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## 1. INTRODUCTION

The Environmental Protection Agency (EPA) regulates the discharge of stormwater runoff from Municipal Separate Storm Sewer Systems (MS4s) that are located in Urbanized Areas (also known as “regulated areas”). The State of Maine has delegated authority for the administration of this program, and the City of Portland (City) is required to obtain a Maine Pollutant Discharge Elimination System (MEPDES) permit for stormwater discharges in the Urbanized Area from the Maine Department of Environmental Protection (MaineDEP). Under the MEPDES General Permit for Stormwater Discharges from Small MS4s, also known as the MS4 General Permit, the City is authorized to discharge stormwater per their Stormwater Management Program (SWMP), which is developed to reduce the contamination of stormwater runoff and eliminate illicit discharges. In accordance with the Small MS4 General Permit, the SWMP consists of six components called *minimum control measures* which, when implemented, should result in a reduction in pollutants discharging into receiving waters. The minimum control measures are:

1. Public Education and Outreach;
2. Public Involvement and Participation;
3. Illicit Discharge Detection and Elimination;
4. Construction Site Stormwater Runoff Control;
5. Post-Construction Stormwater Management; and
6. Good Housekeeping and Pollution Prevention.

The Illicit Discharge Detection and Elimination (IDDE) Program described herein will partially satisfy the requirements of the third minimum control measure. The City is committed to working with residents and state and federal environmental agencies to achieve water quality goals and protect public health. The Department of Public Works (DPW) has established this IDDE Program Manual (Manual) to outline procedures, goals, Standard Operating Procedures (SOPs), and workflow processes. This Manual is a working document and will be revised as necessary.

The DPW's IDDE Program is based on current Maine Pollutant Discharge Elimination System (MEPDES) regulatory requirements, but has also been informed by IDDE “best practices” outlined in by EPA Region 1. The Manual includes and/or references mapping, legal authority, statement of responsibilities, assessment and priority ranking of investigation areas, stormwater discharge outfall screening and sampling, confirmation and removal of illicit connections, follow-up screening, prevention procedures, and training. The Portland DPW manages the City's IDDE Program with support from the Planning and Urban Development Department – Inspections Division, although other municipal departments also play a role in the program.

### 1.1 PROGRAM APPLICABILITY

This IDDE Program should be implemented in the City's Urbanized Area. Urbanized Area is defined by the latest United States decennial census as the land area that has a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile. In Portland, the entire non-island portion of the City is identified as Urbanized. Combined sewer areas are not regulated under the Small MS4 General Permit and are not included in the IDDE Program. Figure 1-1 includes a map showing Portland's Urbanized Area. While the IDDE Program is focused on the Urbanized Area, targeted and systematic investigations will be conducted in prioritized areas, as further described in Section 4.1.4 and 4.1.5.

Figure 1-1: MEPDES Phase II Stormwater Program Automatically Designated MS4 Areas<sup>1</sup>



<sup>1</sup> URL: <http://www.maine.gov/tools/whatsnew/attach.php?id=519637&an=1>

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## 1.2 WHAT IS AN ILLICIT DISCHARGE?

The EPA defines an illicit discharge as *"any discharge to an MS4 that is not composed entirely of stormwater"*; exceptions are discharges regulated by a separate National Pollutant Discharge Elimination System (NPDES) permit and non-stormwater discharges considered allowable by the Small MS4 General Permit. Examples of allowable non-stormwater discharges include water line flushing, uncontaminated pumped groundwater, and footing drains as long as these discharges do not contribute to water quality impairments.

Illicit discharges can enter the drainage system via direct connections or indirect discharges, which are defined as follows:

- A *direct* connection is any non-stormwater pipe connected to the storm drain system, such as pipe from a washing machine or floor drain, or a sewer service connection from a house. Often, these types of discharges are continuous; and
- An *indirect* discharge may come from a wide variety of sources, such as sanitary sewer overflows, infiltration into the drainage system from failed septic systems or leaking sanitary collection systems, or hazardous waste spills into an MS4. Grass clippings, leaf litter, and other solid material dumped or otherwise deposited in the storm drain system are also considered indirect illicit discharges. These are commonly intermittent or transitory discharges.

## 1.3 WHAT IS AN ALLOWABLE NON-STORMWATER DISCHARGE?

Examples of non-stormwater discharges considered allowable by the MS4 general permit include:

- 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
- hydrant flushing and firefighting activity runoff

- 
- water line flushing and discharges from potable water sources
  - individual residential car washing
  - dechlorinated swimming pool discharges

#### 1.4 WHY DOES AN ILLICIT DISCHARGE MATTER?

Illicit discharges are not permitted under the MS4 general permit and/or local regulations and can result in violations and fines for MS4 operators. Additionally, illicit discharges contribute elevated levels of pollutants to surface water bodies and can also contaminate groundwater. When these pollutants enter water bodies, they hinder recreational activities and harm wildlife habitats.

#### 1.5 WHAT DOES THE EPA AND MAINEDEP REQUIRE MUNICIPALITIES TO DO TO DETECT AND ELIMINATE ILLICIT DISCHARGES?

In accordance with the Small MS4 General Permit released in October 2020, the City of Portland must develop, implement, and enforce a program to detect and eliminate illicit discharges. Under previous General Permits, the City developed an illicit discharge program, which consisted of:

- a storm sewer system map (Refer to Section 2 and **Appendix A**);
- the prohibition of non-stormwater discharges into the system via a regulatory mechanism (Refer to Section 3 and **Appendix B**);
- dry weather outfall inspections of all outfalls at least once during the permit cycle, and opportunistic inspections conducted during catch basin or pipe cleaning activities to detect and address non-stormwater discharges into the system (Refer to Section 4.1.2 and **Appendix E**);
- a strategy to detect illicit discharges based on the Standard Operating Procedures for Stormwater Phase II Communities in Maine; and
- an evaluation of non-stormwater discharges that are not considered significant contributors of pollutants (Refer to Section 1.3).

The General Permit typically works on a 5-year cycle, expiring on June 30<sup>th</sup> of the fifth year. The 2013 Small MS4 General Permit was issued on July 1, 2013, but was extended for additional years while a new permit was under development. The sections of this permit that are relevant to the IDDE Program have been included in **Appendix C** for reference. Under the next General Permit effective between 2022-2027, the City is required to:

- refine its infrastructure data and revise the stormwater drainage map accordingly;
- continue to enforce its non-stormwater discharge ordinance;
- revise the dry weather outfall inspection plan; and
- perform a wet weather assessment for the potential for illicit discharges during wet weather events

#### 1.6 PURPOSE OF THIS PROGRAM MANUAL

The purpose of this IDDE Program Manual is to establish a proactive, strategic, written program to address illicit discharges to the MS4 or to waters of the state within the City of Portland Urbanized Area in accordance with the requirements of the 2022 Small MS4 General Permit. The IDDE Program contained herein builds upon the City's IDDE activities conducted under the 2013 Small MS4 General Permit and incorporates a similar approach to address the 2022 permit requirements. The Program's implementation period is intended to align with the five year span of the Small MS4 General Permit.

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This IDDE Program Manual is also intended to assist the City of Portland in implementing the IDDE Program in a prioritized and strategic way to find and eliminate illicit discharges. The Manual establishes procedures for standardized documentation of possible illicit discharge detection through work orders and provides a basis for labor and capital improvement budgeting each year; it is to be used as a guide for IDDE activities and can also be used as a training tool for staff.

## 1.7 DEFINITIONS

The terms listed below are defined for the purposes of this Program. Additional definitions are provided in the City's Non-Stormwater Discharge Ordinance (Article I of Chapter 32 of the City Code of Ordinances); where conflict occurs, the more stringent definition shall apply.

*Best Management Practice (BMP):* Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

*Catch Basin:* A chamber or well, usually built to the curb line of a street, which admits surface water for discharge into a stormwater drain.

*Clean Water Act:* The Federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.) as hereafter amended.

*Discharge of Pollutants:* Any spilling, leaking, pumping, pouring, emptying, dumping, disposing or other addition of pollutants to the Waters of the State (for the purpose of this GP, located within the permittee's UA and not including groundwater.)

*Dry weather Inspection:* An inspection of an outfall that includes observations of sheen, discoloration, foaming, evidence of sanitary sewage, excessive algal growth, and similar visual indicators, as well as detection of odor. These inspections must be completed during a dry weather flow condition (when the storm sewer system is not impacted by current or recent precipitation) or when the outfall is not flowing even if it is within the 72 hours of precipitation greater than 1/4 of an inch, or ice or snow melt.

*Groundwater:* Water beneath the surface of the ground.

*Illicit Connection:* A surface or subsurface drain or conveyance, which allows an illicit discharge into the municipal storm drain system, including without limitation sewage, process wastewater, or wash water and any connections from indoor drains, sinks, or toilets, regardless of whether said connection was previously allowed, permitted, or approved before the effective date of ordinances enacted to prohibit such discharges.

*Illicit Discharge:* 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 the general permit as referenced and section 1.3 of this manual.

*Junction Manhole:* Under the Permit, a junction manhole is a manhole or structure with two or more inlets accepting flow from two or more MS4 alignments. Manholes with inlets solely from private storm drains, individual catch basins, or both, are not considered junction manholes.

*Manhole:* Sewer system structure typically made out of brick, concrete block, or monolithic concrete sections. Manholes have solid covers that do not accept runoff like a catch basin. Manholes within a storm sewer system are installed typically at bends in pipe runs, every 300 feet to 400 feet within a storm sewer pipe run, intersections of two or more pipe runs, and at the ends of pipe runs. Manholes allow for the cleaning and inspection of storm sewer systems. Manholes are typically 'fed' stormwater by catch basins and upstream storm sewer pipes.

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*Municipal Separate Storm Sewer System (MS4):* A conveyance or system of conveyances designed or used for collecting or conveying stormwater (other than a publicly owned treatment works (POTW), as defined at 40 CFR 122.2, or a combined sewer), including, but not limited to, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels or storm drains owned or operated by the City of Portland

*National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit:* A permit issued by United States Environmental Protection Agency or jointly with the Maine Department of Environmental Protection that authorizes the discharge of pollutants to waters of the United States.

*Non-Stormwater Discharge:* Discharge to the municipal storm drain system not composed entirely of stormwater.

*Outfall:* A point source where the MS4 discharges from a pipe, ditch or other discrete conveyance to the waters of the state other than groundwater, or to another entity's MS4, and does not include pipes, cross culverts, tunnels or other conveyances which connect segments of the same stream or other waters of the state and are used to convey waters of the state. For the purposes of this GP, a discharge to a location not defined as a water of the state is not considered an outfall.

*Pollutant:* Any element or property of sewage, agricultural, industrial or commercial waste, runoff, leachate, heated effluent, or other matter whether originating at a point or nonpoint source, that is or may be introduced into any sewage treatment works or waters of the United States. Pollutants shall include without limitation:

- 1) paints, varnishes, and solvents;
- 2) oil and other automotive fluids;
- 3) non-hazardous liquid and solid wastes and yard wastes;
- 4) refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordnances, accumulations and floatables;
- 5) pesticides, herbicides, and fertilizers;
- 6) hazardous materials and wastes; sewage, fecal coliform and pathogens;
- 7) dissolved and particulate metals;
- 8) animal wastes;
- 9) rock; sand; salt, soils;
- 10) construction wastes and residues; and
- 11) noxious or offensive matter of any kind.

*Stormwater:* The part of precipitation including runoff from rain or melting ice and snow that flows across the surface as sheet flow, shallow concentrated flow, or in drainage ways.

*Wastewater:* Any sanitary waste, sludge, or septic tank or cesspool overflow, and water that during manufacturing, cleaning or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct or waste product.

*Storm Sewer:* Also referred to as "Storm Drain", a sewer that carries only surface runoff, street wash, and snow melt from the land. In a separate sewer system, storm sewers are completely separate from those that carry domestic and commercial wastewater (sanitary sewers).

*Waters of the State:* Any and all surface waters and subsurface waters that are contained within, flow through, or under or border upon this state or any portion of the state, including the marginal and high seas, except such waters as are confined and retained completely upon the property of one person and do not drain into or connect with any other waters of the state, but not excluding waters susceptible to use in interstate or foreign commerce, or whose use, degradation or destruction would affect interstate or foreign commerce.



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## 2. STORM SEWER SYSTEM MAP

The City has completed mapping of outfalls and drainage structures (catch basins, manholes, culverts, etc.) in the Urbanized Area. The map is updated regularly to reflect the results of condition evaluations and to include infrastructure attribute information (e.g. pipe size, pipe type, etc.) and, where possible, depicts the direction of in-flow and out-flow pipes and the locations of MS4 outfalls, as stipulated in the General Permit. The Water Resources Division has an asset management team that manages all GIS and mapping data. Water Resources and City Staff utilize an ArcGIS Online map that allows for quick access to asset information including:

- location of all stormwater catch basins;
- connecting surface and subsurface infrastructure with direction of in-flow and out-flow pipes; and
- the locations of all discharges from all stormwater outfalls operated by the City to receiving waters or to an interconnected MS4 and the name of the receiving water for each outfall.

Each catch basin, outfall, and pipe is uniquely identified to facilitate control of potential illicit discharges, and proper operation and maintenance of these structures.

An overview of the City's MS4 is contained in **Appendix A**.

### KEY PROGRAM ELEMENTS: System Mapping

1. **Update map (as needed)**

**Throughout General Permit term**, the City will continue to update and improve the map as necessary to reflect attribute information, corrections or modifications, and progress made.

### 3. LEGAL AUTHORITY

The City of Portland has a Non-Stormwater Discharge Ordinance. This ordinance is located in Chapter 32, Article II. Additionally, the City maintains compliance with the State Plumbing Code MRSA Title 32 Section 3403-B regarding plumbing connections, the State of Maine Subsurface Wastewater Disposal Rules, and citizens are required to comply with Chapter 24 of the City's Code of Ordinances for sanitary sewer connections.

Portland's Ordinance includes language expressly prohibiting illicit discharges to the City's stormwater drainage system. The City's Department of Public Works is designated to administer, implement, and enforce this Ordinance. **Appendix B** includes a copy of the City's Non-Stormwater Discharge Ordinance.

