develop a retailer tool kit for placement at various establishments throughout the City (e.g., Drillen, Shoppers True Value, Broadway Gardens, Home Depot, etc.).
    - Create 2 page info sheet for staff training.
    - Develop signs for product shelves and register/checkout.
    - Develop laminated FAQ sheets to hang with rings at strategic locations.
- Publish a series of articles in the South Portland Sentry describing various aspects of the ordinance and organic landcare considerations (e.g., importance of healthy soils and soil testing, how to properly apply fertilizers, organic landcare practices, etc.).
- Develop a trifold brochure summarizing ordinance and organic landcare principles for dissemination at various locations throughout the City.
- Collaborate with CCSWCD and other potential partners such as Cultivating Community, MOFGA, Friends of Casco Bay, etc., on a series of workshops and events (including YardScaping).
- Continue implementing demonstration projects highlighting organic landcare practices and explore grant opportunities to expand these efforts.

Measureable Goal 7.1b – In Permit Year 2, and as directed by the Council, City staff and the LMAC will expand the scope of the ordinance beyond lawns and performance turf (i.e., athletic fields) to include other land use types that also receive fertilizers (e.g., ornamental gardens, landscape features, vegetable gardens, etc.).

- Review relevant scientific literature and similar ordinances from elsewhere to inform development of ordinance provisions in South Portland.
- Consult with landcare professionals, government agency staff (e.g., Dept. of Agriculture and Forestry), academics and NGOs for input on ordinance provisions.
- Draft ordinance language for review by City's Corporation Counsel.
- Present draft ordinance language to Council for consideration.

- Revise ordinance if/as needed based on Council input and return to Council for reconsideration.
- Implement ordinance following Council approval using similar approach to Measureable Goal 7.1a.

Measureable Goal 7.1c – Continue working with partner organizations to implement all aspects of the Landcare Management Ordinance in Permit Years 3-5. Based on the City's experience with the adoption and implementation of the Pesticides Ordinance in 2016, this will also likely involve serving as a resource for other communities considering landcare management provisions for their ordinances.

2.7.2 BMP 7.2 – Chloride Minimization Program

Responsible Party – Public Works Department Director (with assistance from ISWG / CCSWDC)

Applicable Urban Impaired Stream Watersheds: Barberry, Kimball, Red & Trout

DEP has been intensively investigating the adverse impacts of excessive chloride concentrations on Maine's streams, including UISs in South Portland. They have established a clear link between expansive areas of pavement (e.g., parking lots and public roadways) that receive salt – often excessively – in the winter.

The City has already taken several actions over the past few years to minimize chloride contributions from winter maintenance / deicing activities. We will continue to implement the following chloride reduction practices which are also specified in the Maine BMP Manual for Snow and Ice Control, 2015:

- Annual review of appropriate application rates with crews 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
- Use of pavement temperature gauges to determine application rates
- Consider use of multi-section blades that conform to shape of roads more effectively than conventional plow blades if funding allows
- Use of liquid (pre-wetting) to improve performance and to reduce "bounce and scatter" when applying sodium chloride
- Consider use of road weather information cameras/sensors to measure real time conditions if funding allows

Additionally, while there are two regional pilot programs beginning in 2021 focused on private applicators (one of which is in the Long Creek watershed), real progress on effectively reducing chlorides will require a statewide program, additional public education, and a consideration of limited liability legislation for private applicators. City staff have been closely involved all of these efforts including the promotion of increased understanding about chloride contamination. The City will implement the following Measurable Goals related to chloride reduction in all UISs.

Measurable Goal 7.2a. At least one representative from the City will attend an annual regional training or roundtable to learn about new chloride reduction techniques coordinated by the ISWG or another organization.

Measurable Goal 7.2b. The City will complete the following actions to facilitate future reduction of chlorides through application by private contractors:

- In Permit Year 1, and alternating years thereafter until it passes, the City 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 City will also provide comments on any drafted legislation, and provide testimony at the committee level once drafted to help inform the review committee. The information provided will identify how chlorides affect water quality and how limited liability legislation will support a training, data collection, and certification program like the New Hampshire "Green SnowPro" 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 City 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 first year after it passes, the City will provide awareness of its passage in the form of a presentation to the Council.
    - Beginning the second and subsequent years after passage, the City will educate property owners/managers, private contractors, and/or the public on winter maintenance practices to maintain public safety and protect the environment. These practices will be delivered using two tools per year selected from Appendix D.

2.7.3 BMP 7.3 – Water Quality Monitoring Program
Responsible Parties – Stormwater Program Coordinator

Applicable Urban Impaired Stream Watersheds: Barberry, Kimball, Red & Trout

Periodically conducting water quality monitoring for UISs is critical in determining the relative effectiveness of ongoing restoration efforts – including the implementation of MCMs as required by the MS4 General Permit. It is also crucial for understanding potential impacts from new or emerging pollution sources, such as chlorides originating from winter road salt applications. While DEP has a robust water quality monitoring program for Maine's UISs, data from additional monitoring can be very useful to increase understanding about the status of particular stressors in each watershed.

As described in Section 1.4.3.2, the City has worked closely with DEP over the past decade to initiate supplemental water quality monitoring with YSI data sondes for Trout Brook and Barberry Creek (we have also done this for Anthoine Creek, which was not discussed above and included nutrient analyses). Given the ongoing – and in many cases increasing – challenges from existing development and new development / redevelopment in South Portland's UIS watersheds, the importance of a well-conceived

water quality monitoring program is obvious. Therefore, the City proposes to continue partnering with DEP to develop targeted and strategic water quality monitoring efforts for each of our UISs as described below.

Red Brook

The City has committed to partnering with the Town of Scarborough and DEP to conduct water quality monitoring in the Red Brook watershed to help determine the success of implementation efforts for the 2011 WMP and better understand current water quality conditions. Data from the proposed monitoring effort will also be used to inform an update to the WMP.

Measureable Goal 7.3a – In Permit Year 1, the City will work with Scarborough and 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 periods 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. 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 7.3b – During Permit Year 2, the City and Scarborough will work with DEP to 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 City and Scarborough. South Portland's Stormwater Program Coordinator may also periodically collect paired conductivity and chloride samples during the monitoring periods and transport chloride samples to a local lab for analysis.

Measurable Goal 7.3c – During Permit Year 3, the City and Scarborough will work with DEP to compile and analyze the collected data for review by the Red Brook Watershed Management Plan Working

Group. 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 7.3d – During Permit Years 4 and 5, the City and Scarborough will work with DEP to summarize the water quality data collected for use in the Red Brook Watershed Management Plan Amendment.

Barberry Creek

Barberry Creek does not yet have a WMP and there is some question about whether developing one would be worthwhile given the severity of stressors in the watershed. Therefore, the City proposes to work closely with DEP to develop a targeted monitoring program to help characterize watershed conditions and determine whether developing a WMP is justified.

Measureable Goal 7.3e – During Permit Year 1 the City will work closely with DEP to develop a water quality monitoring plan that identifies monitoring site locations and parameters. It will also identify the seasons and time periods 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 and sediment 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. (The City will also consider purchasing an Onset Hobo data logger to increase monitoring capacity). 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. 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.
- The 2020 Field Geology geomorphic assessment identified several locations for sediment analysis to determine the potential existence and extent of legacy contaminants. The number of samples that can be analyzed will depend on the cost to do so and budget approval process.

Measurable Goal 7.3f – During Permit Year 2, the City will work with DEP to implement the Barberry Creek 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 one location 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 City. South Portland's Stormwater Program Coordinator may also periodically collect paired

conductivity and chloride samples during the monitoring periods and transport chloride samples to a local lab for analysis. Collection of sediment samples for analysis will depend on costs and funding availability.

Measurable Goal 7.3g – During Permit Year 3, the City will work with DEP to compile and analyze the collected data for review. This data compilation will determine if additional water quality monitoring is needed to provide a more accurate representation of watershed conditions.

Measurable Goal 7.3h – If additional water quality data is not needed to further characterize conditions, the City will work with DEP in Permit Year 4 to establish whether a WMP is justified. If it is, the City will apply for grant funding to develop a WMP in Permit Year 5.

Trout Brook

Of the four UISs in the City requiring 3 BMPs by the 2022 MS4 General Permit, Trout Brook has been the most frequently monitored. It has also received the most grant funding to implement recommendations from the WMP, which will need to be updated in the next few years. To help determine how WMP implementation efforts may have affected water quality and prepare for future improvements, the City proposes to conduct additional monitoring in Trout Brook as described below.

Measureable Goal 7.3i – During Permit Year 1 the City will work closely with DEP to develop a water quality monitoring plan that identifies monitoring site locations and parameters. It will also identify the seasons and time periods 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 and sediment 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. (The City will also consider purchasing an Onset Hobo data logger to increase monitoring capacity). 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. Grab sample parameters will include temperature, conductivity and specific conductance.

Measurable Goal 7.3j – During Permit Year 2, the City will work with DEP to implement the Trout 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 one location 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 City.

Measurable Goal 7.3k – During Permit Year 3, the City will work with DEP to compile and analyze the collected data for review. This data compilation will determine if additional water quality monitoring is

needed to provide a more accurate representation of watershed conditions. It will also be used to inform an update of the Trout Brook WMP.

Kimball Brook

Kimball Brook is the least monitored UIS in the City, primarily because it is likely the least adversely impacted by surrounding development. However, given growing concerns about water quality in the Hinckley Park ponds and possibility that some of Kimball Brook's impairment may be due to naturally occurring iron sources, the City is proposing the following monitoring program.

Measureable Goal 7.3l – During Permit Year 1 the City will work closely with DEP to develop a water quality monitoring plan that identifies monitoring site locations and parameters – most likely for conductivity, temperature and iron. It will also identify the seasons and time periods 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. (The City will also consider purchasing an Onset Hobo data logger to increase monitoring capacity). 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. Grab sample parameters will include temperature, conductivity and specific conductance.

Measurable Goal 7.3m – During Permit Year 2, the City will work with DEP to implement the Kimball 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 one location 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 City.

Measurable Goal 7.3n – During Permit Year 3, the City will work with DEP to compile and analyze the collected data for review. This data compilation will determine if additional water quality monitoring is needed to provide a more accurate representation of watershed conditions. It will also be used to inform an update of the Trout Brook WMP (as Kimball is a tributary to Trout).

2.7.4 BMP 7.4 (Alternate) – Implement Impervious Cover Disconnection or Stormwater Treatment Responsible Parties – Collection Systems Division Manager & Water Resource Protection Department Civil Engineer

If DEP decides that elements for one of the previous three BMPs (7.1, 7.2 or 7.3) do not sufficiently

address UIS impairment sources, then BMP 7.4 will be offered as an alternate (either in whole for all UISs or certain elements for specific UISs). Review of recommendations from the WMPs and/or TMDL reports related to impervious cover disconnection or stormwater treatment revealed there are numerous catchment areas within all UISs that may have retrofit or treatment opportunities. The City will investigate, assess, design and install either an impervious cover disconnection project or stormwater treatment system in each of the UISs as described in the following measurable goals.

Implementation of BMP 7.4 will be contingent upon several factors including budget approvals and the ability to obtain permits and easements on private properties, which we will try to avoid by siting treatment systems entirely in the public ROW or on public properties. If BMP 7.4 proves to be infeasible for a given UIS during any permit year, the City will provide an explanatory summary in our annual report and will identify another potential location the following permit year.

Measurable Goal 7.4a – During Permit Year 1, the City will conduct site visits in each UIS and evaluate current conditions and the potential for retrofits or impervious cover disconnection opportunities. At a minimum the following sites will be visited:

- ***Barberry Creek:*** Dartmouth Street and Hemco Road. This heavily industrialized area may allow for a retrofit project to attenuate potential petroleum products in runoff from private properties into the MS4 system. Alternately, given Hannaford's stated commitment to sustainability, the City will contact them to explore strategically installing a stormwater treatment system on their expansive parcel if the other location is infeasible.

- ***Kimball Brook:*** Stillman Street at Pilgrim Road. This area includes the portion of the watershed with the most extensive stormwater drainage network and therefore has the greatest potential for retrofit opportunities. The area draining Pilgrim Road in particular represents a sizeable portion of development in the watershed.

- ***Red Brook:*** John Roberts Road (2 potential locations). This area is essentially the only portion of the watershed in South Portland with stormwater infrastructure in the public ROW for which the City has maintenance responsibilities. Therefore it has the greatest potential for retrofit opportunities. Preliminary investigations (including catchment delineations) have already identified at least 2 locations for possible projects.

- ***Trout Brook:*** Brown Elementary School parking lot; Fessenden Road culvert crossing (2 potential locations); Ocean Street at Bellaire Road. The first three locations have already been investigated preliminarily (including catchment delineations) and are good potential retrofit candidates. The Ocean Street location may also prove to be promising.

The City will write a memo summarizing the results of the evaluations, and will select the sites for design. The City will report on the recommended projects in our annual report.

Measurable Goal 7.4b – During Permit Year 2, the City will prepare the designs for 2 of the recommended projects and obtain any permits and/or easements needed to construct the projects.

Measurable Goal 7.4c – During Permit Year 3, the City will prepare designs for the remaining 2 projects and obtain any permits and/or easements needed to construct the projects. If the budgets are approved for the projects from Permit Year 2, the City will construct these projects using WRP staff and equipment.

Measurable Goal 7.4C – During Permit Year 4, if the budgets are approved for the projects from Permit Year 3, the City will construct these projects using WRP staff and equipment. Documented inspection and maintenance for the systems installed in Permit Year 3 will begin.

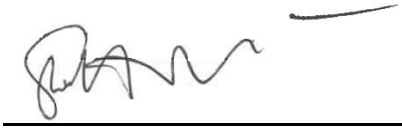
Measurable Goal 7.4d – During Permit Year 5 the City will continue documented inspections for the systems installed in Permit Year 3 and begin documented inspection and maintenance for the systems installed in Permit Year 4.

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.

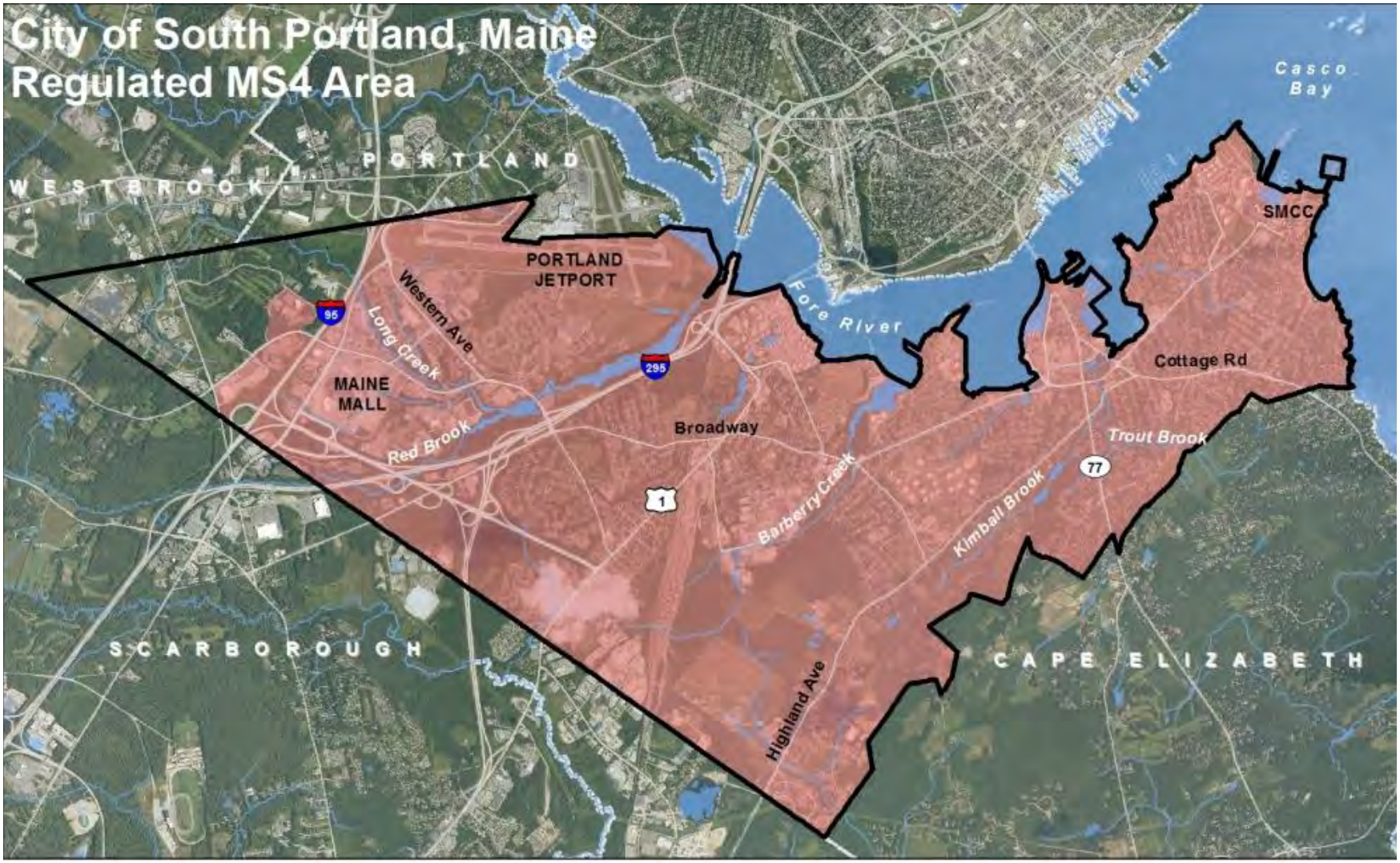
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage 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: 3/31/21