Parties responsible for implementing this IDDE program are listed in the table below:

**Table 3-1: Responsible Parties for Implementing IDDE Program**

Primary Responsible Party	Responsibilities
Public Works Director	- Oversees Water Resources Division and ultimate authority for enforcement of ordinances
Water Resources Manager	- Oversees Compliance Section - Allocates staffing and resources when needed
Compliance Section Coordinator	- Oversees IDDE Program & reviews annual documentation - Coordinates program goals with the Planning - Inspections Divisions - Coordinates with Portland Water District's Industrial Pretreatment Program - Coordinates enforcement activities - Provides coordination between Fats Oil and Grease program and IDDE Program - Administers Prohibited Discharges Article
Stormwater Program Coordinator	- Coordinates outfall investigation, screening and sampling activities - Reviews screening results and citizen complaints - Conducts employee training - Conducts public outreach - Compiles annual documentation
Operations Supervisor, Operations Staff and Compliance Team	- Conducts investigations, screening, and sampling - Conducts elimination activities - Conducts opportunistic inspections
Planning & Urban Development Inspections Division	- Manages building inspections and code enforcement - Alerts Department of Public Works of potential building/plumbing problems - Coordinates with Compliance Section Coordinator on elimination and enforcement activities (as necessary)
Asset Information Management Specialist	- Supports IDDE Program Data Management and provides data compilation for reporting purposes.
Corporation Counsel	- Supports IDDE Program enforcement when necessary

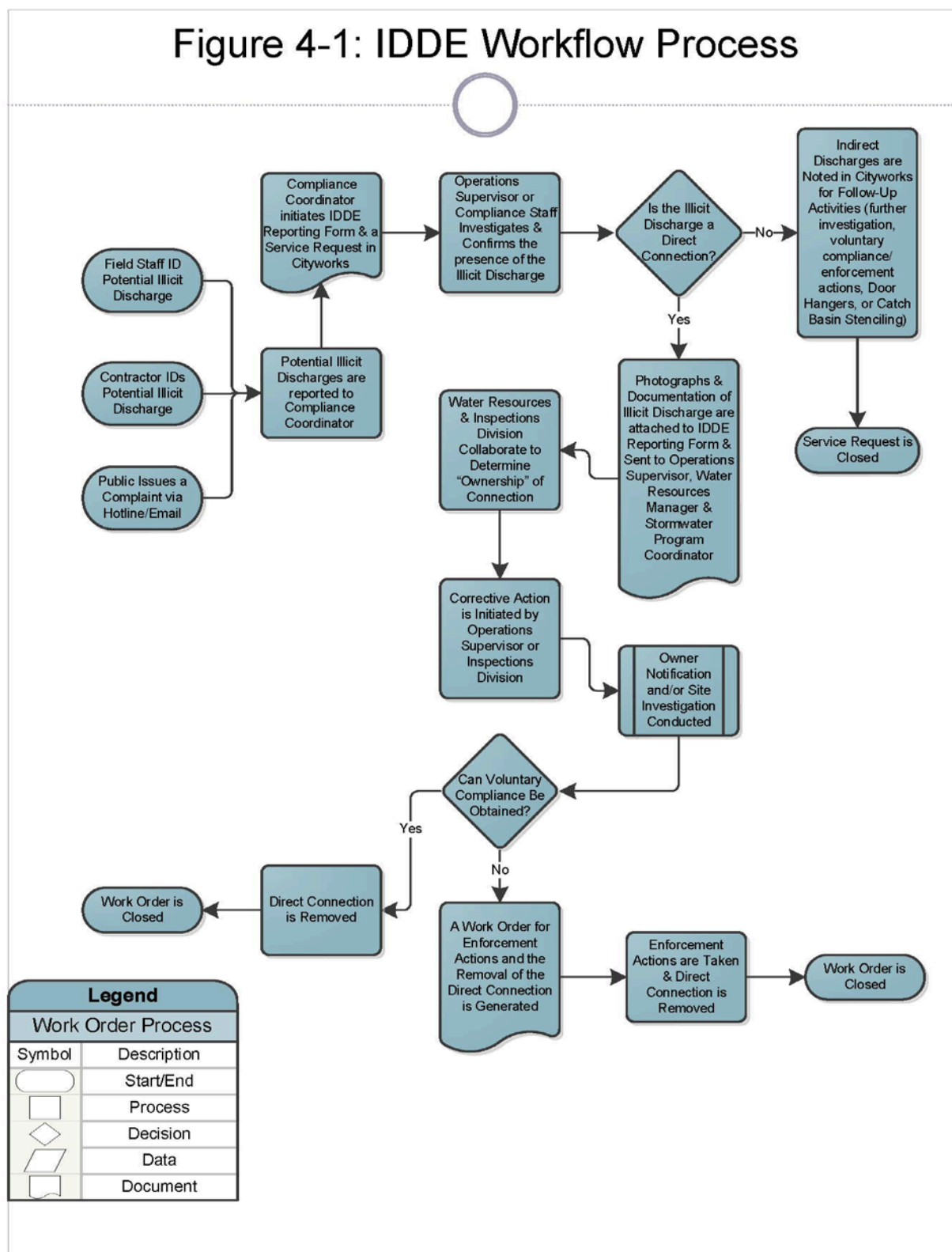
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## 4. ILLICIT DISCHARGE DETECTION AND ELIMINATION

The following has been based on historic IDDE efforts in Portland and incorporates the new requirements of the 2022 General Permit. The Portland IDDE Program is focused on the elimination of direct illicit discharges into the Portland MS4, and therefore the waters of the state, but will continue to address indirect illicit discharges as they are detected. This Program Manual also emphasizes the importance of adequate employee training.

When potential illicit discharges are identified via outfall screening, opportunistic inspections, or a verified public complaint, the workflow process shown in Figure 4-1 on the next page will be enacted, as described in Sections 4.1 and 4.2, which cover the detection and investigation/elimination processes.

Figure 4-1: IDDE Workflow Process



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## 4.1 ILLICIT DISCHARGE DETECTION

In previous permit cycles, the City's primary method of detecting illicit discharges has been to conduct dry weather outfall inspections in priority watersheds and opportunistic inspections of catch basins during City-wide cleaning. In this permit cycle, every outfall must be inspected. This section formalizes procedures for these activities and specifies follow-up investigation to identify and eliminate Illicit Discharges, as described in greater detail in following sections.

The IDDE Program utilizes the following strategies for illicit discharge detection:

1. Voluntary Reporting;
2. Opportunistic Inspections;
3. Private Property Inspections;
4. Outfall Inspections; and
5. Outfall Screenings.

After three years of the effective date of the 2022 MS4 General Permit, a review and evaluation of investigations and elimination activities will be conducted to identify appropriate next steps and updates to this Manual.

### 4.1.1 Voluntary Reporting

City of Portland Online Services allow residents and outside agencies to file complaints, which can be used to report illicit discharges to the Department of Public Works. The Department of Public Works also has a general Customer Service phone line. These services encourage residents to participate in the reporting process and help the Department receive timely information about problems like illegal dumping, spills, or strong odors associated with sewer system failures.

### 4.1.2 Opportunistic Inspections

The City will build upon its existing catch basin and manhole cleaning activities and mapping efforts. Under previous General Permits, the City utilized the Standard Operating Procedure (SOP) outlined in Volume 2 of the *GUIDELINES AND STANDARD OPERATING PROCEDURES For Stormwater Phase II Communities in Maine*. The DPWs ongoing drainage system maintenance activities (e.g. catch basin cleaning, ditch cleaning and maintenance, pipe flushing, etc.) provide the best screening opportunity to document and identify potential illicit discharges on an ongoing basis. The DPW currently performs (through Public Works staff and contractors) catch basin cleaning throughout the year. Catch basin cleaning allows trained DPW staff to visually inspect hundreds of drainage structures for illicit connections each year. Additionally, the DPW conducts periodic storm drain repair, flushing/jetting, and CCTV work, creating other opportunities for opportunistic inspection.

DPW staff will utilize the SOP for Illicit Discharge Opportunistic Inspections in **Appendix D** and conduct olfactory (odor), visual inspections (color, turbidity, floatables, staining, and pipe benthic growth), in-situ (temperature, conductivity) and field and/or laboratory analysis (ammonia, total residual chlorine, surfactants, and bacteria) consistent with Chapter 11 of the Center for Watershed Protection's *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments (2004)* and the Stormwater Monitoring Quality Assurance Project Plan (QAPP) included in **Appendix I**. Training related to illicit discharge detection procedures shall be provided as outlined in Section 4.3.1.

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## KEY PROGRAM ELEMENTS: Opportunistic Inspections

### 1. Detect Illicit Discharges

Opportunistic inspections will continue to be conducted during stormwater drainage system cleaning and other activities such as drainage system attribute mapping, condition assessment, or outfall maintenance to detect illicit discharges. **Appendix D** includes a copy of the City's SOP for the Illicit Discharge Opportunistic Inspection and the City's IDDE Incident Reporting Form, which is utilized to document illicit discharges identified during opportunistic inspections. City staff who operate stormwater drainage system cleaning activities are trained in olfactory and visual inspections (color, turbidity, floatables, staining, and pipe benthic growth), in-situ (temperature, conductivity) and field and/or laboratory analysis (ammonia, total residual chlorine, surfactants, and bacteria) consistent with Chapter 11 of the Center for Watershed Protection's *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments (2004)* and the Stormwater Monitoring Quality Assurance Project Plan (QAPP) included in this manual. See **Appendix G** for Training Materials and **Appendix I** for the QAPP.

Sewer or septic malfunctions, which are reported to and investigated by the City, may also lead to the discovery of illicit discharges. Illicit discharges will continue to be investigated and documented as part of the sewer or septic malfunction reporting process.

### 2. Record Keeping

If a potential illicit discharge is identified, the Compliance Section Coordinator will complete a service request for further investigation. If a direct connection is verified during further investigation, a work order using Computerized Maintenance Management System (CMMS) software will outline the specific elimination activity and work completed. This service request and work order will be traceable by date.

### 3. Identify Additional Problem Areas

Problem Areas for indirect illicit discharges or dumping will be identified during catch basin cleaning activities. Problem areas will be noted using catch basin cleaning forms or the IDDE Incident Reporting Form and will be targeted for further investigation, landowner notification, potential enforcement activities, and catch basin stenciling in subsequent years.

## 4.1.3 Private Property Investigations

The DPWs IDDE Program also relies on private property inspections to detect and eliminate potential illicit discharges into the MS4. The City of Portland Permitting and Inspections Division is the primary regulatory authority for building and plumbing code compliance and supports the DPW staff when an illicit discharge is found on private property.

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#### 4.1.4 Prioritization of MS4 Outfalls

All outfalls will be inspected during the 2022-2027 permit cycle. Under previous General Permits, the City of Portland selected the Bishop Street and Warren Avenue outfall sub-watersheds within the Capisic Brook Watershed as the highest priority watersheds, which was the primary area of focus for dry weather outfall inspections. Beginning in 2022, outfall screening will begin to be conducted for all outfalls. Outfall screening will provide the basis for further investigation and for quantifying the level of illicit discharge abatement effectiveness.

Previously, drainage areas discharging to primary MS4 outfalls were delineated as the basis for City-wide prioritization under this IDDE Program. These drainage areas have a unique ID consistent with the City of Portland MS4 outfall ID (i.e. stormwater discharge point). These drainage areas have been evaluated using the following available data to identify potential drain system vulnerability to cross contamination from illicit connections:

- Drainage Area Land Use;
- Parcel Density;
- Sanitary Sewer Pipe Age;
- Sanitary Sewer Collection System Density;
- Sanitary Sewer Crossings of Drainage System;
- Development Age; and
- Drainage Area Size.

Additionally, an “environmental and public health” risk factor was included for each discharge location based on proximity to public water access (i.e. primary or secondary contact) and water body classification. Each of the above factors were utilized for planning-level prioritization of the primary MS4 discharges within the Urbanized Area. The prioritization results and risk factor matrix is shown in **Appendix F**.

#### KEY PROGRAM ELEMENTS: Prioritization of MS4 Outfalls

- |  |   |
|--|---|
| 1. <b>Identify targeted investigation areas.</b> | Drainage areas have been evaluated for the potential for illicit discharges based on several vulnerability factors. Toward the end of the 2022-2027 permit cycle, outfalls will be prioritized for use in a wet-weather assessment. |
|--|---|

#### 4.1.5 Outfall Screening and Sampling

Outfall (and interconnection) inspections consist of both screening and sampling. All outfalls will be inspected during the next permit cycle. Inspections will be completed digitally and stored in the City's Computerized Management and Maintenance System, City Works.

*Screening* includes a rapid visual and olfactory inspection consistent with Chapter 11 of the Center for Watershed Protection's *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments (2004)*. Inspections are documented on an Outfall Inspection Form; see example form in **Appendix E**. *Sampling* includes collection and laboratory analysis of outfall samples when flow is observed during screening. If flow is not observed during screening, the non-flowing condition is noted on the Outfall Inspection Form and no sample is collected.

For the purposes of this Program, dry-weather conditions consist of no more than 0.1 inches of rainfall in the previous 72-hour period and no significant snowmelt. Wet-weather conditions should consist of at least 0.25 inches of rainfall within the preceding 24-hour period; however, precipitation events sufficient to produce any flow in outfalls to be sampled will also be acceptable for this Program. Coordination with the Portland Water District will be necessary to confirm that flows present are not the result of hydrant flushing or water line bleeders.

If flow is observed during screening, samples will be collected from the outfall (or if the outfall is inaccessible, the nearest accessible upstream drainage structure). Samples will be analyzed for pollutants identified in the **Stormwater Monitoring Quality Assurance Project Plan (QAPP)** either in the field or through laboratory analysis. This suite of parameters in accordance with EPA's Draft Bacterial Source Tracking Protocol (2012), is included for reference in **Appendix H**. All sampling shall be conducted under the **QAPP**, which details sample collection, preservation, and quality control requirements. The QAPP is included in **Appendix I**.

Benchmark concentrations and instrumentation used for stormwater sampling are included in Table 4-2. If benchmark concentrations are exceeded, further investigation is initiated, as described in Section 4.2.

**Table 4-1: Sampling Guidelines for Water Quality Indicator Parameters<sup>2</sup>**

Indicator Parameter	Benchmark Concentration	Instrumentation
Surfactants (as MBAS)	≥ 0.25 mg/L	CHEMetrics K-9400 Field Kit or SM5540C
Ammonia (NH <sub>3</sub> )	≥ 0.5 mg/L	CHEMetrics K-1510 Field, Kit, Hach Ammonia Test Strips, or Laboratory Method EPA 350.1/350.2
Total Chlorine	≥ 0.05 mg/L	Hach Chlorine Pocket Colorimeter or Industrial test Systems Ultra-Low Total Chlorine Test Strips and other midrange chlorine test strips
Conductivity	No threshold	Temperature/ Conductivity probe
Temperature	No threshold	Temperature/ Conductivity probe
Bacteria (e.coli) Fresh Waster	4 cfu/100 mL	SM 9223 B (IDEXX Colilert Quanti-Tray) EPA 1603 (membrane filtration, MF) Or SM 9221 B (Most probable number, MPN)
Bacteria (Enterococcus) Marine Water	10 cfu / 100 mL	SM 9230 B, C or D, (MPN including IDEXX Enterolert, or MF) EPA 1600 (MF)

#### 4.1.6 Wet-weather Assessment

Prior to the end of the permit cycle, the City will perform a wet weather assessment to determine which stormwater outfalls have the potential to discharge pollutants during wet weather events. The City will utilize data from existing studies to identify high-risk factors including (but not limited to):

- Areas within the MS4 that have combined sewer systems;

<sup>2</sup> Adapted from EPA's [Draft Bacterial Source Tracking Protocol \(2012\)](#)



- 
- Sanitary sewer systems located in a common trench with stormwater infrastructure, particularly those with known infiltration;
  - Subsurface wastewater disposal systems that are 20 years old or more, or those in areas known to have experienced recent malfunctions or failures;
  - Municipally-owned dog parks;
  - Complaints of sewage odor at a stormwater outfall during wet weather events;
  - Direct discharge from the stormwater system to any of the following:
    - A public beach or recreational area;
    - A water body impaired for bacteria;
    - A shellfish bed; and/or
    - A drinking water supply.

Using this list of high-risk outfalls the DPW will devise a plan for monitoring the outfalls during the next permit cycle, which includes the type of monitoring and the specific frequency & conditions under which monitoring will occur for each outfall. This IDDE Manual will be updated to include the identified wet weather outfalls that will be monitored based on the EPA New England bacterial source tracking protocol or other acceptable protocols or methodologies. The updated Manual will specify the timing and frequency of wet weather monitoring to be completed during the term of the next permit cycle.

<b>KEY PROGRAM ELEMENTS: Outfall Screening and Sampling</b>	
<b>1. Conduct Outfall Screening and Sampling</b>	Outfall inspections and screening will be conducted by City staff with the assistance of a third-party contractor as necessary. A sample copy of the City's Outfall Inspection Form has been included in <b>Appendix E</b> . Inspections will take place when possible but preferably when snow and vegetation do not impede access/visibility.
<b>2. Record Keeping</b>	Summaries of outfall sampling and inspection results will be submitted via digital file to the Compliance Section Coordinator for review. If an obvious (i.e. visible) illicit discharge is identified, the contractor or staff will notify the Compliance Section Coordinator who will produce a Service Request alerting appropriate staff of the need for further investigation. This service request will be traceable by calendar year.
<b>3. Identify Additional Problem Areas</b>	Indirect illicit discharges or dumping will be identified during outfall inspection activities. Problem areas will be noted using outfall forms and will be targeted for catch basin stenciling, mailings/door hangers, further investigation, or enforcement. Excessive dumping that compromises drainage system function or creates hazardous conditions will be addressed through the creation of a service request.
<b>4. Perform a Wet-weather Assessment</b>	Determine which stormwater outfalls have the potential to discharge pollutants during wet weather events and update the IDDE Manual prior to the end of the permit cycle.