Scott Morelli

Title: City Manager

APPENDIX A
Urbanized Area Map



City of South Portland
Water Resource Protection

City of South Portland (~12.3 sq. mi.)

2010 Urbanized Area (~11.3 sq. mi.)

0 1 2 Miles

Date: 12/2/13 by F. Dillon
Sources: MEGIS, CoSP, US Census Bureau

APPENDIX B

Notice of Intent, Public Notice and Permittee Specific DEP Order

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	City of South Portland			Permittee ID #	MER041018
Name and title of chief elected official or principal executive officer	Scott Morelli, City Manager				
Mailing Address	25 Cottage Road				
Town/City	South Portland	State	ME	Zip Code	04116-9422
Daytime Phone	207-767-3201	Email	smorelli@southportland.org		
PRIMARY CONTACT PERSON FOR OVERALL STORMWATER MANAGEMENT PROGRAM (if different than PEO/CEO)					
Name and Title	Fred Dillon, Stormwater Program Coordinator				
Mailing Address	Water Resource Protection Department, PO Box 9422				
Town/City	South Portland	State	ME	Zip Code	04116-9422
Daytime Phone	207-347-4138	Email	fdillon@southportland.org		
STORMWATER MANAGEMENT PLAN (SWMP)					
Urbanized Area (sq. mi.)	Approx. 9.72 sq. mi.				
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*): List attached separately					
List of impaired waterbodies that receive stormwater from the regulated small MS4 (*attach additional sheets as necessary*): List attached separately					
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				Date	3/31/21

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	

DEPLW0916 **Maine Department of Environmental Protection** **1/5/2021**

Notice of Intent to Comply with General Permit for the Discharge of Stormwater from Small Municipal Storm Sewer Systems (MS4s)

The City of South Portland is filing a Notice of Intent (NOI) and Stormwater Management Plan (SWMP) to comply with the General Permit for the Discharge of Stormwater from Small Municipal Storm Sewer Systems (MS4s). The City is filing the NOI and SWMP with the Maine Department of Environmental Protection (DEP) for the discharge of stormwater from the City's separated storm sewer system to the following waters:

STREAMS
Anthoine Creek, Barberry Creek*, Gambler's Arm Brook, Kimball Brook (tributary to Trout Brook)*, Nonesuch River tributary (un-named), Red Brook*, Trout Brook*

** Denotes Urban Impaired Stream; underlined UIS's have completed Watershed Management Plans that are being implemented as of 3/31/21. Long Creek is not included because it is not part of the designated Urbanized Area in South Portland and is covered under a separate permitting process.*

OTHER WATERBODIES
Calvary Pond, Casco Bay, Clark's Pond, Fore River, Sawyer Marsh, Willard Beach

The NOI and SWMP will be filed on 3/31/21. The NOI, SWMP and the General Permit will be available for public inspection at DEP's Augusta office during normal business hours. Copies of the NOI and SWMP will also be available at the municipal offices of the City of South Portland at 25 Cottage Road and on the City's Water Resource Protection Department webpage (www.southportland.org/departments/water-resource-protection).

Public comments will be accepted until a final administrative action is taken to approve, approve with conditions or deny this application. Written public comments or requests for information may be made to the Municipal/Industrial Stormwater Coordinator, Department of Environmental Protection, State House Station #17, Augusta, Maine 04333-0017. Telephone (207) 287-3901.


Notice of Intent to Comply with General Permit for the Discharge of Stormwater from Small Municipal Storm Sewer Systems (MS4s)
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STREAMS
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APPENDIX C
Summary of Public Comments Received

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/municipality	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/municipality	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 webinars/workshops may be offered to reach 7 hours)	Number of workshop attendees
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

Illicit Discharge Detection & Elimination Plan

City of South Portland, Maine

Illicit Discharge Detection and Elimination Plan

March 2021

In Compliance with the

2022 General Permit for the Discharge of Stormwater from

Small Municipal Separate Storm Sewer Systems

Table of Contents

List of Attachments

Cover Photo: Stormwater Intern Gretchen Anderson collecting stormwater sample from catch basin (June 2015)

1.0 INTRODUCTION

The City of South Portland, Maine (hereafter the City) is subject to the requirements of the Maine Department of Environmental Protection (DEP) General Permit for Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (hereafter the MS4 Permit). The MS4 Permit requires permittees to address the following six Minimum Control Measures throughout the City's Urbanized Area:

> Maine DEP defines an illicit discharge as any discharge to an MS4 that is not composed entirely of storm water, except that the following are not considered illicit discharges:
>
> - Discharges authorized under a Maine DEP permit (38 M.R.S §413)
> - Uncontaminated groundwater,
> - Water from a natural resource (such as a wetland), or
> - an allowable non-storm water discharge (Section 3.0).

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

This document describes the IDDE Program for the City in fulfillment of the Minimum Control Measure 3 IDDE requirements specified in Part IV.C.3.b of the MS4 Permit.

1.1 IDDE Responsibilities in the City

The City's Water Resource Protection Department (hereafter WRP) Director is ultimately responsible for overall permit compliance, and for implementation of this IDDE Plan. The Director receives direct support in Plan implementation from the Collection Systems Division (hereafter CSD) Manager and Stormwater Program Coordinator, both of whom will assist in the facilitation of any required changes to the Non-Stormwater Discharge Ordinance. Additional City staff also support implementation of this Plan:

- CSD staff: conduct outfall, ditch and catch basin inspections and monitoring, and conduct illicit discharge investigations.
- WRP Engineering Division Manager: primary administrator for ArcGIS ESRI licensing (for mapping).

- Code Enforcement Officer/Health Inspector: assists CSD staff in illicit discharge investigations when needed (e.g., plumbing inspections).

1.2 Amendments and updates to the IDDE Program

DEP designs MS4 Permits to provide coverage for five-year periods. The first MS4 Permit applicable to the City became effective in 2003 and expired in 2008. DEP issues subsequent Permits in 2008 and 2013, providing the City with continuous coverage for their stormwater discharges.

This IDDE Program has been developed to meet the requirements of the 2022 MS4 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 Program document;
- the City identifies that the Program is not effective;
- municipal operations change which need to be reflected in this Program.

The WRP Director is responsible for overall permit compliance and will modify this IDDE Plan as needed with the assistance of the CSD Manager and Stormwater Program Coordinator.