## 4.2 ILLICIT DISCHARGE INVESTIGATION AND ELIMINATION

The following Section focuses on investigating and isolating the source(s) of illicit discharges into the City's MS4. Investigation procedures may vary depending on the nature of the illicit discharge "potential", but the following outlines the general components of investigation within the City. When a direct connection, spill or environmental hazard is conclusively verified and attributed to a specific discharger or property during opportunistic inspection, several investigation steps will be bypassed to quickly eliminate the discharge.

Once an illicit discharge has been verified by the Compliance Section Coordinator or Operations Supervisor, the Compliance Section Coordinator, Operations Supervisor, Archivist, and/or the Inspection Division of the Planning will determine the "ownership" of the illicit discharge and the appropriate resolution process. Additional field investigation may be required and which may consist of private property site entry procedures (if needed), notifying the property owner or operator of the problem, and providing the appropriate educational materials and/or a copy of the IDDE ordinance to the property owner. Once a violation determination is made, the Inspection Division and/or Public Works can then begin pursuing voluntary compliance or take enforcement actions, as discussed in greater detail in the following sections; if no Code violations are identified, then the investigation is closed. Illicit discharges should be eliminated within 60 days of verification.

**KEY PROGRAM ELEMENTS: Illicit Discharge Investigation and Elimination**

- |                                       |   |
|---------------------------------------|---|
| 1. <b>Pursue Voluntary Compliance</b> | City staff will respond to illicit discharges, illicit connections, or illegal dumping activities using progressive enforcement actions, focusing first on education to promote voluntary compliance. |
| 2. <b>Take Enforcement Actions</b>    | If voluntary compliance is not obtained, City staff will respond with increasingly severe enforcement actions.  |
| 3. <b>Follow-Up Sampling</b>          | If sampling results indicate additional illicit discharges may still remain, then the process must continue until sampling results clearly demonstrate complete removal.                              |
| 4. <b>Follow-Up Public Outreach</b>   | City staff will conduct public outreach in areas where illicit discharges, illicit connections, or illegal dumping activities have been identified.   |

The following facilities are regulated for stormwater discharges under their own MEPDES permits and the specified enforcement authority will be responsible for any enforcement actions taken. The City of Portland will be responsible for notification of MaineDEP and the discharger of the potential illicit discharge within their jurisdiction.

**Table 4-2: Co-Permittee Facilities**

<b>Exempt Facility</b>	<b>Alternate Regulation They Are Subject To</b>	<b>Enforcement Authority</b>
<b>Maine Turnpike Authority and Maine DOT (in urbanized areas)</b>	Maine General Permit for the Discharge of Stormwater from MDOT and MTA MS4s	MaineDEP
<b>Industrial Facilities</b>	Multi-Sector General Permit for Industrial Activities	MaineDEP

**4.2.1 Catchment Investigation Procedure**

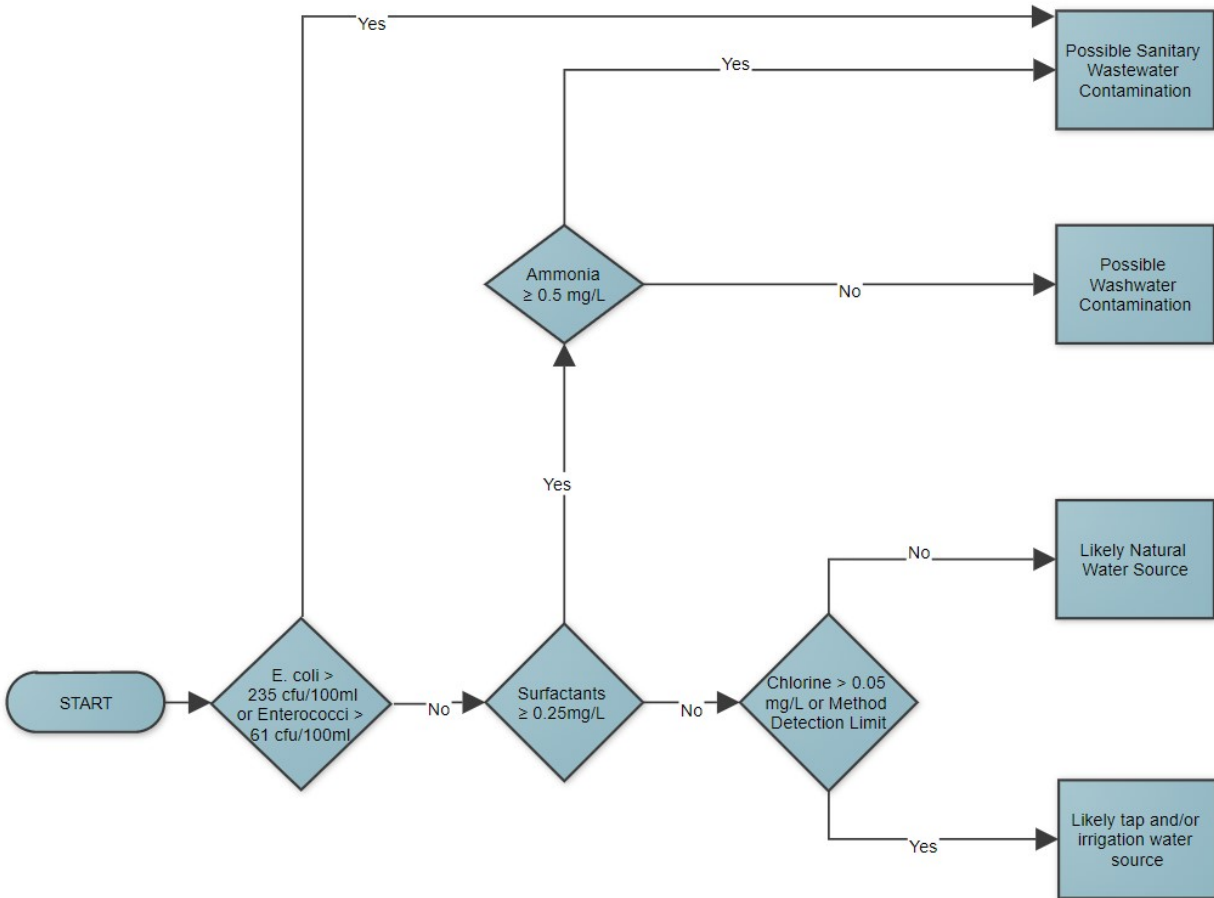
The DPW will implement the following Catchment Investigation Procedure at outfalls identified with exceedances of benchmark parameters or in areas identified with likely illicit discharges based on visual, olfactory or in-situ field evidence. As discussed in Section 4.1.5, the potential for an illicit connection is based on olfactory/visual evidence and/or sampling results (e.g. sampling results where ammonia  $\geq 0.5$  mg/l, surfactants  $\geq 0.25$  mg/l, AND chlorine  $\geq 0.05$  mg/l).

The investigation procedure is initiated by the Compliance Section Coordinator and is conducted by trained DPW staff with the assistance of a third-party contractor as needed. A public complaint or concern may also initiate an illicit discharge investigation. The investigation procedure includes the following implementation steps:

1. Conduct a preliminary review of catchment drainage plans, GIS mapping, and record drawings. Identify key junction manholes in the catchment that will require investigation outlined in Step 4. Review sewer system evaluation results to identify any problem segments of sanitary sewer, recent sanitary sewer repair and replacement projects or other indicators of historic interconnections between the sanitary and storm drain systems.

- 
2. As needed, distribute notifications to residents and property owners within the investigation area to inform them of the potential need to gain access to private property to inspect drainage systems, internal plumbing and/or conduct dye testing.
  3. Conduct field investigations during dry weather to reduce the effect of stormwater base flows on the investigation procedure. Conduct a rapid visual and olfactory inspection of key junction manholes in the catchment to attempt to identify obvious visual source(s) of illicit cross-connection and dry-weather flows. Typically, the investigation should progress from upstream to downstream locations to systematically rule out “clean” and dry segments of pipe. If visual evidence of a direct illicit discharge is identified and the segment of pipe can be isolated, skip to Step 5.
  4. Isolate the pipe or open drainage segment that contains dry-weather flow by sampling at the downstream junction manhole for ammonia, chlorine, surfactants, temperature, conductivity, and/or bacteria. Methods are listed in Table 4-2.
    - When flow is observed in a junction manhole, obtain a sample of the dry-weather flow and use field kits or laboratory analysis to analyze samples and record results. Compare field results with the sampling thresholds shown in Figure 4-2 to identify the likely source of potential illicit connection(s). Junction manholes with obvious signs of contamination (e.g. toilet paper) do not need to be sampled.
    - When flow is not observed in a key junction manhole, DPW staff or a third party contractor will partially block each inlet of the manhole using sandbags or other barriers for a 48-hour dry period (i.e. when no precipitation or significant snowmelt is expected). Re-inspect the junction manhole after 48 hours for intermittent flows, and then sample any captured flow for ammonia, chlorine, surfactants, temperature, conductivity, and/or bacteria.
  5. Additional investigation procedures may be required before or after bracketed sampling to attempt to isolate the source of pollutants. These could include laboratory water quality testing (e.g. E. coli or Enterococcus), wet-weather (and/or high groundwater) investigation monitoring, CCTV pipe inspections, and targeted internal plumbing inspections including dye testing. Often verification of the source of the illicit discharge requires some form of internal TV inspection coordinated with dye flushing. This work would be completed by DPW staff or a third-party contractor.
  6. When illicit discharge locations are verified in association with a physical address or interconnection with the sanitary sewer, field staff will photograph the problem area at ground level, identify any other indicators of location, summarize likely remedy to the problem and forward this information via the IDDE Incident Reporting Form, including any sampling results, to the Compliance Section Coordinator and Stormwater Program Coordinator via e-mail for initiation of the corrective action process. The IDDE Incident Reporting Form initiated will not be finalized until the description of the probable resolution is completed within the IDDE Incident Reporting Form.
  7. Identification of Illicit Discharges in pipe segments may preclude further investigation in “downstream” segments of the catchment as upstream contamination will impact sampling results in downstream locations. Once an illicit discharge is eliminated, further investigation can commence. This may require several investigation efforts to run concurrently to meet MS4 permit deadlines.

Figure 4-2: Flow Chart to Identify Likely Source of Illicit Discharge<sup>3</sup>



## 4.2.2 Voluntary Compliance

The preferred approach to address illicit discharges is to pursue voluntary compliance from the property owner or responsible party using education. Often, business operators and property owners are unaware of the existence of illicit connections or activities on their properties that may constitute an illicit discharge. In these cases, providing the responsible party with information about the connection or operation, the environmental consequences, and suggestions on how to remedy the problem may be enough to secure voluntary compliance. See sample outreach letter for indirect illicit discharges in **Appendix J**.

Education begins during the site investigation when the operation or connection is first verified. Property owners and operators should be notified that the problem(s) must be corrected in a timely manner and that the City will be conducting a follow-up site visit to verify compliance.

### 4.2.2.1 Operational Problems

Property owners are responsible for correcting operational problems that result in illicit discharges to the stormwater drainage system. This could include moving washing activities indoor or undercover, covering material storage areas,

<sup>3</sup> Adapted from Chapter 12 of the Center for Watershed Protection's *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments* (2004): Figure 47, pg. 131.

cleaning sewer laterals, locating an appropriate discharge location for liquid wastes, or other operational modifications. Through site visits and education, the City can provide technical assistance to aid property owners in identifying and addressing the operational problems.

#### 4.2.2.2 Structural Problems

Many illicit direct connection problems will require a structural modification to correct the problem. Structural repairs are used to address failing sanitary sewer laterals, collection system pipes or to redirect discharges from sewer laterals to an approved sanitary wastewater collection system. Correcting structural problems is the responsibility of the property owner or the City depending on the nature of the illicit discharge. The DPW may provide general guidance for private landowners through an outreach handout or personal communication.

#### 4.2.3 Enforcement Actions

When voluntary compliance cannot be obtained or does not produce the desired result, the City is required to pursue follow-up enforcement action. All enforcement actions will be the responsibility of the City of Portland Public Works unless determined to be a sanitary sewer or septic code violation within the property and hence the jurisdiction of the MEDEP or Inspections Division. The table below outlines detailed enforcement steps. More serious violations or continued non-compliance may warrant a more aggressive enforcement approach, such as suspending access to the storm drain, if an “imminent and substantial danger” exists.

**Table 4-3: Illicit Discharge Enforcement Actions**

<b>Step 1 – Initial Actions</b>	<ul style="list-style-type: none"> <li>• Provide landowner education</li> <li>• Encourage voluntary compliance</li> <li>• Provide additional staff support or technical assistance</li> <li>• Request evidence of corrected problem (if applicable)</li> <li>• Conduct site visit to verify compliance and completion of work</li> </ul>
<b>Step 2 – Follow-up Actions</b>	<ul style="list-style-type: none"> <li>• Set compliance date (determined on individual incident basis)</li> <li>• Conduct site visit to verify compliance and completion of work</li> </ul>
<b>Step 3 – Final Actions</b>	<ul style="list-style-type: none"> <li>• Send “notice of violation” letter* indicating that unresolved issues &amp; levy fines will be referred to prosecutor</li> </ul>

\*Document copies of all letters

##### 4.2.3.1 Enforcement Timeline

The timeline of corrective action procedures is highly dependent on the nature of the violation and the responsiveness and cooperation from the person(s) responsible, but is typically not longer than 60 days. Where elimination of an illicit discharge within 60 calendar days of its identification and verification as an illicit discharge is not possible, the permittee and responsible person(s) must establish an expeditious schedule for its elimination and track progress. The urgency of addressing identified problems will be based on the nature of the pollutant in question and potential impacts to downstream waters. Compliance dates should be included in all violation notices.

If property owners are not addressing problems in a timely manner, the City may step in and perform the repairs necessary to remove an illicit connection, eliminate an illicit discharge, and/or clean-up a dumping incident. Property owners will also be responsible for reimbursing the City for any costs incurred in correcting IDDE problems in accordance with the City’s legal authority.

---

### 4.2.3.2 Record Keeping

Throughout the investigation and enforcement action activities, all information related to the incident or property in question should be well documented. Along with monitoring and investigation activities, summaries of corrective action will be included in each MS4 Annual Report. Records for each verified illicit discharge removed from the City's MS4 should include:

- location of discharge and source;
- description of discharge;
- method/date of discovery;
- date of elimination;
- mitigation action;
- estimated volume of flow removed; and
- cost, when available.

Additional records should be maintained for each illicit discharge that is not removed within 60 days of verification, including:

- justification for delayed corrective action;
- schedule for removal of illicit discharge;
- explanation of why schedule is as expeditious as possible; and
- description of legal actions against landowner (if applicable).

The City's computerized maintenance management software, City Works, will be used to create service requests and work orders for illicit discharges. City Works will allow for all work to be recorded so that an asset (outfall or catch basin where discharge was found) can be traceable.

### 4.2.4 Follow-Up Sampling.

After elimination, dry-weather confirmatory screening must be conducted just "downstream" in nearest manhole to the eliminated illicit discharge to confirm removal. Field sample collection may be necessary and includes ammonia, chlorine, and surfactants and similar procedures for outfall screening, as described in Section 4.1.5. The results of the sampling must confirm the illicit discharge has been eliminated.

If sampling results indicate additional illicit discharges may still remain, then the process must continue until sampling results clearly demonstrate complete removal.

### 4.2.5 Follow-Up Public Outreach

Surveys in Portland conducted during Capisic Brook watershed outreach planning indicated that storm drain stencil street markings are one of the most visible reminders to citizens about stormwater runoff. Catch basin stenciling, mailings and/or door hangers shall be conducted in areas where indirect illicit discharges, such as dumping, have been identified.

---

## 4.3 TRAINING & EDUCATION

### 4.3.1 Annual Employee Training

Employee training is an important component of Portland's IDDE Program. DPW staff are trained in Opportunistic Inspection SOPs via the training module in **Appendix G**.

City staff involved with the IDDE investigation procedures shall be able to properly utilize equipment to identify illicit discharges. The Water Resources Division Compliance Section may implement a series of trainings on outfall screening and investigation procedures using sampling equipment and use of field equipment for investigation and data collection, including the following:

- Extension pole cameras or hand held video units for field staff to view inside drainage structures;
- Field data collection tools that can be synchronized with working GIS infrastructure maps and CMMS software; and
- Water quality test kits and instruments used to sample for the parameters listed in Table 4.2.

#### KEY PROGRAM ELEMENTS: Annual Employee Training

- |  |   |
|--|---|
| 1. <b>Include IDDE Topics in Annual Training</b> | City staff responsible for implementing the Opportunistic Inspections will be trained to identify illicit discharges. |
|--|---|

### 4.3.2 Public Education

Under the MS4 General Permit, the DPW must inform public employees, businesses, and the general public of the hazards of illicit discharges. Targeted mailings, catch basins stenciling, mailings and/or door hangers in neighborhoods with consistent indirect illicit discharges are a component of the IDDE Program (see **Appendix J** for a sample outreach letter). Additionally, general awareness on illicit discharges through a variety of outreach avenues will continue to be implemented and reported in the MS4 General Permit Annual Report.

#### PROPOSED PLAN: Public Education

- |   |  |
|---|--|
| 1. <b>Targeted Mailings for Indirect Discharges</b> | City staff will conduct targeted mailings or place signage in neighborhoods where consistent indirect discharges have been identified by opportunistic inspections or voluntary reporting. See sample outreach letter in <b>Appendix J</b> . |
|---|--|



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## 5. IDDE IN THE OPEN DITCH SYSTEM

### 5.1 OPEN DITCH INSPECTIONS

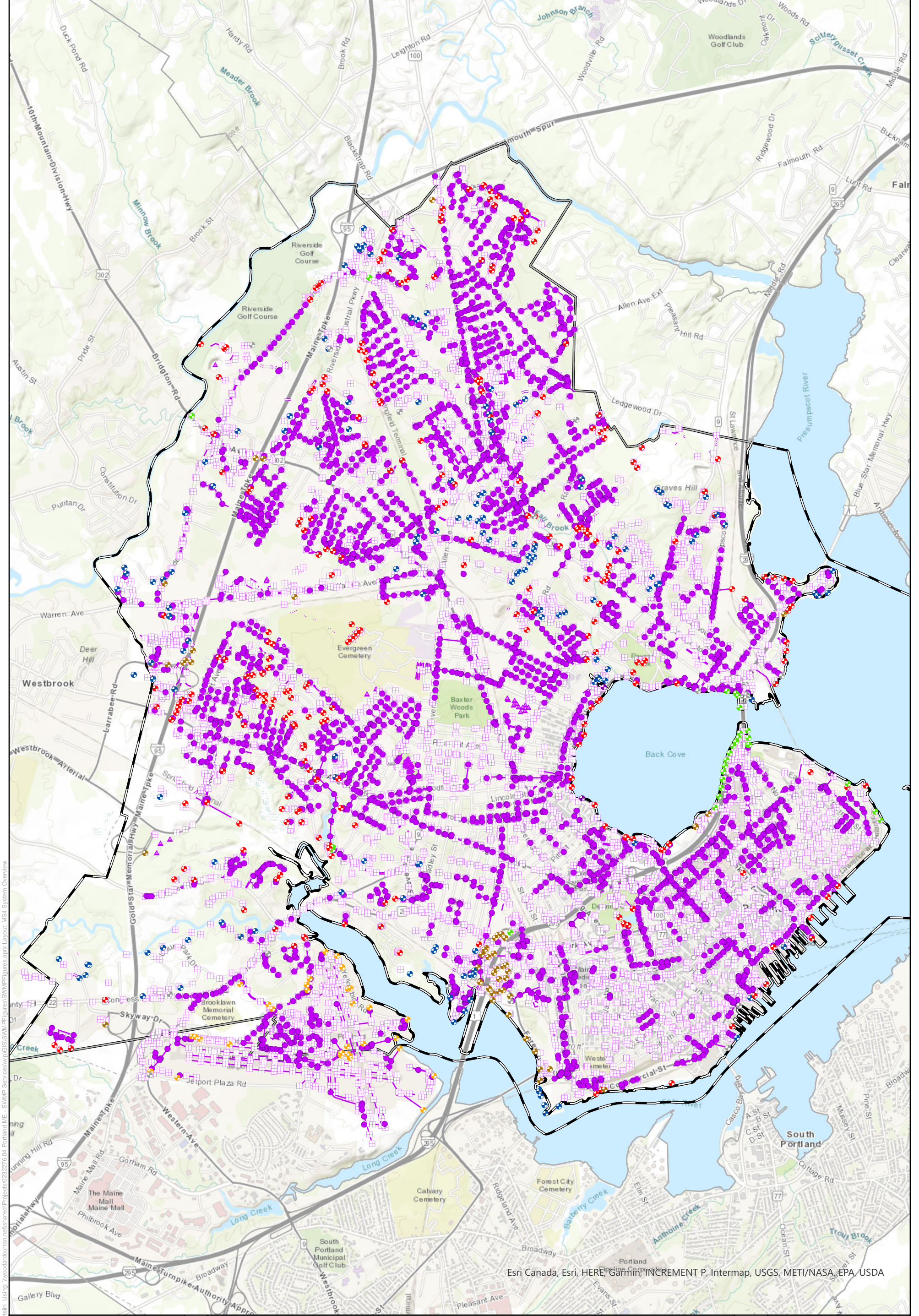
In accordance with the 2022-2027 MS4 General Permit, the City will assess the potential impact of septic systems as illicit discharges by focusing on areas that are not served by sanitary sewer service.

#### KEY PROGRAM ELEMENTS: Open Ditch Inspections

- |  |  |
|--|--|
| 1. <b>Conduct Targeted Open Ditch Inspections</b>      | Dry weather open ditch inspections may be conducted by City staff with the assistance of a third-party contractor (as needed). Inspections will take place in the late fall/early winter or in the early spring of each permit year, when snow and vegetation do not impede access/visibility.   |
| 2. <b>Conduct Opportunistic Open Ditch Inspections</b> | City staff will continue to inspect for illicit discharges in the open ditch system as part of the general maintenance of municipal infrastructure. The City will follow the same SOP for opportunistic IDDE inspection activities outlined in Section 4.1.2 while conducting mapping activities and maintenance on the open ditch system. Septic system failures will be investigated for otherwise undetermined illicit discharges to the open ditch system. |
| 3. <b>Employee Training</b>                            | Train responsible City staff on the open ditch inspection protocol as part of the Annual Employee Trainings.   |

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## APPENDIX A: STORM SEWER SYSTEM MAP



Esri Canada, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA

# Stormwater Collection System Overview

## Portland, ME

Legend	
<span style="color: purple;">●</span> StormManholes	<span style="color: purple;">□</span> Catchbasin
<span style="color: purple;">▲</span> Stormwater BMP	<span style="color: purple;">○</span> Storm Drain Pipe
<span style="color: purple;">—</span> Outfalls	<span style="color: purple;">—</span> Underdrain
<span style="color: grey;">○</span> Unknown	<span style="color: blue;">○</span> Private
<span style="color: red;">○</span> City	<span style="color: orange;">○</span> State
<span style="color: yellow;">○</span> Jetport	<span style="color: purple;">○</span> PWD
<span style="color: green;">○</span> MDOT	<span style="color: purple;">—</span> Storm Drain Pipe
	<span style="color: purple;">—</span> Culverts
	<span style="border: 1px solid black;"> </span> Portland Boundary
	<span style="border: 1px dashed black;"> </span> Town Boundaries





Project #: 0232276.04  
Map Created: March 2021

Figure Exported: 3/11/2021. By: stewartain. Using: woodardcurran.net\shared\Projects\0232276.04\_Portland\_ME\_-\_SWMP\_Services\wp\GIS\SWMP\Figures\SWMP\Figures.aprx. Layout: MS4\_System\_Overview

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

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## APPENDIX B: NON-STORMWATER DISCHARGE ORDINANCE

## CHAPTER 32 STORM WATER

**Art. I. Prohibited Discharges, §§ 32-1--32-15**

**Art. II. Prohibited Discharges, §§ 32-16--32-35**

**Art. III. Post-Construction Stormwater Management, §§32-36--32-40**

### ARTICLE I. IN GENERAL

#### Sec. 32-1. Definitions.

For the purposes of this article, the terms listed below are defined as follows:

*Applicant.* "Applicant" means a person with requisite right, title or interest or an agent for such person who has filed an application for a development project that requires a post-construction stormwater management plan under this article.

*Best management practices ("BMP").* "Best management practices" or "BMPs" means schedules or activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

*Clean Water Act.* "Clean Water Act" means the federal Water Pollution Control Act (33 U.S.C. § 1251 *et seq.*, also known as the "Clean Water Act"), and any subsequent amendments thereto.

*Discharge.* "Discharge" means any spilling, leaking, pumping, pouring, emptying, dumping, disposing or other addition of pollutants to "waters of the state." "Direct discharge" or "point source" means any discernable, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation or vessel or other floating craft, from which pollutants are or may be discharged.

*Enforcement authority.* "Enforcement authority" means the person(s) or department authorized under section 32-3 of this article to administer and enforce this article.

*Exempt person or discharge.* "Exempt person or discharge" means any person who is subject to a multi-sector general permit for industrial activities, a general permit for construction activity, a general permit for the discharge of storm water from the Maine

department of transportation and the Maine turnpike authority municipal separate storm sewer systems, or a general permit for the discharge of storm water from state or federally owned authority municipal separate storm sewer system facilities; and any non-storm water discharge permitted under a NPDES permit, waiver, or waste discharge license or order issued to the discharger and administered under the authority of the U.S. environmental protection agency ("EPA") or the Maine department of environmental protection ("DEP").City of Portland

*Municipality.* "Municipality" means the city of Portland.

*Municipal separate storm sewer system, or MS4.* "Municipal separate storm sewer system" or "MS4," means conveyances for storm water, including, but not limited to, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels or storm drains (other than publicly owned treatment works and combined sewers) owned or operated by any municipality, sewer or sewage district, fire district, state agency or federal agency or other public entity that discharges directly to surface waters of the state.

*National pollutant discharge elimination system (NPDES) storm water discharge permit.* "National pollutant discharge elimination system (NPDES) storm water discharge permit" means a permit issued by the EPA or by the DEP that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

*Non-storm water discharge.* "Non-storm water discharge" means any discharge to an MS4 that is not composed entirely of storm water.

*Person.* "Person" means any individual, firm, corporation, municipality, quasi-municipal corporation, state agency or federal agency or other legal entity which creates, initiates, originates or maintains a discharge of storm water or a non-storm water discharge.

*Pollutant.* "Pollutant" means dredged spoil, solid waste, junk, incinerator residue, sewage, refuse, effluent, garbage, sewage sludge, munitions, chemicals, biological or radiological materials, oil, petroleum products or by-products, heat, wrecked or discarded equipment, rock, sand, dirt and industrial, municipal, domestic, commercial or agricultural wastes of any kind.

*Post-construction stormwater management plan.* "Post-construction stormwater management plan" means BMPs employed by a development project to meet the stormwater standards of Section V of the department of planning and urban development's Technical and

*Premises.* "Premises" means any building, lot, parcel of land, or portion of land, whether improved or unimproved, including adjacent sidewalks and parking strips, located within the municipality from which discharges into the storm drainage system are or may be created, initiated, originated or maintained.

*Qualified post-construction stormwater inspector.* "Qualified post-construction stormwater inspector" means a person who conducts post-construction stormwater best management practice inspections for compensation and who has received the appropriate training for the same from DEP or otherwise meets DEP requirements to perform said inspections.

*Regulated small MS4.* "Regulated small MS4" means any small MS4 regulated by the State of Maine "general permit for the discharge of storm water from small municipal separate storm sewer systems" dated July 1, 2008 ("general permit") or the general permits for the discharge of storm water from the Maine department of transportation and Maine turnpike authority small MS4s or state or federally owned or operated small MS4s, including all those located partially or entirely within an urbanized area (UA).

*Small municipal separate storm sewer system, or small MS4.* "Small municipal separate storm sewer system", or "small MS4," means any MS4 that is not already covered by the phase I MS4 storm water program including municipally owned or operated storm sewer systems, state or federally-owned systems, such as colleges, universities, prisons, Maine department of transportation and Maine turnpike authority road systems and facilities, and military bases and facilities.

*Storm drainage system.* "Storm drainage system" means the City of Portland's regulated small MS4 and other conveyances for storm water located in areas outside the UA that drain into the regulated small MS4.

*Storm water.* "Storm water" means any storm water runoff, snowmelt runoff, and surface runoff and drainage; "Stormwater" has the same meaning as "storm water".

*Urbanized area ("UA").* "Urbanized area" or "UA" means the areas of the State of Maine so defined by the latest decennial (2000) census by the U.S. Bureau of Census.  
(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

**Sec. 32-2.       Reserved.**  
**Sec. 32-3.       Reserved.**

<b>Sec. 32-4.</b>	<b>Reserved.</b>
<b>Sec. 32-5.</b>	<b>Reserved.</b>
<b>Sec. 32-6.</b>	<b>Reserved.</b>
<b>Sec. 32-7.</b>	<b>Reserved.</b>
<b>Sec. 32-8.</b>	<b>Reserved.</b>
<b>Sec. 32-9.</b>	<b>Reserved.</b>
<b>Sec. 32-10.</b>	<b>Reserved.</b>
<b>Sec. 32-11.</b>	<b>Reserved.</b>
<b>Sec. 32-12.</b>	<b>Reserved.</b>
<b>Sec. 32-13.</b>	<b>Reserved.</b>
<b>Sec. 32-14.</b>	<b>Reserved.</b>
<b>Sec. 32-15.</b>	<b>Reserved.</b>

## **ARTICLE II. PROHIBITED DISCHARGES**

### **Sec. 32-16. Applicability.**

This Article shall apply to all persons discharging storm water and/or non-storm water discharges from any premises into the storm drainage system.

(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

### **Sec. 32-17. Responsibility for administration.**

The department of public works is the enforcement authority who shall administer, implement, and enforce the provisions of this article.

(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10; 8-17-09; Ord. 108-15/16, 11/16/2015)

### **Sec. 32-18. Prohibition of non-storm water discharges.**

(a) *General prohibition.* Except as allowed or exempted herein, no person shall create, initiate, originate or maintain a non-storm water discharge to the storm drainage system. Such non-storm water discharges are prohibited notwithstanding the fact that the city may have approved the connections, drains or conveyances by which a person discharges un-allowed non-storm water discharges to the storm drainage system.

(b) *Allowed non-storm water discharges.* The creation, initiation, origination and maintenance of the following non-storm water discharges to the storm drainage system is allowed:

- (1) Landscape irrigation; diverted stream flows; rising ground waters; 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 fire fighting activity runoff; water line flushing and discharges from potable water sources; individual residential car washing; and de-chlorinated swimming pool discharges.

- (2) Discharges specified in writing by the enforcement authority as being necessary to protect public health and safety.
- (3) Dye testing, with verbal notification to the enforcement authority prior to the time of the test.

(c) *Exempt person or discharge.* This article shall not apply to an exempt person or discharge, except that the enforcement authority may request from exempt persons and persons with exempt discharges copies of permits, notices of intent, licenses and orders from the EPA or DEP that authorize the discharge(s).