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 program 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 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 through citizen complaints 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 staff 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 Permit requires that MS4s consider illicit discharges that might result from dumping. One example of this would be trash or litter dumped in/near stormwater structures might leak leachate into the system intermittently. Because intermittent discharges are longer lasting, 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 Program Components

The MS4 Permit requires that an IDDE program be developed and implemented which contains six components. An overview of each component is provided in this subsection, and the remaining sections of this document describe how the City is implementing each component.

- Development of a watershed-based map: The City is required to develop a watershed-based map of the storm sewer system infrastructure including: catch basins, drain manholes, connecting surface and subsurface infrastructure, the direction of in-flow and out-flow pipes, and the locations of all discharges from the City'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 (a connected pipe, a culvert, or a 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 City's watershed-based map.
- Authority to Prohibit Illicit Discharges: To the extent allowable under state or local law, the City 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 City's Non-Storm Water Discharge Ordinance is implemented.
- Identification of High Priority Areas for Inspections: Prior MS4 Permits required the City to identify priority protection areas for potential illicit discharges. The 2022 MS4 Permit does not have this requirement, but does require that the City have "procedures for prioritizing watersheds". The City'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 City must develop procedures for locating illicit discharges by conducting dry weather outfall inspections and assessing catch basins for evidence of pollutants. The City also conducts ditch inspections. The 2022 MS4 Permit also requires analytical monitoring for outfalls that are flowing during dry weather. Section 5.0 of this document describes the City's inspection Plan.

- Procedures to Investigate and Remove Illicit Discharges: The City must develop procedures for locating the source of the discharge and procedures for the removal of the source. Sections 6.0 and 7 of this document describe how the City investigates potential discharges to determine their sources and removes illicit discharges once the source is discovered.
- Procedures to Document Illicit Discharges: The City must develop procedures for documenting actions and evaluating impacts on the storm sewer system subsequent to the removal. Section 8.0 describes how the City tracks illicit discharges.

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

2.0 STORMWATER INFRASTRUCTURE GIS DATA LAYERS

The City maintains and routinely updates stormwater infrastructure information in Geographic Information System (GIS) format. South Portland's stormwater map was created from a variety of sources including:

- GPS data collection & field verification
- Incorporation of features from existing City plans
- Incorporation of features from new development and redevelopment plans
- Incorporation of features from Maine Department of Transportation (MDOT) & Maine Turnpike Authority (MTA) plans
- Staff knowledge of stormwater infrastructure

WRP maintains the stormwater GIS layers on the City's server using a variety of ESRI-based platforms including ArcMap, ArcGIS Pro and ArcGIS Online (AGOL). Most of this data (including associated attribute information) is available on WRP's main webpage via AGOL for the public and other interested parties. A very basic data layer without any attribute information is also available to the public on the City's web-based GIS viewer. The City's GIS consultant CAI Technologies has overall responsibility for data quality and integrity. The following subsections provide general information on the infrastructure naming protocols and procedures in use to keep GIS data layers updated.

2.1 Infrastructure Naming Protocols

WRP has historically referenced sixteen watersheds within the City's boundaries. The City's GIS consultant created delineations for these watersheds by using a combination of existing GIS data layers, ESRI's hydrologic modeling tools and ground-truthing. DEP staff also conducted intensive field investigations and worked closely with the City's GIS consultant to refine the Trout Brook and Barberry Creek watersheds. Each watershed is uniquely identified numerically with an ESRI object id number and includes a unique an alphabetic watershed name in the attribute table. The naming protocol for the City's stormwater infrastructure is consists of four primary data layer types and subtypes as follows:

- Drainage Structure Types
    - Catch basin: each structure has a unique 7 character id in the following format: CB_####
    - Catch basin in sewer: each structure has a unique 8 character id in the following format: sCB_#### (where the "s" indicates "sewer")
    - Drain manhole: each structure has a unique 7 character id in the following format: DM_####
- Drainage Pipe Types
    - Gravity: each pipe segment has unique alphanumeric characters indicating upstream and downstream drainage structures (e.g., DM_####-CB####)
    - Culvert: each pipe segment has unique alphanumeric characters indicating pipe inlet and outlet (e.g., CI_####-CO#### where "CI"=culvert inlet and "CO"=culvert outlet)
    - Combined sewer: each pipe segment has unique alphanumeric characters indicating upstream and downstream drainage structures (e.g., DM_####-CB####)
- Drainage Outfalls: each piped outfall has a unique alphanumeric characters denoting watershed in which outfall resides and unique sequential number (e.g., AC_### for Anthoine Creek)
- Drainage Ditches: each ditch has a unique alphanumeric characters denoting watershed in which ditch resides and unique sequential number (e.g., LCD_### for Long Creek Ditch)

Replaced structures or pipes retain the same ids and newly installed structures or pipes are assigned new ids using the naming protocols described above. On the infrequent occasions when existing publicly owned piped infrastructure is discovered, it is assigned a unique id using the naming protocols above.

2.2 Procedures to Update Map of Infrastructure

The following scenarios describe how changes to City-owned stormwater infrastructure are made and how the associated GIS data are subsequently updated:

1. CSD's construction crew completes routine maintenance to the stormwater system based on condition assessments of existing infrastructure and planned upgrades or additions to address problem areas. The City's GIS consultant periodically updates associated GIS data layers to reflect these changes (typically at least annually).
2. More significant changes, such as for stormwater separation projects, are constructed by outside contractors after the preparation of formal design drawings. The City's GIS consultant incorporates these changes into WRP's GIS data layers after record drawings (i.e., "as-builts") for the project have been completed.

3.0 AUTHORITY TO PROHIBIT ILLICIT DISCHARGES

The City's authority to prohibit illicit discharges became effective in September 2004 with the passage of a Non-Stormwater Discharge Ordinance (Chapter 22, Article XIV). The ordinance was adapted to be City-specific from a model ordinance created by the Maine Municipal Association for communities regulated by the MS4 Permit. Though the MS4 Permit is only applicable to the Urbanized Area of City, the City implements the Non-Stormwater Discharge Ordinance in all areas of City. The Ordinance allows the following non-stormwater discharges to the storm drain system:

- 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.

The ordinance also allows discharges associated with dye testing with verbal notice to the WRP Director, who administers the ordinance and has the authority to issue a Notice of Violation if needed.

Discharges of hydrant and water line flushing require dechlorination whenever they will flow through the City's MS4 and into a small stream. In accordance with DEP's 11/18/2016 Issue Profile for Drinking Water System Discharges to Regulated Small MS4s, the Portland Water District (PWD) either aerates or dechlorinates 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)

The PWD flushes the system every three years and provides an annual report to the City describing water dechlorination methods in use and testing results for any flushing conducted. The PWD reports are included with the City's annual MS4 Program reports, which are posted on WRP's stormwater webpages.

4.0 IDENTIFICATION OF PRIORITY AREAS

Prior MS4 Permits required that the City identify priority areas for targeted IDDE activities (i.e., outfall and ditch inspections). The 2022 MS4 Permit no longer includes this requirement, but the City will continue to prioritize IDDE activities based on impairment status and compliance with water quality

classification standards. The City's five urban impaired stream watersheds (Long Creek, Red Brook, Barberry Creek, Trout Brook and Kimball Brook) will be high priorities. Willard Beach will also be a high priority given the fact that it is a swimming beach and frequently used by the public on a year-round basis (Attachment A). Additionally, as resources allow, the City will prioritize Anthoine Creek given the episodic occurrence of summertime algal blooms in the adjacent tidal flats leading to the Fore River. The City may also use this prioritization for illicit discharge investigations in the event there are insufficient resources to address all potential illicit discharges simultaneously.

5.0 PROCEDURES TO LOCATE POTENTIAL ILLICIT DISCHARGES

The City uses the following methods to locate illicit discharges:

1. Observations during catch basin cleaning
2. Reports of illicit discharge issues by the public or other entities
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

Catch basin cleaning, dry weather outfall and ditch inspections are documented with iPads using an AGOL-based Collector App. Responses to illicit discharge reports are documented using a form adapted from the Center for Watershed Protection. Attachment B shows the form used for IDDE inspection reports.