(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

#### **Sec. 32-19. Suspension of access to the city's small MS4.**

The enforcement authority may, without prior notice, physically suspend discharge access to the storm drainage system to a person when such suspension is necessary to stop an actual or threatened non-storm water discharge to the storm drainage system which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the storm drainage system, or which may cause the city to violate the terms of its environmental permits. Such suspension may include, but is not limited to, blocking pipes, constructing dams or taking other measures, on public ways or public property, to physically block the discharge to prevent or minimize a non-storm water discharge to the storm drainage system. If a person fails to comply with a suspension order issued in an emergency, the enforcement authority may take such steps as deemed necessary to prevent or minimize damage to the storm drainage system, or to minimize danger to persons.

(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

#### **Sec. 32-20. Monitoring of discharges.**

In order to determine compliance with this article, the enforcement authority may enter upon and inspect premises subject to this article at reasonable hours to inspect the premises and connections thereon to the storm drainage system; and to conduct monitoring, sampling and testing of the discharge to the storm

drainage system.

(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

### **Sec. 32-21. Enforcement.**

It shall be unlawful for any person to violate any provision of or to fail to comply with any of the requirements of this article. Whenever the enforcement authority believes that a person has violated this article, the enforcement authority may enforce this article in accordance with 30-A M.R.S.A. § 4452.

- (a) *Notice of violation.* Whenever the enforcement authority believes that a person has violated this article, the enforcement authority may order compliance with this article by written notice of violation to that person indicating the nature of the violation and ordering the action necessary to correct it, including, without limitation:
- (1) The elimination of non-storm water discharges to the storm drainage system, including, but not limited to, disconnection of the premises from the MS4.
  - (2) The cessation of discharges, practices, or operations in violation of this article.
  - (3) At the Person's expense, the abatement or remediation (in accordance with best management practices in DEP rules and regulations) of non-storm water discharges to the storm drainage system and the restoration of any affected property; and/or
  - (4) The payment of fines, of the city's remediation costs and of the city's reasonable administrative costs and attorneys' fees and costs. If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such abatement or restoration must be completed.
- (b) *Penalties/fines/injunctive relief.* In addition to the imposition of any other costs or penalties provided for herein, any person who violates this section shall be subject to fines, penalties and orders for injunctive relief and shall be responsible for the city's attorney's fees and costs, all in accordance with 30-A M.R.S.A. § 4452. Each day such violation continues shall constitute a separate violation. Moreover, any person who violates this section also shall be responsible for any and all fines,

penalties, damages and costs, including, but not limited to attorneys' fees and costs, incurred by the city for violation of federal and State environmental laws and regulations caused by or related to that person's violation of this article; this responsibility shall be in addition to any penalties, fines or injunctive relief imposed under this section.

- (c) *Consent agreement.* The enforcement authority may, with the approval of the city manager, enter into a written consent agreement with the violator to address timely abatement of the violation(s) of this article for the purposes of eliminating violations of this article and of recovering fines, costs and fees without court action.
- (d) *Appeal of notice of violation.* Any person receiving a notice of violation or suspension notice may appeal the determination of the enforcement authority to the city manager or his or her designee. The notice of appeal must be received within 30 days from the date of receipt of the notice of violation. The city manager shall hold a hearing on the appeal within 30 days from the date of receipt of the notice of appeal, except that such hearing may be delayed by agreement of the city manager and the appellant. The city manager may affirm, reverse or modify the decision of the enforcement authority. A suspension under Section 32-5 of this article remains in place unless or until lifted by the city manager or by a reviewing court. A party aggrieved by the decision of the city manager may appeal that decision to the Maine superior court within 45 days of the date of the city manager's decision pursuant to Rule 80B of the Maine Rules of Civil Procedure.
- (e) *Enforcement measures.* If the violation has not been corrected pursuant to the requirements set forth in the notice of violation, or, in the event of an appeal to the city manager, within 45 days of a decision of the city manager affirming the enforcement authority's decision, then the enforcement authority may recommend that the corporation counsel's office file an enforcement action in a Maine court of competent jurisdiction under Rule 80K of the Maine Rules of Civil Procedure.
- (f) *Ultimate responsibility of discharger.* The standards set forth herein are minimum standards; therefore this article does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution, nor unauthorized discharge of pollutants into

waters of the U.S. caused by said person. This article shall not create liability on the part of the city, or any officer agent or employee thereof for any damages that result from any person's reliance on this article or any administrative decision lawfully made hereunder.

(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

**Sec. 32-22. Severability.**

The provisions of this article are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this article or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions, clauses, sentences, or paragraphs or application of this article.

(Ord. No. 85-08/09, 10-20-08; Ord. No. 35-09/10, 8-17-09)

- Sec. 32-23. Reserved.**
- Sec. 32-24. Reserved.**
- Sec. 32-25. Reserved.**
- Sec. 32-26. Reserved.**
- Sec. 32-27. Reserved.**
- Sec. 32-28. Reserved.**
- Sec. 32-29. Reserved.**
- Sec. 32-30. Reserved.**
- Sec. 32-31. Reserved.**
- Sec. 32-32. Reserved.**
- Sec. 32-33. Reserved.**
- Sec. 32-34. Reserved.**
- Sec. 32-35. Reserved.**

**ARTICLE III. POST-CONSTRUCTION STORMWATER MANAGEMENT.**

**Sec. 32-36. Applicability.**

This article applies to all development projects that require a stormwater management plan pursuant to section V of the department of planning and urban development's Technical and Design Standards and Guidelines.

(Ord. No. 35-09/10, 8-17-09)

**Sec. 32-37. Post-construction stormwater management plan approval.**

Notwithstanding any ordinance provision to the contrary, no applicant for a development project to which this article is applicable shall receive approval for that development project unless the applicant also receives approval for its post-construction stormwater management plan and for the best management

practices ("BMPs") for that development project.  
(Ord. No. 35-09/10, 9-17-09)

**Sec. 32-38. Post-construction stormwater management plan compliance.**

Any person owning, operating, or otherwise having control over a BMP required by a post construction stormwater management plan shall maintain the BMPs in accordance with the approved plan and shall demonstrate compliance with that plan as follows:

- (a) *Inspections.* The owner or operator of a BMP shall hire a qualified post-construction stormwater inspector to at least annually, inspect the BMPs, including but not limited to any parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.
- (b) *Maintenance and repair.* If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action(s) to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective action(s) to the department of public works ("DPW") in the annual report.
- (c) *Annual report.* The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification to DPW in a form provided by DPW, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective action(s) taken.
- (d) *Filing fee.* Any persons required to file an annual certification under this section shall include with the annual certification a filing fee established by DPW to pay the administrative and technical costs of review of the annual certification.
- (e) *Right of entry.* In order to determine compliance with this article and with the post-construction stormwater

management plan, DPW may enter upon property at reasonable hours with the consent of the owner, occupant or agent to inspect the BMPs.

(Ord. No. 35-09/10, 8-17-09; Ord. 108-15/16, 11-16-2015)

**Sec. 32-39. Enforcement.**

It shall be unlawful for any person to violate any provision of or to fail to comply with any of the requirements of this article or of the post-construction stormwater management plan. Whenever the enforcement authority believes that a person has violated this article, DPW may enforce this article in accordance with 30-A M.R.S.A. § 4452. Each day on which a violation exists shall constitute a separate violation for purposes of this section.

- (a) *Notice of violation.* Whenever DPW believes that a person has violated this article or the post-construction stormwater management plan, DPW may order compliance by written notice of violation to that person indicating the nature of the violation and ordering the action necessary to correct it, including, without limitation:
- (1) The abatement of violations, and the cessation of practices or operations in violation of this article or of the post-construction stormwater management plan;
  - (2) At the person's expense, compliance with BMPs required as a condition of approval of the development project, the repair of BMPs and/or the restoration of any affected property; and/or
  - (3) The payment of fines, of the City's remediation costs and of the City's reasonable administrative costs and attorneys' fees and costs.
  - (4) If abatement of a violation, compliance with BMPs, repair of BMPs and/or restoration of affected property is required, the notice shall set forth a deadline within which such abatement, compliance, repair and/or restoration must be completed.
- (b) *Penalties/fines/injunctive relief.* In addition to the imposition of any other costs or penalties provided for herein, any person who violates this section shall be subject to fines, penalties and orders for injunctive relief and shall be responsible for the city's attorney's fees and costs, all in accordance with 30-A M.R.S.A. § 4452. Each day such violation continues shall constitute a

separate violation. Moreover, any person who violates this section also shall be responsible for any and all fines, penalties, damages and costs, including, but not limited to attorneys' fees and costs, incurred by the city for violation of federal and state environmental laws and regulations caused by or related to that person's violation of this article; this responsibility shall be in addition to any penalties, fines or injunctive relief imposed under this section.

- (c) *Consent agreement.* The enforcement authority may, without approval of the city manager, enter into a written consent agreement with the violator to address timely abatement of the violation(s) of this article for the purposes of eliminating violations of this article and of recovering fines, costs and fees without court action.
- (d) *Appeal of notice of violation.* Any person receiving a notice of violation or suspension notice may appeal the determination of the enforcement authority to the city manager or his or her designee. The notice of appeal must be received within 30 days from the date of receipt of the notice of violation. The city manager shall hold a hearing on the appeal within 30 days from the date of receipt of the notice of appeal, except that such hearing may be delayed by agreement of the city manager and the appellant. The city manager may affirm, reverse or modify the decision of the DPW. A party aggrieved by the decision of the city manager may appeal that decision to the Maine superior court within forty-five (45) days of the date of the city manager's decision pursuant to Rule 80B of the Maine Rules of Civil Procedure.
- (e) *Enforcement measures.* If the violation has not been corrected pursuant to the requirements set forth in the notice of violation, or , in the event of an appeal to the city manager, within forty-five (45) days of a decision of the city manager affirming the enforcement authority's decision, then the enforcement authority may recommend that the corporation counsel's office file an enforcement action in a Maine court of competent jurisdiction under Rule 80K of the Maine Rules of Civil Procedure.

(Ord. No. 35-09/10, 8-17-09; Ord. 108-15/16, 11-16-2015)

#### **Sec. 32-40. Severability.**

The provisions of this article are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this article or the application thereof to any person, establishment, or

circumstances shall be held invalid, such invalidity shall not affect the other provisions, clauses, sentences, or paragraphs or application of this article.  
(Ord. No. 35-09/10, 8-17-09)



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**APPENDIX C: APPLICABLE SECTIONS FROM GENERAL PERMIT  
FOR THE DISCHARGE OF STORMWATER FROM  
SMALL MUNICIPAL SEPARATE STORM SEWER  
SYSTEMS**

**State of Maine  
Department of Environmental Protection  
Bureau of Water Quality**

**General Permit for the Discharge of Stormwater from Small  
Municipal Separate Storm Sewer Systems (MS4)**



**MER041000**

**Final Permit**

**October 15, 2020**

# General Permit--Municipal Separate Storm Sewer Systems

Maine Pollutant Discharge Elimination System (MEPDES)/Maine Waste Discharge License (WDL)

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Final Permit  
General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems



STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
17 STATE HOUSE STATION  
AUGUSTA, ME 04333

**DEPARTMENT ORDER**

**IN THE MATTER OF**

MUNICIPAL SEPARATE STORM SEWER SYSTEM	)	MAINE POLLUTANT DISCHARGE
GENERAL PERMIT	)	ELIMINATION SYSTEM PERMIT
STATE OF MAINE	)	
MER041000	)	MAINE WASTE DISCHARGE LICENSE
W009170-5Y-C-R	)	<b>RENEWAL</b>
	<b>APPROVAL</b>	

Pursuant to the provisions of Federal law Title 33 USC, §1251, and Maine Law 38 M.R.S., Section 414-A et seq., and applicable regulations, the Maine Department of Environmental Protection (Department/DEP) has considered an application by the State of Maine to renew Maine Pollutant Discharge Elimination System (MEPDES) permit #MER041000/Maine Waste Discharge License W009170-5Y-A-N General Permit (GP), with its supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

**APPLICATION SUMMARY**

Pursuant to applicable laws and rules of the State's MEPDES program, the Department's Bureau of Water Quality, Division of Water Quality Management has developed a GP for discharges of stormwater from Small Municipal Separate Storm Sewer Systems (MS4s) to surface waters of the state. This GP is being issued as a combination MEPDES permit/WDL and has been assigned #MER041000. This GP is a two-step general permit pursuant to 40 Code of Federal Regulation (CFR) §122.28(d)(2). The Department will establish a list of required actions and corresponding schedules of compliance for each small MS4 permittee in a separate Department Order based on a Department review of the permittee's Notice of Intent (NOI) and Storm Water Management Plan (SWMP).

**REGULATORY SUMMARY**

On January 12, 2001, the Department received authorization from the U.S. Environmental Protection Agency (EPA) to administer the National Pollutant Discharge Elimination System (NPDES) permit program in Maine. From that point forward, the program has been referred to as the MEPDES permit program. The terms and conditions of this GP are consistent with the requirements established in the MEPDES permit program.

## Final Permit

### General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

#### CONCLUSIONS

Based on the findings in this GP, and subject to the terms and conditions listed in Parts I-IV of this GP and a list of required actions and corresponding schedules of compliance for each permit specific Department Order, the Department makes the following conclusions:

1. The discharge(s) covered under this GP, either by itself or in combination with other discharges, will not lower the quality of any classified body of water below such classification.
2. The discharge(s) covered under this GP, either by itself or in combination with other discharges, will not lower the quality of any unclassified body of water below the classification which the Department expects to adopt in accordance with state law.
3. The provisions of the State's antidegradation policy, Maine law, 38 M.R.S. § 464(4)(F), will be met, in that:
  - (a) Existing in-stream water uses and the level of water quality necessary to protect and maintain those existing uses will be maintained and protected;
  - (b) Where high quality waters of the State constitute an outstanding natural resource, that water quality will be maintained and protected;
  - (c) Where the standards of classification of the receiving water body are not met, the discharge will not cause or contribute to the failure of the water body to meet the standards of classification;
  - (d) Where the actual quality of any classified receiving water body exceeds the minimum standards of the next highest classification that higher water quality will be maintained and protected; and
  - (e) Where a discharge will result in lowering the existing water quality of any water body, the Department has made the finding, following opportunity for public participation, that this action is necessary to achieve important economic or social benefits to the State.
4. The discharge(s) covered under this GP will be subject to effluent limitations that require application of best practicable treatment as defined in 38 M.R.S. § 414-A(1)(D).

Final Permit

General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems


**ACTION**

Based on the findings and conclusions as stated above, the Department APPROVES GP #MER041000, *General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems*, which results in a discharge of stormwater to surface waters of the state, SUBJECT TO THE ATTACHED CONDITIONS, including:

1. The attached conditions included as Part I-IV of this GP.
2. *Maine Pollutant Discharge Elimination System Permit Standard Conditions Applicable To All Permits*, revised July 1, 2002, attached.
3. This GP becomes effective on July 1, 2022 and expires at midnight five (5) years after that date. If the GP is to be renewed, it will remain in force until the Department takes final action on the renewal. Persons wishing to obtain coverage under this GP must apply for coverage by way of the submission of a Notice of Intent (NOI) not later than March 31, 2021.

DONE AND DATED AT AUGUSTA, MAINE, THIS 15 DAY OF October, 2020.

COMMISSIONER OF ENVIRONMENTAL PROTECTION

BY:   
\_\_\_\_\_   
for Melanie Loyzim, Acting Commissioner

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of Public Notice December 9, 2019

**Date filed with Board of Environmental Protection October 15, 2020**

This Order prepared by GREGG WOOD, BUREAU OF WATER QUALITY

MS4 Final Permit 2020                      10/14/2020

**Part IV. Requirements (cont'd)**

**C. Minimum Control Measures (MCMs).** For each MCM, the permittee must define specific BMPs; designate a person(s) or position(s) responsible for each BMP; define a time line for implementation of each BMP; and define measurable goals for each BMP. The MCMs to be included in the SWMP are as follows.

**1. MCM1 – Education/Outreach Program (Program)**

The permittee must at a minimum develop and implement an ongoing Education/Outreach Program addressing stormwater discharges and impacts on water bodies and steps that can be taken to reduce pollutants in stormwater runoff. The program must be designed to address stormwater issues of significance. The ultimate objective of the program is to change behavior of the target audiences so that pollutants in stormwater are reduced.