5.1 Catch Basin Cleaning Inspections

Although the 2022 MS4 Permit only requires catch basin cleaning and inspection every two years, CSD staff clean and inspect all of the City's publicly-owned catch basins (~2,800 annually!). In addition to documenting structural conditions, inspections also identify the presence of illicit discharges, such as oil, litter, sewage, or other potential pollutants. Any evidence of illicit discharges is documented and forwarded to the Stormwater Program Coordinator for further action.

5.2 Reports of Illicit Discharges

Reports of illicit discharges from the public or other entities (e.g., other City departments, staff from

other utilities, anonymous reports, etc.) can be made by phone or with the City's online reporting webpage. All reports are forwarded to the CSD Manager and Stormwater Program Coordinator for further action as needed.

5.3 Dry Weather Outfall Inspections

During previous permit cycles, dry weather outfall inspections were conducted in the highest priority urban impaired stream watersheds as identified in the City's Stormwater Management Plans (e.g., Long Creek, Trout Brook and Barberry Creek). As described above, while the 2022 MS4 Permit no longer requires this prioritization, the City will focus on all five urban impaired stream watersheds, Willard Beach and Anthoine Creek as time and resources allow. Inspections will be conducted as follows:

- Inspections will be performed during periods of dry weather whenever possible.
- Inspections will be performed where field inspections can be conducted 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;
- Inspections will be performed during periods with low or minimal snow cover when temperatures are well below freezing to minimize staff exposure risks to tick-borne diseases, such as Lyme, Powassan, Anaplasmosis, Babesiosis, etc.
- Visual observations will include the following at a minimum: visible 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 City has safe and legal access to the structure to be inspected.
- When maintenance or potential illicit discharge issues are identified, the CSD Manager and Stormwater Program Coordinator will be informed so that any necessary follow-up work can be planned and scheduled accordingly.

5.4 Outfall Sampling and Analysis

Outfall sampling and analysis is required under the 2022 MS4 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 Stormwater Program Coordinator may solicit the assistance of other utility operators (e.g., PWD, MDOT, MTA, etc.) 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 and using field equipment, 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 Permit at this time, but the CSD 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 or leaking sewer pipes).

5.5 Ditch Inspections

The 2022 MS4 Permit does not require ditch inspections be completed. However, based previous MS4 Permit requirements, CSD completed ditch inspections annually in the Long Creek, Trout Brook and Barberry Creek watersheds beginning in 2013. The inspections were completed using a variety of mobile devices and cloud-based data collection platforms based on the availability of technology and funding (e.g., iPhones using Fulcrum, iPads using Collector, etc.). The City will continue to inspect ditches for potential illicit discharges on an annual basis using the following guidelines:

- Field inspections 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 using the City's standard ditch inspection form.

When maintenance or potential illicit discharge issues are identified, the CSD Manager and Stormwater Program Coordinator will be informed so that any necessary follow-up work can be planned and scheduled accordingly.

5.6 Septic System Inspections

As required by the 2013-2018 MS4 Permit, the City developed a list of septic systems with the potential to discharge to the MS4 system in the event of failure. While the vast majority of the City is serviced by public sewers, 183 parcels with septic systems were identified and inspected on a "drive-by" basis in the fall of 2016. Some systems were flagged as being potentially problematic due to the presence of greener grass above the leach fields (the inspections were conducted during an extended period of extreme drought). However, since no other corroborating problem indicators were observed (e.g., ponding or sewage breakout) no further actions were deemed necessary. None of the systems were observed to have evidence of leakage or failure. Because this effort did not yield useful information on septic system failures and was of questionable value, it is no longer being conducted.

5.7 Cooperation with other MS4s

Because the City's MS4 infrastructure has interconnections with other MS4s, it may be necessary to conduct cooperative investigations with these entities or to inform them of issues associated with the City's infrastructure. The other MS4 contacts with which the City has interconnections are listed below (as of January 2021).

Entity	Division/Department	Contact Person	Position	Email	Phone
Town of Cape Elizabeth	Public Works Department	Jay Reynolds	Public Works Director	jay.reynolds@capeelizabeth.org	799-4151
City of Portland	Water Resources	Doug Roncarati	Stormwater Program Coordinator	dar@portlandmaine.gov	874-8848
Town of Scarborough	Public Works Department	Stephen Buckley	Public Works Deputy Director	sbuckley@scarboroughmaine.org	730-4407
City of Westbrook	Public Services	Lynn Leavitt	Sustainability Coordinator	lleavitt@westbrook.me.us	591-8135
Maine Department of Transportation	Environmental Office	Kerem Gungor	Stormwater Engineer	kerem.gungor@maine.gov	592-3489
Maine Turnpike Authority	Environmental Office	John Branscom	Environmental Services Coordinator	jbranscom@maineturnpike.com	871-7771
Southern Maine Community College	Environmental Health & Safety Office	Jennifer Otenti	Environmental Health & Safety Coordinator	jotenti@smccme.edu	741-5932

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

6.0 PROCEDURES TO INVESTIGATE ILLICIT DISCHARGES

CSD conducts all investigations for illicit discharge issues. This process begins with visual observations of the potential illicit discharge location to identify whether evidence of an illicit discharge still exists. If CSD staff confirm the presence or occurrence of an illicit discharge, they attempt to locate its source by systematically inspecting upstream structures in the stormwater drainage system. For example, if CSD staff observed evidence of residue from petroleum products while cleaning catch basins, they would visually inspect upstream infrastructure until locating its source. In addition to opening drainage structures, this inspection could involve using the City's TV van to identify internal pipe conditions and lateral pipe locations, dye testing to confirm lateral pipe connections, or smoke testing to confirm potential breaks in storm drains or co-located sewer lines. CSD staff could also use analytical monitoring as described in section 5.4 to identify potential illicit discharge sources. If CSD staff are unable to confirm the source upon initial investigation, the area may be re-inspected to assess if the illicit discharge was a one-time or repeating occurrence with investigations conducted as needed.

7.0 PROCEDURES REMOVE ILLICIT DISCHARGES

Once CSD identify the potential source of the illicit discharge, they will then contact the responsible party to initiate its removal or discontinuation. If a private entity is responsible for the illicit discharge and does not take timely action to eliminate it, the WRP Director may invoke the Non-Storm Water Discharge

Ordinance to compel compliance (Section 3.0 above). This could begin with verbal or email notice to the responsible party followed by a formal Notice of Violation (NOV). The NOV will specify that the responsible party must remove the illicit discharge within 60 days of its source identification. If this timeframe is infeasible, the responsible party must work with WRP to establish a schedule to remove the illicit discharge as expeditiously as possible.

If the City is the source of an illicit discharge, WRP will work directly with the responsible municipal department to remove or discontinue the illicit discharge within 60 calendar days of its source identification or will develop a schedule to expedite removal.

8.0 PROCEDURES TO DOCUMENT ILLICIT DISCHARGES

The City will document the progress of investigating and removing illicit discharges using an IDDE Tracking Table. This table is included in annual MS4 program reports and posted on WRP's Stormwater Program webpage. The Stormwater Program Coordinator will retain electronic copies of IDDE Tracking Tables as back-up documentation for any investigative and removal work completed.

9.0 RECORDS RETENTION

The Stormwater Program Coordinator will retain paper or electronic files of inspections and investigations including laboratory reports, for a minimum of three years after expiration of the MS4 Permit term. If the MS4 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.
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.* http://www.thinkbluemaine.org/docs/index.htm

CWP and Robert Pitt 2011 (updated 2016). *Illicit Discharge Detection and Tracking Guide.*

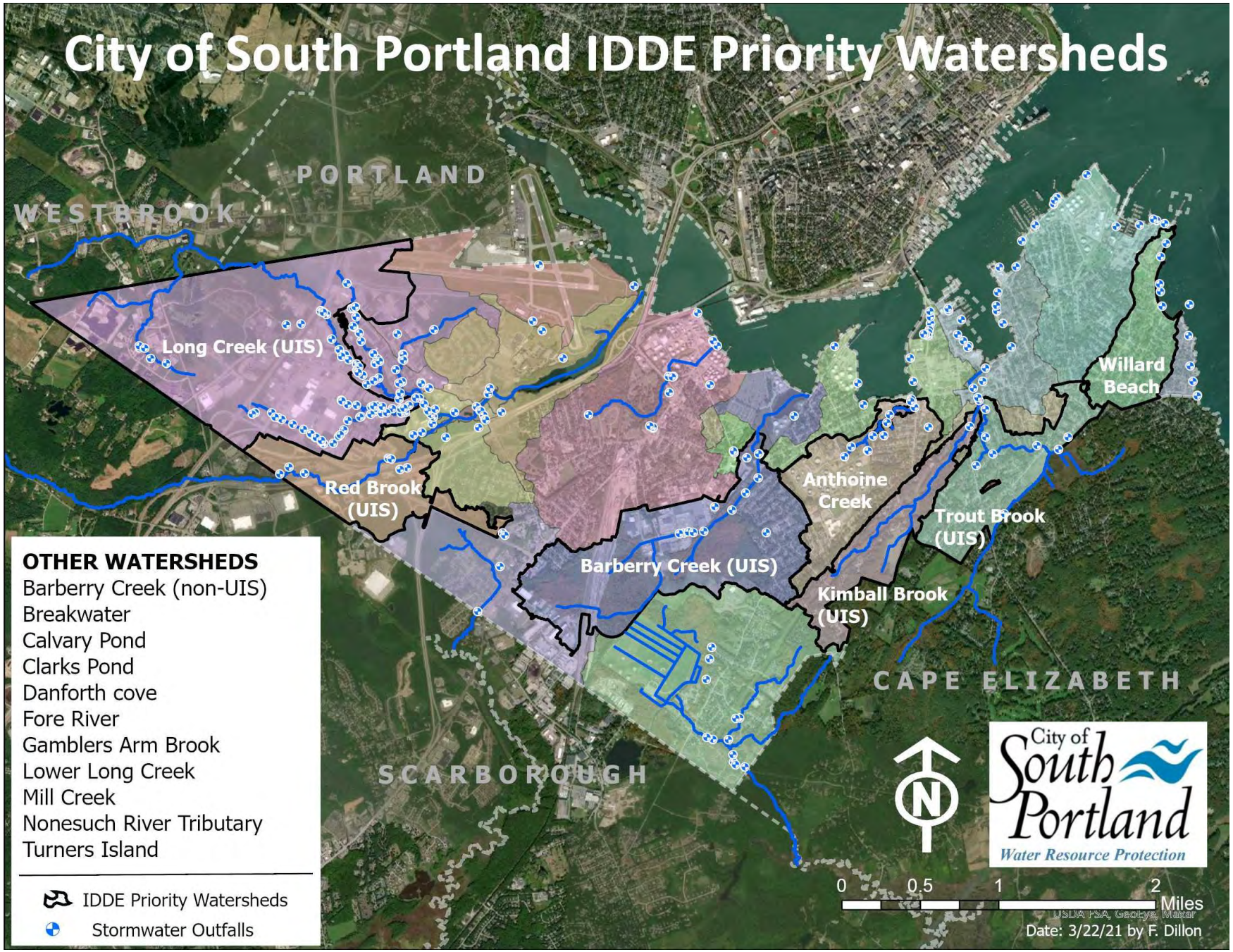
https://owl.cwp.org/mdocs-posts/idde-and-tracking-guide/

USEPA New England Bacterial Source Tracking Protocol 2012.

https://www3.epa.gov/region1/npdes/stormwater/ma/2014AppendixI.pdf

ATTACHMENT A

SOUTH PORTLAND IDDE PRIORITY WATERSHEDS MAP


City of South Portland IDDE Priority Watersheds
PORTLAND
WESTBROOK
SCARBOROUGH
CAPE ELIZABETH
Long Creek (UIS)
Red Brook (UIS)
Barberry Creek (UIS)
Anthoine Creek
Willard Beach
Trout Brook (UIS)
Kimball Brook (UIS)
OTHER WATERSHEDS
Barberry Creek (non-UIS)
Breakwater
Calvary Pond
Clarks Pond
Danforth cove
Fore River
Gamblers Arm Brook
Lower Long Creek
Mill Creek
Nonesuch River Tributary
Turners Island
IDDE Priority Watersheds
Stormwater Outfalls
N
City of South Portland
Water Resource Protection
0 0.5 1 2 Miles
USDA FSA, Geotye, Maxar
Date: 3/22/21 by F. Dillon

ATTACHMENT B

IDDE INSPECTION REPORTING FORM

City of South Portland Illicit Discharge Detection & Elimination (IDDE) Reporting Form*				
Incident ID:				
Reporter Information				
Incident Date:			Incident Time:	
Caller contact information (if available):				
Responder Information				
Call taken by:			Call date/time:	
Response date/time:			Precip prev. 24-48 hrs:	
Incident Location				
Latitude / Longitude:				
Stream address or outfall #:				
Closest street address:				
Nearby landmark:				
Primary Location Description		**Secondary Location Description**		
☐ Stream corridor		☐ Outfall	☐ In-stream flow	
☐ Upland area		☐ Near storm drain	☐ Near other waste source (SW pond, wetland, etc.)	
Description of location & incident details:				
Upland Problem Indicator Description				
☐ Dumping		☐ Oils/solvents/chemicals	☐ Sewage	
☐ Wash water, suds, etc.		☐ Other:_____		
Stream Corridor Problem Indicator Description				
Odor	☐ None	☐ Sewage	☐ Rancid/sour	☐ Petroleum (gas)
	☐ Sulfide	☐ Other (describe in narrative section)		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other (describe in narrative section)			
Floatables	☐ None	☐ Sewage (toilet paper, etc.)	☐ Algae	☐ Dead fish
	☐ Other (describe in narrative section)			
Description of problem indicators & response:				
Suspected Violator (name, personal or vehicle description, license plate #, etc.):				
Report completed by:				

**Adapted from Center for Watershed Protection's Illicit Discharge Detection and Elimination Technical Appendices (Oct. 2004)*

City of South Portland IDDE Inspection Report ~

INSERT MAP HERE

City of South Portland IDDE Inspection Report ~

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CAPTION HERE	CAPTION HERE

ATTACHMENT C

QUALITY ASSURANCE PROJECT PLAN

ISWG and SMSWG
Stormwater Monitoring Program QAPP
2/8/2021
Revision 1

Stormwater Monitoring Quality Assurance Project Plan Template

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 (MS4 General Permit). The MS4 General Permit requires that the municipalities conduct dry weather inspections on 100% of their outfalls during the 5-year 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. (Part IV(C)(3)(e)(vi) of the MS4 General Permit contains a few conditions under which flowing outfalls do not need to be monitored.)

The following monitoring needs to be conducted whether or not the outfall's dry weather flow exhibits evidence of an illicit discharge:

- E. coli, enterococci, total fecal coliform or human bacteroides;
- Ammonia, total residual chlorine, temperature, and conductivity; and
- Optical enhancers or surfactants.

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.

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(C)(3)(h) of the MS4 General Permit.

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 are conducting 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 being 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 included as Addendum 4 to this QAPP, or may be kept in a separate electronic or paper location as long as 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

ISWG and SMSWG
Stormwater Monitoring Program QAPP
2/8/2021
Revision 1

Bacteria - select one or more based on discharge environment	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 hours of receipt	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)
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.

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

ISWG and SMSWG
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Revision 1

Ammonia (select one method)	**CWA Method, Field Equipment, or Test Kit**	**Preservation**	**Holding time**	**Bottle needed**	**Notes on Use**
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	H_2SO_4 (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
Total Residual Chlorine (select one method)	**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 and other mid range chlorine test strips	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	As of 6/2020, USEPA had not used Ultra low chlorine test strips (0.2 to 0.5 mg/L). Informal review shows these should be used simultaneously with a mid range (0.5 to 10 mg/l) test strips to double check range.
Temperature and Conductivity (use both)	**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.