- a. The permittee must develop an outreach program as part of its SWMP and implement it over the term of the permit.
- b. The education/outreach program must define the target audiences, specific messages, message delivery/distribution tools, evaluation methods and an implementation schedule for each target audience.
- c. The permittee may partner with other MS4s, community groups, or watershed associations to implement the education/outreach program to meet this GP requirement.
- d. The education/outreach program must define the awareness and behavior change goals and identify the party or parties responsible for program implementation.
- e. The permittee may use existing materials if they are appropriate for the target audience and message the permittee chooses to deliver, or the permittee may develop its own outreach materials.
- f. The permittee must identify methods it will use to evaluate the effectiveness of each awareness and behavior change campaign. Any message or delivery mechanism found ineffective or of unsatisfactory efficacy, must be modified accordingly.
- g. The education/outreach program must include the following as a minimum:
  1. An Outreach to Raise Awareness Campaign of storm water pollution issues targeted at the general public and one additional audience: municipal; commercial; development/construction; or institutions. Outreach to raise awareness is defined as a means to introduce information that may be new to or not well understood by the target audience. Campaigns to raise awareness are typically delivered broadly.

**Part IV. Requirements (cont'd)**

The permittee will implement a minimum of two (2) awareness campaigns during the term of this permit. One campaign shall be targeted to the general public and another campaign shall be targeted to one of the audiences cited above. Each campaign will be delivered using a minimum of three (3) outreach tools per year. These outreach tools may include: printed materials such as brochures, posters or newsletters; electronic materials such as websites, e-mail, or online ads; mass media such as newspaper articles or public service announcements (radio or television); social media such as Facebook or Twitter, public events or meetings or displays in public areas such as town/city hall.

2. An Outreach to Change Behavior Campaign so that pollutants in storm water are reduced. Outreach to Change Behavior means to promote and reinforce desirable behaviors designed to reduce storm water pollution. Campaigns to change behavior are typically delivered to small, targeted segments of the population through direct communication.

The permittee must promote a minimum of one (1) behavior change per permit term and shall be directed to two (2) audiences annually and using a minimum of three (3) different outreach tools per year. Campaigns for behavior change may be delivered through targeted workshops, incentives that encourage desired behavior, pledge drives to commit to desired behaviors, or other methods that effect behavior change. Printed materials such as brochures, posters or newsletters; electronic materials such as websites; mass media such as newspaper articles or public service announcements (radio or television); social media such as Facebook or Twitter, or displays in public areas such as town/city hall may also be used to promote the desired behavior.

- h. The program must show evidence of focused campaigns for specific audiences such that outreach tools and messages are appropriate for the audiences. The program must also show evidence that progress toward the defined awareness and behavior goals of the program has been achieved. The permittee must identify methods that it will use to evaluate the effectiveness of each outreach campaign (awareness two (2) campaigns and behavior change one (1) campaign). If appropriate, evaluation efforts may evaluate more than one campaign. For example, the same evaluation effort may document both the level of the general public's stormwater awareness and the targeted audience's current behavior.

Any methods used to evaluate the effectiveness of the program must be tied to the defined goals of the program and the overall objective of changes in behavior and awareness. To evaluate effectiveness the permittee must conduct a baseline evaluation prior to each campaign. The baseline evaluation must be relevant and appropriate and may have occurred in the previous permit cycle or in the current permit cycle. The baseline evaluation is to be followed by an evaluation in year five of this permit to assess the overall effectiveness of the outreach program.



**Part IV. Requirements (cont'd)**

- i. The permittee must document in each Annual Compliance Report: the messages for each audience; the methods of distribution; the outreach tools used, the measures/methods used to determine the on-going effectiveness of the campaigns, and any changes planned based on the measures of effectiveness.

**2. MCM2 - Public involvement and participation**

The objective of this minimum control measure is to involve the public in both the planning and implementation process of improving water quality and reducing storm water quantity via the storm water program. A program planned with a stakeholder group is more likely to be successful in achieving its goals. The public can provide valuable input and assistance to a MS4's municipal storm water management program. Therefore, the public must be given opportunities to play an active role in both the development and implementation of the program. An active and involved community is crucial to the success of a municipal storm water management program because it allows for broader public support, additional expertise and a conduit to other programs. Community members are also more likely to apply these lessons/BMPs at home.

- a. The permittee must comply with applicable state and local public notice requirements using effective mechanisms for reaching the public and comply with the public notice requirements of the Maine Freedom of Access Act, 1 M.R.S. §§ 401 et seq. ("FOAA") when the permittee involves stakeholders in the implementation of this GP. The permittee must document the meetings and attendance in the annual report as a way of measuring this goal.
- b. The permittee or regional storm water group of which the permittee is a member must annually host/conduct or participate in a public event (for example, storm drain stenciling, stream clean-up, household hazardous waste collection day, volunteer monitoring, neighborhood educational events, conservation commission outreach program, Urban Impaired Stream outreach program, or adopt a storm drain or local stream program). The event must include a pollution prevention and/or water quality theme. The target audience does not need to be the entire urbanized area but should be aimed at a segment of the population that the permittee wishes to reach. The permittee is encouraged to plan this event and consult with the Department to ensure it will satisfy this GP's requirements.

**Part IV. Requirements (cont'd)****3. MCM3 - Illicit Discharge Detection and Elimination (IDDE) Program**

Each permittee must implement and enforce a program to detect and eliminate illicit discharges and non-stormwater discharges, as defined in 06-096 CMR 521(9)(b)(2), except as provided in paragraph h of this section. The program must address illicit discharges in the following four components: 1) Procedures for prioritizing watersheds, 2) procedures for tracing the source of an illicit discharge, 3) procedures for removing the source of the discharges, and 4) procedures for program evaluation and assessment. The period between identification and elimination of an illicit discharge is not a grace period. Discharges from an MS4 that are mixed with an illicit discharge are not authorized by this GP and remain unlawful until eliminated.

- a. The permittee must continue to implement a non-stormwater discharge ordinance that prohibits the discharge of non-stormwater discharges and provides for the implementation of appropriate enforcement procedures and actions.
- b. The IDDE program must include a written IDDE Plan to address any discharge that is not uncontaminated groundwater, water from a natural resource or an allowable non-stormwater discharge. The plan must address dumping that results in illicit discharges to the MS4. The IDDE plan must set forth all written procedures developed in accordance with the requirements listed in this section including:
  - i. A reference or citation of the authority the permittee will use to implement all aspects of the IDDE program.
  - ii. Clearly identify in the written IDDE Plan the responsibilities with regard to eliminating illicit discharges. The written IDDE Plan must identify the lead municipal agency(ies) or department(s) responsible for implementing the IDDE Program as well as any other agencies or departments that may have responsibilities for aspects of the program (e.g., board of health responsibilities for overseeing septic system construction; sanitary sewer system staff; inspectional services for enforcing plumbing codes; town counsel responsibilities in enforcement actions, etc.). Where multiple departments and agencies have responsibilities with respect to the IDDE program, specific areas of responsibility must be defined and processes for coordination and data must be established and documented.
  - iii. Written procedures for dry weather outfall inspections and wet weather assessments which must be consistent with Part IV(3)(e) and Part IV(3)(f) respectively, of this GP.

**Part IV. Requirements (cont'd)**

- iv. Steps that must be taken when a potential illicit discharge is identified (whether during dry weather inspections, during routine work, during opportunistic inspection of other infrastructure or through other methods) to perform an initial investigation to identify the source(s) of discharge, including but not limited to: efforts to identify the nature of the discharge; source investigation; reporting; clean up; corrective actions/elimination; and enforcement.
- v. Steps that must be taken, upon verification of the source of the illicit discharge, to notify all responsible parties for any such discharge and require immediate cessation of improper disposal practices in accordance with its legal authorities. Where elimination of an illicit discharge within 60 calendar days of its identification and verification as an illicit discharge is not possible, the permittee must establish an expeditious schedule for its elimination and report the dates of identification and schedules for removal in the permittee's annual reports. The permittee must immediately commence and continue actions identified in the schedule as necessary for elimination. The permittee must diligently pursue actions identified in the schedule to be consistent with the intent of this GP. In the interim, the permittee must take all reasonable and prudent measures to minimize the discharge of pollutants to and from the MS4, including follow-up screening and inspection to confirm permanent elimination of the discharge.
- vi. A Quality Assurance Project Plan (QAPP) describing the procedures to be used during the investigation and monitoring of those outfalls identified as flowing during outfall inspections.
- c. Permittees that can demonstrate compliance with an individual Maine Pollutant Discharge Elimination System (MEPDES) permit and or Maine Waste Discharge License (WDL) conditions within their Urbanized Areas and which result in Sanitary Sewer Evaluation Surveys (SSES) and/or written Capacity, Management, Operations and Maintenance (CMOM) plans may utilize these programs to support the IDDE requirements of this GP at the discretion of the Department, provided the sanitary sewer conveyance and/or treatment provider supports this finding.
- d. Permittees must maintain a map(s) of their municipally-owned or operated storm sewer system. The map(s) must show the location of all stormwater catch basins, connecting surface and subsurface infrastructure and depict the direction of in-flow and out-flow pipes, and the locations of all discharges from all stormwater outfalls operated by the regulated small MS4 to receiving waters or to an interconnected MS4 and the name of the receiving water for each outfall. Each catch basin must be uniquely identified to facilitate control of potential illicit discharges, and proper operation and maintenance of these structures.

Permittees must continue to keep their map(s) current and ensure that maps are reviewed for any updates at least annually. Permittees may choose to utilize paper or electronic maps for their storm sewer system. The permittee is not required to maintain maps of their sanitary sewer system for compliance with this GP.

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### General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

#### Part IV. Requirements (cont'd)

- e. Permittees must implement a dry weather outfall inspection program. This inspection program-must include:
  - i. For each outfall, the following information must be included: type (e.g. pipe or ditch), material, size of conveyance, the name and location of the nearest named waterbody to which the outfall eventually discharges. Each outfall must have a unique identifier.
  - ii Conducting visual dry weather inspections on 100% of their identified outfalls during the five-year term of this GP.
  - iii. Outfalls that are inaccessible due to safety concerns are not required to be inspected but a substitute inspection must be conducted of the first (i.e., closest) accessible inspection location within the stormwater system (e.g., catch basin, manhole, pipe, etc.) that drains to the inaccessible outfall.
  - iv. Where dry weather flow is present the permittee must sample the discharge to determine if the discharge is an illicit discharge and then must investigate until either a source is identified, or it has been determined that the evidence of the illicit discharge is due to naturally occurring source(s).
    1. Sampling and analysis must include, but is not limited to:
      - a. *E.coli*, enterococci, total fecal coliform or human bacteroides;
      - b. Ammonia, total residual chlorine, temperature and conductivity; and
      - c. Optical enhancers or surfactants.

All analyses can be performed with field test kits or field instrumentation and are not subject to 40 CFR Part 136 requirements given the sampling is for investigative purposes and not to determine compliance with this GP. Sampling for ammonia and surfactants must use sufficient sensitive methods to detect said parameters at or below the minimum reporting concentrations as follows: 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).

## Final Permit

### General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

#### **Part IV. Requirements (cont'd)**

- v. Where dry weather flow at an outfall does not exhibit evidence of an illicit discharge, the permittee must take steps to determine and confirm that flow during dry weather conditions is only uncontaminated groundwater, water from a natural resource, or an allowable non-stormwater discharge that has entered the system and collect at least one (1) sample per the 5-year permit term in accordance with the protocols set forth in the approved QAPP and analyzed for the parameters listed in Part IV(C)(3)(e)(iv)(1).
- vi. Outfalls that are flowing during dry weather are exempt from the dry weather investigation required in Part IV(C)(3)(e)(iv) under any of the following conditions:
  - 1. The outfall is associated with roadway drainage in undeveloped areas with no dwellings and no sanitary sewers,
  - 2. The outfall is associated with only subsurface drainage for any of the following: an athletic field, a park or undeveloped green space and associated parking without services,
  - 3. The outfall is from cross-country drainage that neither cross nor are in proximity to sanitary sewer alignments through undeveloped land,
  - 4. The contributing pipes to the outfall have been televised in a previous permit cycle and determined to be structurally sound with no illicit connections or connections from structures that could contribute an illicit discharge, and no new construction or redevelopment has occurred in the outfall drainage area since the screening, or
  - 5. The outfall was screened in accordance with Part IV(C)(3)(e)(iv) in a previous permit cycle and no new construction or redevelopment has occurred in the outfall drainage area since the screening.
- vii. The permittee may rely on screening conducted under previous permits to the extent it meets the requirements in Part IV(C)(3)(e)(iv) and no new construction or redevelopment has occurred in the outfall drainage area since the screening.
- viii. Steps that must be taken upon verification of the source of the illicit discharge to locate, identify and eliminate the illicit discharge within the UA as expeditiously as possible.

## Final Permit

### General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

#### Part IV. Requirements (cont'd)

- f. Prior to the expiration date of this GP, permittees must perform a wet weather assessment for the potential for illicit discharges during wet weather events. The assessment will vary by permittee and utilize data from existing studies, including (but is not limited to):
  - i. Areas within the MS4 that have combined sewer systems;
  - ii. Sanitary sewer systems located in a common trench with stormwater infrastructure, particularly those with known infiltration;
  - iii. Subsurface wastewater disposal systems that are 20 years old or more, or those in areas known to have experienced recent malfunctions or failures;
  - iv. Municipally-owned dog parks;
  - v. Complaints of sewage odor at a stormwater outfall during wet weather events;
  - vi. Direct discharge from the stormwater system to any of the following:
    - a. A public beach or recreational area;
    - b. A water body impaired for bacteria;
    - c. A shellfish bed; and/or
    - d. A drinking water supply.

The outcome of the assessment will be a list of outfalls identified for wet weather monitoring and testing if applicable, by the permittee in the next permit cycle and the rationale for including these outfalls.

On or before the expiration date of this GP, the permittee must identify these wet weather outfalls in its written IDDE plan and identify the wet weather outfalls targeted for wet weather monitoring based on the EPA New England bacterial source tracking protocol or other acceptable protocols or methodologies and specify the timing and frequency of wet weather monitoring to be completed during the term of the next permit cycle. Should the permittee complete the IDDE plan prior to the expiration date of the GP and permittee specific DEP Order, the permittee must implement the wet weather monitoring upon completion of the update IDDE plan update.

## Final Permit

### General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

#### Part IV. Requirements (cont'd)

- g. Permittees are not required to report individual Sanitary Sewer Overflows (SSOs) separately from the sanitary sewer conveyance and/or treatment provider, however, permittees are required to summarize the SSO events that discharge to the MS4 in their annual reports. Permittees must work cooperatively with that provider to identify any potential source of pollution to the MS4 from an SSO.
- h. Allowable Non-Stormwater Discharges. This GP authorizes the following non-stormwater discharges. If the permittee identifies any of these sources as significant contributors of pollutants to the MS4, then the permittee must implement measures and/or cooperate with responsible dischargers to control these sources so they are no longer significant contributors of pollutants. The permittee must identify in its SWMP if it has identified any of these sources as a significant contributor of pollutants to the MS4.
- 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
  - hydrant flushing and firefighting activity runoff
  - water line flushing and discharges from potable water sources
  - individual residential car washing
  - dechlorinated swimming pool discharges

**Part IV. Requirements (cont'd)****4. MCM4 – Construction Site Stormwater Runoff Control**

Each permittee must implement and enforce a program to minimize or eliminate pollutants in any stormwater runoff to the regulated small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of stormwater discharges from construction activity disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more.