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

ISWG and SMSWG
Stormwater Monitoring Program QAPP
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Revision 1

Optical Enhancers or Surfactants (select one)	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 days, analyze within 7 days	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 color will interfere.
Other Optional Parameters	**CWA Method, Field Equipment, or Test Kit**	**Preservation**	**Holding time**	**Bottle needed**	**Notes on Use**
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.

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

ISWG and SMSWG
Stormwater Monitoring Program QAPP
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Revision 1

Other Optional Parameters (continued)	CWA Method, Field Equipment, or Test Kit	Preservation	Holding time	Bottle needed	Notes on Use
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 acid	DRO is Diesel Range Organics (C10 to C28) GRO is Gasoline Range Organics (C5 to C10)
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 (Optional - NOT REQUIRED BY PERMIT) 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:

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

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. If RPDs are not met on a day when samples were collected from multiple sites, the sampler should consider carefully the conditions that may have lead to the issue and whether those conditions would cause all the sample results to be unreliable.

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. Review Laboratory quality control reports for any errors or issues. Review visual observations of sample collected to assess if there were any differences in color, clarity, odor, or volume of discharge that could account for discrepancy. 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 being 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, 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 3 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 2 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 saline/estuarine Class SC	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)
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 may be indicative of human sewage, but MHB considers 4,200 col/100ml HB to be equivalent to the level of contamination that exceeds the EPA acceptable risk of gastrointestinal illness to swimmers. (Rothenburger and Jones, 2018 and Boehm, Soller and Shanks 2015)	Any concentration of human source of sewage should be investigated.
Ammonia	$\geq$ 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	$\geq$ 0.05 mg/L	Limit of test kit and was taken from USEPA Draft 2012 Bacteria Source Tracking Protocol.

Parameter	Threshold Level for Additional Investigation	Notes/Discussion
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.

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Revisions:

1. Original document prepared for 2022 MS4 General Permit Submission to Maine DEP

Addenda

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
4. User Manual(s) and Safety Data Sheets (SDS) for Field Equipment and/or Test Kit(s) (This is an optional addendum. The information must be located where field personnel can access electronically or in paper form, so this Addendum can be used as a place to describe where field personnel will find equipment, manuals and SDSs).

References:

Rothenheber and Jones 2018. *Enterococci Concentrations in a Coastal Ecosystem are a function of fecal source input*. Published in Applied Environmental Microbiology, July 13, 2018.

Boehm, Soller and Shanks 2015. *Human-Associated Fecal Quantitative Polymerase Chain reaction Measurements and Simulated Risk of Gastrointestinal Illness in Recreational Waters Contaminated with Raw Sewage.* Published in Environmental Sciency and Technology Letters 2015, 2, 270-275.

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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: 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 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

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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:

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL Order Number (*Lab Use Only*):

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX:(856) 786-0262

Company :		**EMSL-Bill to:** ☐ Same ☐ Different If Bill to is Different please note in Comments** *Third Party Billing requires written authorization from third party*	
Street:			
City:	**State/Province:**	**Zip/Postal Code:**	**Country:**
Report To (Name):		**Fax #:**	
Telephone #:		**E-mail Address:**	
Project Name/ Number:			
Please Provide Results: ☐ Fax ☐ E-mail	**PO#**	**State Samples Taken:**	

Turnaround Time (TAT) Options* - Please Check

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☐ 1 Week ☐ 2 Week

**Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements.*

Fungi	Bacteria	Insects
☐ ERMI Panel (M180) *Dust Only*	☐ Human ***Bacteroides*** (M199)	☐ Bed Bug (***Cimex lectularius***) (M146)
☐ EPA 36 Panel (M233) *Air, Swab*	☐ Total ***Bacteroides*** (M095)	☐ Tick - ***Anaplasma phagocytophilum*** Anaplasmosis (M261)
☐ Water Damage 20 Panel (M181)	☐ ***E. coli*** O157:H7 (M140)	☐ Tick - ***Babesia microti*** Babesiosis (M260)
☐ Wood Rot Fungi 10 Panel (M232)	☐ ***E. coli*** (M200)	☐ Tick - ***Borrelia burgdorferi*** Lyme disease (M196)
☐ ***Aspergillus*** 15 Panel (M186)	☐ Total ***Enterococcus*** (M096)	**Other**
☐ ***Aspergillus*** 6 Panel (M188)	☐ ***Helicobacter pylori*** (M207)	☐ ***Acanthamoeba*** spp. (M147)
☐ ***Penicillium*** 13 Panel (M189)	☐ ***Legionella pneumophila*** (M103)	☐ ***Cryptosporidium*** spp. (M237)
☐ Customized Fungi Panel (M100)	☐ ***Legionella*** 4 species-EPA (M162)	☐ ***Giardia*** spp. (M149)
☐ ***Penicillium*** Mycotoxin 9 Panel (M190)	☐ ***Legionella*** Broad Screen (M163)	☐ Enterovirus RT-PCR (M142)
Birds, Animal Droppings	☐ MRSA (M203)	☐ Food Authentication (F130)
☐ ***Chlamydophila psittaci*** (M234)	☐ ***Mycobacterium avium*** (M144)	☐ GMO Analysis (F131)
☐ ***Cryptococcus neoformans*** (M143)	☐ ***Mycobacterium tuberculosis*** (M159)	☐ DNA Barcode Analysis (M195)
☐ ***Histoplasma capsulatum*** (M208)	☐ ***Pseudomonas aeruginosa***	☐ DNA Sequencing Fungi/Bacteria Isolates (M192)
☐ Raccoon Roundworm (M236)	☐ ***Salmonella*** spp. (M141)	☐ Special Request:
☐ Rodent (Mouse, Rat) Dropping (M271)	☐ ***Shigella*** spp. (F122)	

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected

Client Sample # (s): -	**Total # of Samples:**	
Relinquished (Client):	**Date:**	**Time:**
Received (Lab):	**Date:**	**Time:**
Comments:		

Controlled Document – DNA Testing COC – R3 – 12/17/2012

Page 1 of ____ pages

ISWG and SMSWG
Stormwater Monitoring Program QAPP
2/8/2021
Revision 1

Addendum 4
User Manual(s) and Safety Data Sheets (SDS) for Field Equipment and/or Test Kit(s)
(This is an optional addendum. The information must be located where field personnel can access electronically or in paper form, so this Addendum can be used as a place to describe where field personnel will find equipment, manuals and SDSs).

APPENDIX D

INTERCONNECTED MS4 COORDINATION LETTERS

City of South Portland

Water Resource Protection

Fred Dillon, Stormwater Program Coordinator

September 28, 2020 (sent via email)

Jay Reynolds
Public Works Director
Town of Cape Elizabeth
Public Works Department
10 Cooper Drive
Cape Elizabeth, ME 04107

RE: MS4 Coordination for Illicit Discharges

Dear Jay:

The City of South Portland filed a notice of intent to comply with the Maine General Permit for the discharge of storm water from the municipal separate storm sewer system (MS4) in 2013. Under this permit (which has been administratively continued until June 30, 2021), we are required to coordinate with neighboring and nested MS4 permittees on spill response efforts in order to help improve the health of Maine's water resources.

The City of South Portland has interconnections with your MS4 system or stormwater outfalls discharging to shared water resources (please see our online infrastructure map here). We will notify you of any illicit discharges in South Portland that could affect either your MS4 system or shared water resources. We respectfully request that you do the same. In the event of an emergency after hours, please contact South Portland's Public Safety Dispatch at 911.

I would appreciate it if you would 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 South Portland. Please contact me if you have any questions and thanks for your cooperation.

Sincerely,

Fred Dillon

Cc: Kristie Rabasca – Integrated Environmental Engineering, Inc.
Patrick Cloutier – South Portland Water Resource Protection Department Director
Dave Thomes – South Portland Collection Systems Division Manager
Justin Gove – South Portland Civil and Transportation Engineer
Doug Howard – South Portland Public Works Director
Melissa Hutchins – South Portland Public Works Superintendent
Jim Wilson – South Portland Fire Chief

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fdillon@southportland.org • www.southportland.org

City of South Portland

Water Resource Protection

Fred Dillon, Stormwater Program Coordinator

September 28, 2020 (sent via email)

Kerem Gungor, P.E.
Stormwater Engineer
Maine Department of Transportation Environmental Office
16 State House Station
Augusta, ME 04333

RE: MS4 Coordination for Illicit Discharges

Dear Kerem:

The City of South Portland filed a notice of intent to comply with the Maine General Permit for the discharge of storm water from the municipal separate storm sewer system (MS4) in 2013. Under this permit (which has been administratively continued until June 30, 2021), we are required to coordinate with neighboring and nested MS4 permittees on spill response efforts in order to help improve the health of Maine's water resources.

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Sincerely,

Fred Dillon

Cc: Patrick Cloutier – South Portland Water Resource Protection Department Director
Dave Thomes – South Portland Collection Systems Division Manager
Justin Gove – South Portland Civil and Transportation Engineer
Doug Howard – South Portland Public Works Director
Melissa Hutchins – South Portland Public Works Superintendent
Jim Wilson – South Portland Fire Chief

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City of South Portland

Water Resource Protection

Fred Dillon, Stormwater Program Coordinator

September 28, 2020 (sent via email)

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

RE: MS4 Coordination for Illicit Discharges

Dear Sean:

The City of South Portland filed a notice of intent to comply with the Maine General Permit for the discharge of storm water from the municipal separate storm sewer system (MS4) in 2013. Under this permit (which has been administratively continued until June 30, 2021), we are required to coordinate with neighboring and nested MS4 permittees on spill response efforts in order to help improve the health of Maine's water resources.

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Sincerely,

Fred Dillon

Cc: Patrick Cloutier – South Portland Water Resource Protection Department Director
Dave Thomes – South Portland Collection Systems Division Manager
Justin Gove – South Portland Civil and Transportation Engineer
Doug Howard – South Portland Public Works Director
Melissa Hutchins – South Portland Public Works Superintendent
Jim Wilson – South Portland Fire Chief

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City of South Portland

Water Resource Protection

Fred Dillon, Stormwater Program Coordinator

September 28, 2020 (sent via email)

Doug Roncarati
Stormwater Program Coordinator
City of Portland
Department of Public Works
55 Portland Street
Portland, ME 04101

RE: MS4 Coordination for Illicit Discharges

Dear Doug:

The City of South Portland filed a notice of intent to comply with the Maine General Permit for the discharge of storm water from the municipal separate storm sewer system (MS4) in 2013. Under this permit (which has been administratively continued until June 30, 2021), we are required to coordinate with neighboring and nested MS4 permittees on spill response efforts in order to help improve the health of Maine's water resources.

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Sincerely,

Fred Dillon

Cc: Scott Reynolds – Portland Stormwater Program Coordinator
Patrick Cloutier – South Portland Water Resource Protection Department Director
Dave Thomes – South Portland Collection Systems Division Manager
Justin Gove – South Portland Civil and Transportation Engineer
Doug Howard – South Portland Public Works Director
Melissa Hutchins – South Portland Public Works Superintendent
Jim Wilson – South Portland Fire Chief

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City of South Portland

Water Resource Protection

Fred Dillon, Stormwater Program Coordinator

September 28, 2020 (sent via email)

Stephen Buckley
Public Works Deputy Director
Town of Scarborough
Public Works Department
20 Washington Avenue
Scarborough, ME 04074

RE: MS4 Coordination for Illicit Discharges

Dear Stephen:

The City of South Portland filed a notice of intent to comply with the Maine General Permit for the discharge of storm water from the municipal separate storm sewer system (MS4) in 2013. Under this permit (which has been administratively continued until June 30, 2021), we are required to coordinate with neighboring and nested MS4 permittees on spill response efforts in order to help improve the health of Maine's water resources.

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I would appreciate it if you would 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 South Portland. Please contact me if you have any questions and thanks for your cooperation.

Sincerely,

Fred Dillon

Cc: Angela Blanchette – Scarborough Town Engineer
Patrick Cloutier – South Portland Water Resource Protection Department Director
Dave Thomes – South Portland Collection Systems Division Manager
Justin Gove – South Portland Civil and Transportation Engineer
Doug Howard – South Portland Public Works Director
Melissa Hutchins – South Portland Public Works Superintendent
Jim Wilson – South Portland Fire Chief

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City of South Portland

Water Resource Protection

Fred Dillon, Stormwater Program Coordinator

September 28, 2020 (sent via email)

Jennifer Otenti
Environmental, Health & Safety Coordinator
Southern Maine Community College
2 Fort Road
South Portland, ME 04106

RE: MS4 Coordination for Illicit Discharges

Dear Jennifer:

The City of South Portland filed a notice of intent to comply with the Maine General Permit for the discharge of storm water from the municipal separate storm sewer system (MS4) in 2013. Under this permit (which has been administratively continued until June 30, 2021), we are required to coordinate with neighboring and nested MS4 permittees on spill response efforts in order to help improve the health of Maine's water resources.

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Sincerely,

Fred Dillon

Cc: Patrick Cloutier – South Portland Water Resource Protection Department Director
Dave Thomes – South Portland Collection Systems Division Manager
Justin Gove – South Portland Civil and Transportation Engineer
Doug Howard – South Portland Public Works Director
Melissa Hutchins – South Portland Public Works Superintendent
Jim Wilson – South Portland Fire Chief

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City of South Portland

Water Resource Protection

Fred Dillon, Stormwater Program Coordinator

September 28, 2020 (sent via email)

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

RE: MS4 Coordination for Illicit Discharges

Dear Lynn:

The City of South Portland filed a notice of intent to comply with the Maine General Permit for the discharge of storm water from the municipal separate storm sewer system (MS4) in 2013. Under this permit (which has been administratively continued until June 30, 2021), we are required to coordinate with neighboring and nested MS4 permittees on spill response efforts in order to help improve the health of Maine's water resources.

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Sincerely,

Fred Dillon

Cc: Patrick Cloutier – South Portland Water Resource Protection Department Director
Dave Thomes – South Portland Collection Systems Division Manager
Justin Gove – South Portland Civil and Transportation Engineer
Doug Howard – South Portland Public Works Director
Melissa Hutchins – South Portland Public Works Superintendent
Jim Wilson – South Portland Fire Chief

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APPENDIX F

Erosion & Sediment Control Inspection Report Form

City of South Portland

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 (include locations & photo numbers)**
ESC Plan Available		Y		N			
Changes to ESC Plan Needed		Y		N			
Winter Stabilization Needed (11/1 - 4/15)		Y		N			
Contractor ESC Reports Available		Y		N			
Previous Corrective Actions Needed		Y		N			
Catch basin inlet controls in place and in good condition (not filled with sediment)		Y		N		N/A	
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	
Dewatering & concrete washout activities following ESC Plan		Y		N		N/A	
Proper waste management (no trash & debris on site)		Y		N		N/A	
Proper dust control measures		Y		N		N/A	
Proper stabilization of exposed soils (no rill or gully formation)		Y		N		N/A	
Infiltration areas protected from compaction		Y		N		N/A	
Sediment accumulation in on-site stormwater treatment systems		Y		N		N/A	
Sediment, trash, debris or polluted stormwater observed leaving site[3]		Y		N			
CORRECTIVE ACTIONS NEEDED		Y		N			
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):

CoSP Tier II ESC Inspection Form 11-1-17.xlsx *Ver. 1: 11/1/17* **Adapted from ISWG Tier II ESC Inspection Report Form*

TIER II: EROSION AND SEDIMENT CONTROL INSPECTION REPORT*

INSERT PHOTO HERE	INSERT PHOTO HERE
CAPTION HERE	CAPTION HERE
INSERT PHOTO HERE	INSERT PHOTO HERE
CAPTION HERE	CAPTION HERE
INSERT PHOTO HERE	INSERT PHOTO HERE
CAPTION HERE	CAPTION HERE

CoSP Tier II ESC Inspection Form 11-1-17.xlsx *Ver. 1: 11/1/17* **Adapted from ISWG Tier II ESC Inspection Report Form*