- a. The permittee must develop and implement a construction site runoff program that includes the following elements:
  - i. An ordinance or other regulatory mechanism that requires the use of erosion and sediment control BMPs at construction sites consistent with the minimum standards outlined in Appendix C, *Erosion and Sedimentation Control, Inspections and Maintenance and Housekeeping* of this GP. Also see the Department's website for a guidance document entitled *Maine Erosion and Sediment Control Practices Field Guide For Contractors* to assist contractors and municipalities in developing BMPs for the ordinance or other regulatory mechanism. Permittees who have an existing ordinance must evaluate the ordinance and update it as needed within one (1) year of the effective date of this GP to provide the permittee with the necessary enforcement authority. Those permittees without an existing ordinance must develop an ordinance within one (1) year of the effective date of this GP and have an approved ordinance in place with the necessary enforcement authority within two (2) years of the effective date of this GP.
  - ii. Procedures for site plan review that incorporate consideration of potential water quality impacts, erosion control, waste storage, and other elements of this MCM, the ability for the public to comment on such reviews at publicly-noticed meetings, and procedures to consider information submitted by the public.
  - iii. Procedures for notifying construction site developers and operators of the requirements for registration under the Maine Construction General Permit and Chapter 500, Stormwater Management.
  - iv. Procedures for construction site operations 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.



**Part IV. Requirements (cont'd)**

- v. Documentation of construction activity that disturbs one or more acres within the urbanized area including:
  - a. Written (hardcopy or electronic) procedures for site inspections and enforcement of erosion and sediment control measures. Inspections are to be conducted by the permittee or third-party inspector. The procedures must clearly define who is responsible for site inspections as well as who has authority to implement enforcement procedures. The program must provide that the permittee may, to the extent authorized by law, impose sanctions to ensure compliance with the local program.
  - b. Inspections of construction sites to ensure erosion and sediment controls are in place and sediment is contained within the project site. Inspections must be completed as follows:
    - i. A minimum of three inspections must be completed during the active earth-moving phase of construction.
    - ii. A minimum of one inspection must be completed annually until a project reaches substantial completion, as defined by the MS4 permittee (i.e., municipality).
    - iii. One of the three inspections must be conducted at project completion to ensure that the site reached permanent stabilization and all temporary erosion and sediment controls have been removed.
    - iv. Documentation of construction inspections, enforcement action and corrective actions taken.

**5. MCM5 – Post-Construction Stormwater Management in New Development and Redevelopment.**

Each permittee must implement and enforce a program to address post construction 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 MS4.

- a. The permittee must promote strategies which include a combination of structural and/or non-structural BMPs appropriate to prevent or minimize water quality impacts.
  - i. The permittee must implement a procedure for notifying site developers to consider Low Impact Development techniques.

**Part IV. Requirements (cont'd)**

- b. To ensure adequate long-term operation and maintenance of post construction BMPs, each permittee must have and implement a post construction discharge ordinance, or other regulatory mechanism. This ordinance or other regulatory mechanism must contain provisions as follows:
  - i. Require that the owner or operator of a post construction BMP provide the permittee with an annual report, completed by a qualified inspector documenting that all on-site BMPs are adequately maintained and functioning as intended, and
  - ii. Require that if a post construction BMP requires maintenance, the owner or operator must provide to the permittee, a record of the deficiency and corrective action(s) taken in no later than 60 days following the date the deficiency was identified. If 60 days is not possible, then the permittee must establish an expeditious schedule to complete the maintenance and establish a record of the deficiency and corrective action(s) taken.

**6. MCM6 - Pollution Prevention/Good Housekeeping for Municipal Operations.**

The objective of this program is to mitigate or eliminate pollutant runoff from municipal operations on property that is owned or managed by the permittee and located within the UA.

- a. Permittees must maintain an inventory of all municipal operations conducted in, on, or associated with facilities, buildings, golf courses, cemeteries, parks and open space owned or operated by the permittee that have the potential to cause or contribute to stormwater or surface water pollution.
- b. Permittees must implement written (hardcopy or electronic) operation and maintenance (O&M) procedures for all municipal operations identified in (a) above to reduce stormwater pollution to the maximum extent practicable. The O&M plan must address stormwater treatment and controls that are used to achieve compliance with the conditions of this GP.
  - i. The O&M plan must be up-to-date prior to the effective date of this GP and must be reviewed annually to iteratively improve strategies and practices to eliminate or better control pollutant discharges.
  - ii. The permittee must conduct annual employee training to prevent and reduce stormwater pollution from the municipal operations and facilities subject to this GP. The permittee must report in each of its Annual Compliance Reports on the types of trainings presented, the percentage of municipal and contract staff, and their occupation, that received training, the length of the training, and training content delivered.

**Part IV. Requirements (cont'd)**

- iii. The permittees must develop and implement a program to sweep all paved streets and paved parking lots maintained by the permittee at least once a year done soon after snowmelt.
- iv. The permittee must develop and implement a program to inspect catch basins and other stormwater structures that accumulate sediment. This program must include:

Developing and implementing a program to inspect all catch basins at least once every other year and, if necessary, clean catch basins and other stormwater structures that accumulate sediment and dispose of the removed sediments in accordance with current state law. The permittee must clean catch basins more frequently if inspections indicate excessive accumulation of sediment. Excessive accumulation is greater than or equal to 50 percent of the sump filled. If two consecutive inspections show excess accumulation, then the permittee must clean those CBs every year instead of every other year. If it is documented during two consecutive years of cleaning of a CB identified as accumulating excess material that there is little to no material in the sump (less than 25% of the sump) then that CB can return to the list of CBs to be inspected at least once every other year and cleaned more often if two consecutive inspections show excess accumulation.

- c. Permittees must evaluate and implement a prioritized schedule, as necessary, for repairing or upgrading the conveyances, structures and outfalls of the regulated small MS4.
- d. Permittees must implement written (hardcopy or electronic) procedures outlined in a stormwater pollution prevention plan (“SWPPP”) for the following operations or facilities that are owned or operated by the permittee (unless the facility is currently regulated under Maine’s Industrial Stormwater Program): public works facilities; transfer stations; and school bus maintenance facilities. Implementation of this SWPPP must address long-term operation of structural and non-structural controls that reduce stormwater pollution to the maximum extent practicable.

**1. Control measures**

The permittee must select, design, install and implement control measures, adhering to good engineering practices and manufacturer’s specifications, to minimize pollutant discharges from all potential sources. The control measure(s) selected must be capable of meeting the non-numeric technology-based effluent limitations established in this section. Where more than one standard exists for a specific pollutant, compliance with this GP and the control measure design must be based on the most stringent standard. In selecting control measures, the permittee must consider:

**Part IV. Requirements (cont'd)**

- a. The quantity and nature of the pollutants and their potential to impact the water quality of the receiving waters;
- b. Preventing stormwater from coming into contact with polluting materials;
- c. Using control measures in combination;
- d. Assessing the type and quantity of pollutants, including their potential to impact receiving water quality;
- e. Minimizing impervious areas at the facility and infiltrating runoff onsite (including bioretention cells, green roofs, and pervious pavement, among other approaches) in accordance with State laws and regulations;
- f. Attenuating flow using open vegetated swales and natural depressions;
- g. Conserving and/or restoring riparian buffers; and
- h. Using treatment interceptors (*e.g.*, swirl separators and sand filters).

**2. Non-numeric effluent limitations**

The permittee must comply with the following non-numeric effluent limitations.

- a. Minimize exposure. The permittee must minimize the exposure of manufacturing, processing, and material storage areas (including, but not limited to, loading and unloading, storage, disposal, cleaning, maintenance, and fueling operations) to rain, snow, snowmelt, and runoff in order to minimize pollutant discharges. Unless impractical, the permittee must also:
  - i. Use grading, berming or curbing to prevent runoff of contaminated flows and divert run-on away from these areas;
  - ii. Locate materials, equipment, and activities so that potential leaks and spills are contained or able to be contained or diverted before discharge;
  - iii. Clean up spills and leaks promptly using dry methods (*e.g.*, absorbents) to prevent the discharge of pollutants;
  - iv. Properly dispose of materials used for spill or leak clean up to prevent used clean up materials from being a source of pollutants in stormwater;
  - v. Store leaky vehicles and equipment indoors or, if stored outdoors, use drip pans and absorbents;
  - vi. Use spill/overflow protection equipment;
  - vii. The washing of new or used vehicles or equipment is allowed with the following prohibitions and recommended best management practices:
    1. Engine, undercarriage and transmission washing is prohibited. Cleaning operations should minimize the detachment of paint residues, heavy metals or any other potentially hazardous materials from surfaces.

**Part IV. Requirements (cont'd)**

2. Vehicle and equipment washing should occur, where possible, on an impermeable surface (i.e., concrete, asphalt, plastic or other) and utilize an area that extends to a minimum of four (4) feet on all sides of the vehicle or equipment so that wash water and overspray falls initially on the impermeable surface. From the impermeable surface, wash water should then be directed to a vegetated area.
  3. Vehicles and equipment should not be washed near uncovered repair areas or chemical storage areas such that chemicals can be transported in wash water runoff. All wash water runoff should drain away from a shop repair or chemical storage area.
  4. Wash water from cleaning the interior of truck trailers and other large commodity carrying containers must be collected and discharged to a POTW or treated in a closed-loop, wash water recycling system.
  - viii. Drain fluids from equipment and vehicles that will be decommissioned, and, for any equipment and vehicles that will remain unused for extended periods of time, inspect at least quarterly for leaks.
  - ix. locate industrial materials and activities inside or protect them with storm resistant coverings where practical to do so.
- b. **Good housekeeping.** The permittee must keep clean all exposed areas that are potential sources of pollutants. The permittee must perform good housekeeping measures in order to minimize pollutant discharges, including but is not limited to, the following:
- i. Sweep or vacuum at regular intervals as a primary measure or, alternatively, wash down the area as a secondary measure and collect and/or treat, and properly dispose of the washdown water;
  - ii. Store materials in appropriate containers that are labeled to specify contents;
  - iii. Keep all dumpster lids closed when not in use or ensure that discharges have a control measure. For dumpsters, waste bins and roll-off containers that do not have lids and could leak, ensure that discharges have a control measure (*e.g.* sheet flow to an upland vegetated buffer). Dumpsters and roll-off containers should only be used to hold solid waste materials and never used to hold liquid wastes. This permit does not authorize any dry weather discharges from dumpsters or roll-off containers;
  - iv. Minimize the potential for waste, garbage and floatable debris to be discharged by keeping exposed areas free of such materials, or by intercepting them before they are discharged;
  - v. Site and operate snow storage and disposal areas to prevent the discharge of snow directly into surface waters and minimize discharges of pollutants from snow maintenance activities. Permittees shall minimize the use of sodium chloride or other salts when possible and evaluate opportunities for use of alternative products.

**Part IV. Requirements (cont'd)**

- c. **Maintenance.** The permittee must maintain all control measures that are used to achieve effective operating condition, as well as all industrial equipment and systems, in order to minimize pollutant discharges. This includes:
- i. Performing and documenting inspections and preventive maintenance of stormwater drainage, source controls, treatment systems, and equipment and systems that could fail and result in contamination of stormwater;
  - ii. Diligently maintaining non-structural control measures (*e.g.*, keep spill response supplies available, personnel appropriately trained);
  - iii. Cleaning catch basins when the depth of sediment or debris reaches 50% of the sump depth and keeping the sediment and debris surface at least six inches below the lowest outlet pipe or alternatively, establish a routine maintenance schedule such each catch basin is inspected at least once per year.
- d. **Spill prevention and response.** The permittee must minimize the potential for leaks, spills and other releases that may be exposed to stormwater and develop plans for effective response to such spills if or when they occur in order to minimize pollutant discharges. The permittee must conduct spill prevention and response measures including, but not limited to, the following:
- i. Plainly label containers 55 gallons or greater (*e.g.*, “Used Oil,” “Spent Solvents,” “Fertilizers and Pesticides”) that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;
  - ii. Implement procedures for material storage and handling, including the use of secondary containment and barriers between material storage and traffic areas, or a similarly effective means designed to prevent the discharge of pollutants from these areas;
  - iii. Develop training on spill response procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. As appropriate, execute such procedures as soon as possible;
  - iv. Keep adequate and accessible spill kits on-site, located near areas where spills may occur or where a rapid response can be made; and
  - v. Notify appropriate facility personnel when a leak, spill, or other release occurs.
- e. **Erosion and sediment controls.** The permittee must minimize erosion by stabilizing exposed soils at the facility in order to minimize pollutant discharges and by placing flow velocity dissipation devices in stormwater swales and ditches at discharge locations, as necessary, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points. The permittee must also use structural and non-structural control measures, as necessary, to minimize the discharge of sediment.

**Part IV. Requirements (cont'd)**

- f. **Management of runoff.** The permittee must divert, infiltrate, reuse, contain, or otherwise manage stormwater runoff to minimize pollutants in the discharges.
- g. **Salt storage piles or piles containing salt.** Unless otherwise authorized by variance pursuant to *Siting and Operation of Road Salt and Sand-Salt Storage Areas*, 06-096 Code of Maine Regulations (CMR) 574 (effective December 3, 2001), the permittee must enclose or cover storage piles of salt, or piles containing salt, used for deicing or other commercial or industrial purposes, including maintenance of paved surfaces, in order to minimize pollutant discharges. This includes preventing stormwater runoff from coming into contact with covered piles. The permittee must implement appropriate measures (*e.g.*, good housekeeping, diversions, containment) to minimize exposure resulting from adding to or removing materials from the pile.
- h. **Employee training.** Annually, the permittee must train all employees who work in areas where industrial materials or activities are exposed to stormwater, or who are responsible for implementing activities necessary to meet the conditions of this permit (*e.g.*, inspectors, maintenance personnel), including all members of the facility's stormwater pollution prevention team. The permittee must ensure the following personnel understand the requirements of this permit and their specific responsibilities with respect to those requirements:
  - i. Personnel who are responsible for the design, installation, maintenance, and/or repair of controls (including pollution prevention measures);
  - ii. Personnel responsible for the storage and handling of chemicals and materials that could become contaminants in stormwater discharges;
  - iii. Personnel who are responsible for conducting and documenting monitoring and inspections pursuant to this GP; and
  - iv. Personnel who are responsible for taking and documenting corrective actions pursuant to this GP.

Personnel must be trained in at least the following if related to the scope of their job duties (*e.g.*, only personnel responsible for conducting inspections need to understand how to conduct inspections):

- v. An overview of what is in the SWPPP;
- vi. Spill response procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases, good housekeeping, maintenance requirements, and material management practices;
- vii. The location of all controls on the site required by this GP, and how they are to be maintained;
- viii. The proper procedures to follow with respect to the GP's pollution prevention requirements; and
- ix. When and how to conduct inspections, record applicable findings, and take corrective actions.

**Part IV. Requirements (cont'd)**

- i. **Dust generation and vehicle tracking of industrial materials.** The permittee must utilize control measures to minimize generation of dust and off-site tracking of raw, final, or waste materials. Discharges of pollutants associated with the facility's activity as the result of off-site tracking are not authorized by this GP.

**3. Storm Water Pollution Prevention Plan – General Requirements**

- a. **Availability of SWPPP.** The permittee must prepare a SWPPP for the facility prior to the effective date of this GP. If a permittee prepared a SWPPP for coverage under a previous version of this GP, the permittee must review and update the SWPPP to implement all provisions of this GP prior to the effective date of this GP. Upon receiving authorization under this GP, a copy of the SWPPP must be available to appropriate facility staff, Department staff, and USEPA staff. The permittee must keep a copy of the SWPPP on-site at all times for reference and review.
- b. **SWPPP preparation.** The SWPPP must be up-to-date prior to the effective date of this GP and must be prepared in accordance with good engineering practices and to industry standards. The SWPPP may be developed by either a person on the facility's staff or a third party, but it must be developed by a "qualified person" and must be certified in accordance with the signatory requirements of 06-096 CMR 521(5). A "qualified person" is a person knowledgeable in the principles and practices of stormwater controls and pollution prevention and possesses the education and ability to assess conditions at the facility that could impact stormwater quality, and the education and ability to assess the effectiveness of stormwater controls selected and installed to meet the requirements of the permit. A qualified person may include facility staff that is familiar with the facility's activities and control measures necessary to reduce or eliminate the discharge of pollutants associated with the activity.
- c. **Amended SWPPP.** The permittee must amend the SWPPP within thirty (30) calendar days of completion of any of the following:
  - i. A change in design, construction, operation, or maintenance at the facility that may have a significant effect on the discharge or potential for discharge of pollutants from the facility including the addition or reduction of industrial activity;
  - ii. Monitoring, inspections, or investigations by the permittee or by local, State, or Federal officials which determine the SWPPP is ineffective in eliminating or significantly minimizing the intended pollutants;
  - iii. A discharge under this GP that is determined by Department to cause or have the reasonable potential to cause or contribute to the violation of an applicable water quality standard.



**Part IV. Requirements (cont'd)**

- d. **SWPPP Contents:** This subsection describes the minimum requirements that must be addressed or contained within an acceptable SWPPP.
- i. **Stormwater Pollution Prevention Team.** The SWPPP must identify the individuals (by name or title) who comprise the facility's Stormwater Pollution Prevention Team. The Stormwater Pollution Prevention Team is responsible for assisting the facility manager in developing, implementing, maintaining and revising the facility's SWPPP. Responsibilities of each team member must be listed.
  - ii. **Nature of activities.** The SWPPP must provide a description of the nature of the activities at each facility.
  - iii. **Maps.** The SWPPP must contain a general location map with sufficient detail to identify the location of the facility and all receiving waters for all stormwater discharges. A site map depicting the following features must also be included with the SWPPP.
    1. Boundaries of the property and the size of the property in acres;
    2. Location and extent of significant structures and impervious surfaces;
    3. Directions of stormwater flow (use arrows);
    4. Locations of all stormwater control measures;
    5. Locations of all receiving waters, including wetlands, in the immediate vicinity of the facility;
    6. Locations of all stormwater conveyances including catch basins, ditches, pipes, and swales;
    7. Locations of potential pollutant sources;
    8. The location of all above ground tanks;
    9. For the purposes of the site map, identify areas of frequent spills (greater than three occurrences per year) and large spills (greater than 10 gallons) that have occurred in the last three years. All locations of fuel frequent/large spills must be documented within the SWPPP or applicable Spill Prevention Control & Counter Measure (SPCC) Plan;

**Part IV. Requirements (cont'd)**

10. Locations of all stormwater monitoring points;
  11. Locations of stormwater inlets, outlets, outfalls, and discharge points, with a unique identification code for each discharge point (*e.g.*, Outfall 001, 002) and an approximate outline of the areas draining to each discharge point;
  12. Locations of the following activities where such activities are exposed to precipitation:
    - fueling stations;
    - vehicle and equipment maintenance and/or cleaning areas;
    - loading/unloading areas;
    - locations used for the treatment, storage, or disposal of wastes;
    - liquid storage tanks;
    - processing and storage areas;
    - immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility;
    - transfer areas for substances in bulk;
    - machinery; and
    - locations and sources of run-on to the site from adjacent property that contains significant quantities of pollutants.
- e. **Summary of potential pollutant sources.** The SWPPP must provide a description of areas of the facility and operations where materials or activities are exposed to stormwater or from which allowable non-stormwater discharges originate. Materials or activities include but are not limited to: street sweeping, roadway construction, repair and rehabilitation, maintenance of streets and right-of-ways, snow removal and storage, chemical and material storage, fleet maintenance and storage, and fertilizer, pesticide, and insecticide application and storage of materials. Structures located in areas of activity are potential sources of pollutants.

For each separate area identified, the description must include the following.

- i. **Activities in the area.** A list of the activities exposed to stormwater and the predicted direction of flow of stormwater from each activity and outfall/discharge point.

**Part IV. Requirements (cont'd)**

- ii. **Pollutants.** A list of pollutants associated with each identified activity, which could be exposed to rainfall or snowmelt and could be discharged from the facility. The pollutant list must include all significant materials that have been handled, treated, stored or disposed, and that have been exposed to stormwater in the three years prior to the date you prepare or amend your SWPPP.
- iii. **Spills and leaks.** The permittee must document where potential spills and leaks could occur that could contribute pollutants to stormwater discharges, and the corresponding outfalls/discharge points that would be affected by such spills and leaks. The permittee must document all frequent or large spills and leaks of oil or toxic or hazardous substances that actually occurred at exposed areas, or that drained to a stormwater conveyance, in the three years prior to the date the SWPPP was prepared or last amended. The permittee must document the circumstances leading to the release and actions taken in response to the release and the measures taken to prevent the recurrence of such releases.
- iv. **Wastewater or process water containment.** Any stationary above ground tank, container, or container storage area used for the storage of wastewater or process water (does not include deicing materials for winter road maintenance) that has the potential to discharge to surface waters or a stormwater conveyance during a malfunction must be held in a secondary containment device capable of containing 100% of the contents of the tank, plus precipitation. The containment devices must meet all Federal and State rules for primary and secondary containment. Secondary containment requirements are waived if the tank is equipped with a level sensor and alarm to signal an overflow or leak and the facility has a contingency plan in place to remove excess liquid to a second containment structure or off-site treatment facility to prevent exposure to stormwater. The containment structures must be visually inspected for signs of deterioration at least once per year. The contingency plan and tank inspection procedure must be documented in the SWPPP.
- v. **Non-stormwater discharges** – The permittee must document that it has evaluated its site for the presence non-stormwater discharges not listed in MCM3 of this GP. Documentation must include the following.
  - 1. The date of the evaluation;
  - 2. A description of the evaluation criteria used;
  - 3. A list of the outfalls or onsite drainage points that were directly observed during the evaluation; and
  - 4. The action(s) taken, such as a list of control measures used to eliminate unauthorized discharge(s), or documentation that a separate MEPDES permit was obtained.

**Part IV. Requirements (cont'd)**

- vi. **Salt storage.** The permittee must document the location of any storage piles containing salt or other material or products, or liquid brine used for deicing or other municipal purposes.
- vii. **Sampling data.** Existing dischargers must summarize all stormwater discharge sampling data collected at the facility during the previous permit term. The summary must include a narrative description (and may include data tables/figures) that adequately summarizes the collected sampling data to support identification of potential pollution sources at the facility. New dischargers and new sources must provide a summary of any available stormwater runoff data they may have.
- viii. **Method of on-site storage or disposal.** A storage practice or disposal method must be detailed for all raw materials, intermediate materials, final products and waste materials. Waste materials must be handled in accordance with applicable federal and State waste management rules and regulations.

**4. Storm Water Pollution Prevention Plan – Control Measures**

The permittee must review all control measures at least quarterly and complete corrective actions to modify any control measures that are not achieving the intended effect of minimizing pollutant discharges. The SWPPP must document the type and location of all control measures selected to ensure compliance with technology-based and water quality-based effluent limitations.

- a. **Best management practices (BMPs) considerations.** Best management practices must be applied to all areas described in the summary of potential pollutant sources documented in the SWPPP. The SWPPP must include an implementation schedule for all proposed BMPs. The permittee must consider, at a minimum, the following in selection of BMPs:
  - i. The quantity and nature of the pollutants, and their potential to impact the water quality of receiving waters;
  - ii. Preventing stormwater from coming into contact with polluting materials;
  - iii. Using control measures in combination to minimize pollutants in stormwater discharges;
  - iv. Opportunities to offset stormwater and temperature impacts from impervious areas on dry weather flows and low flow situations to streams;
  - v. Minimizing impervious areas at the facility and infiltrating runoff onsite (including bioretention cells, green roofs, and pervious pavement, among other approaches);
  - vi. Attenuating flow using open vegetated swales and natural depressions; and
  - vii. Use of treatment interceptors (*e.g.*, swirl separators, sand filters, catch basin inserts/filters) to minimize the discharge of pollutants.

**Part IV. Requirements (cont'd)**

- b. **Non-structural control measures** The permittee must comply with the non-structural control measures in Part IV (6)(d)(2), *Non-Numeric Effluent Limitations*.

The permittee must review all structural BMPs at least quarterly and complete corrective actions to modify any BMPs that are not achieving the intended effect of minimizing pollutant discharges. The SWPPP must document the type and location of all BMPs selected to ensure compliance with technology-based and water quality-based effluent limitations.

**5. Stormwater Pollution Prevention Plan Records**

The permittee must keep the following inspection, monitoring, and certification records on site with the SWPPP. Records required to be kept with a facility's SWPPP are facility-specific except that any of the records listed below that are already being maintained in order to comply with other portions of this GP (e.g. catch basin cleaning, street sweeping) do not need to be stored on site with the SWPPP.

- a. Documentation of maintenance and repairs of control measures, including the date(s) of regular maintenance, date(s) of discovery of areas in need of repair/replacement, and for repairs, date(s) that the control measure(s) returned to full function, and the justification for any extended maintenance/repair schedules;
- b. All SWPPP inspection reports and visual monitoring reports required by this GP;
- c. A description of any deviations from the schedule for visual monitoring, and the reason for the deviations (e.g., adverse weather or it was impracticable to collect samples within the first 60 minutes of a measurable storm event);
- d. Dates and descriptions of all spills and leaks and corrective actions taken;
- e. Corrective Action Reports and summary of completed actions taken at the site, including event(s) and date(s) when problems were discovered and modifications occurred; and
- f. A copy of records for all employee SWPPP related training as required.

**6. Monitoring Requirements**

- a. **Procedures for conducting monitoring.** This GP contains routine facility inspections and visual monitoring. Samples and measurements taken for the purpose of monitoring must be representative of the volume and nature of the discharge over the sampling and reporting period.

**Part IV. Requirements (cont'd)**

The SWPPP must document the procedures and frequencies for conducting quarterly routine facility inspections and visual monitoring where applicable. SWPPP documentation must include the following.

- i. Location of sample collection (discharge point designation);
- ii. Monitoring schedule including monitoring exceptions, adverse weather conditions, and waivers.
- iii. Stormwater samples should, whenever practicable, be collected within the first sixty (60) minutes of the beginning of a discharge during a storm event of greater than  $\frac{1}{4}$  of an inch during a 24-hour period. Sampling events are only required during normal business hours. If a sample cannot be collected within the first 60 minutes, the permittee must document with inspection forms the reason(s) or circumstance(s) why it was not practicable to obtain a timely sample. Samples collected more than two (2) hours following the beginning of a discharge are not acceptable and will be rejected by the Department.

In the case of snowmelt, samples must be collected during a period with a measurable discharge from the representative outfall/discharge point.

If a stormwater discharge event does not occur during normal operating business hours an entire calendar quarter, the permittee must document in the SWPPP that there was no discharge to sample. Monitoring requirements under these circumstances are waived.

**7. Routine Facility Inspections**

- a. **Applicability.** All permittees with public works facilities; transfer stations; school bus and other maintenance garages located in the UA must conduct routine facility inspections of areas of the facility covered by the requirements in this GP, including, but not limited to, the following:
  - i. Areas where materials or activities are exposed to stormwater;
  - ii. Areas identified in the SWPPP and those that are potential pollutant sources;
  - iii. Areas where spills and leaks have occurred in the past three years;
  - iv. Discharge points; and
  - v. Control measures used to comply with the limits contained in this GP.

**Part IV. Requirements (cont'd)**

- b. **Minimum inspection requirements** - Routine facility inspections must be conducted once per calendar quarter each year the permittee is covered under this GP. These inspections must be equally spaced with a minimum of sixty (60) days between inspections whenever possible. At least once each calendar year, the routine inspection must be conducted during a period when a stormwater discharge is occurring. The permittee must document findings from each routine facility inspection in a signed, certified report maintained with the SWPPP including, but not limited to, the following:
- i. The inspection date and time;
  - ii. The name(s) and signature(s) of the inspector(s);
  - iii. Weather information (precipitation in the previous 48 hour period of time);
  - iv. All observations relating to the implementation of control measures at the operations or facility, including:
    1. A description of any discharges occurring at the time of the inspection;
    2. Any new discharges from and/or pollutants at the site;
    3. Any evidence of, or the potential for, pollutants entering the drainage system;
    4. Observations regarding the physical condition of and around all outfalls/discharge points, including any flow dissipation devices, and evidence of pollutants in discharges and/or the receiving water;
  - v. Any control measures needing maintenance, repairs, or replacement;
  - vi. Any additional control measures needed to comply with the GP requirements; and
  - vii. Any incidents of noncompliance.

Routine facility inspection requirements may be satisfied at the same time visual monitoring is conducted provided they are conducted during a qualifying storm event and all components of both monitoring types are included in the report.

- c. **Visual Monitoring.** All permittees required to have a SWPPP must conduct visual monitoring once per calendar quarter each year the permittee is covered under this GP. The permittee must collect a stormwater sample from each outfall/discharge point or a representative outfall/discharge point during a qualifying storm event of greater than 0.25 inches, or ice or snow melt and conduct a visual assessment of these samples. These samples are not required to be collected in accordance with 40 CFR Part 136 procedures but must be collected in such a manner that the samples are representative of the stormwater discharge. The sample must be collected in a clean, colorless glass or plastic container, and examined in a well-lit area. The visual assessment must be performed and documented in accordance with standard operating procedures outlined in document dated June 12, 2017, DEPLW0768 (or most current version), *Visual Monitoring of Stormwater Discharges Associated with Industrial Activity*. See Attachment E of this GP. The quarterly Visual Monitoring sample forms must be completed and kept on file with the SWPPP. Visual evidence of pollution in a stormwater sample indicates that modifications or additions to control measures are needed at the site.

**Part IV. Requirements (cont'd)**

The permittee must visually inspect and document or observe the sample for the following water quality characteristics:

1. Color;
2. Odor;
3. Clarity (diminished);
4. Floating solids;
5. Settled solids;
6. Suspended solids;
7. Foam;
8. Oil sheen; and
9. Other obvious indicators of stormwater pollution

If a stormwater discharge event associated with a qualifying storm event does not occur during normal operating business hours for an entire calendar quarter, the permittee must document in the SWPPP that there was no discharge to sample. Monitoring requirements under these circumstances are waived.

8. **Conditions Requiring SWPPP Review and Revision.** When any of the following conditions occur or are detected during an inspection, monitoring or other means, or the Department informs the permittee that any of the following conditions have occurred, the permittee must review and revise, as appropriate, the SWPPP (*e.g.*, sources of pollution; spill and leak procedures; non-stormwater discharges; the selection, design, installation and implementation of your control measures) so that pollutant discharges are minimized:
- a. An unauthorized release or discharge (*e.g.*, spill, leak, or discharge of non-stormwater not authorized by this or another MEPDES permit to a water of the State) occurs at the operation or facility;
  - b. A discharge violates a condition of this GP or permittee-specific DEP Order;
  - c. A discharge violates a non-numeric effluent limitation contained in this GP, or an applicable water quality-based limitation or ambient water quality criteria associated with impaired waters monitoring;
  - d. The control measures are not stringent enough for the discharge to meet applicable water quality standards;
  - e. A required control measure was never installed, was installed incorrectly, or is not being properly operated or maintained; or
  - f. Whenever a visual assessment shows evidence of stormwater pollution (*e.g.*, color, odor, floating solids, settled solids, suspended solids, foam).



**Part IV. Requirements (cont'd)****9. Corrective Actions and Deadlines.**

- a. **Immediate actions.** If corrective action is needed, the permittee must immediately take all reasonable steps necessary to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational, including cleaning up any contaminated surfaces so that the material will not discharge in subsequent storm events.

*Note: In this context, the term “immediately” requires the permittee to, on the same day a condition requiring corrective action is found, take all reasonable steps to minimize or prevent the discharge of pollutants until a permanent solution is installed and made operational. However, if a problem is identified at a time in the work day when it is too late to initiate corrective action, the initiation of corrective action must begin no later than the following work day. “All reasonable steps” means that the permittee has undertaken initial actions to assess and address the condition causing the corrective action, including, for example, cleaning up any exposed materials that may be discharged in a storm event (e.g., through sweeping, vacuuming) or making arrangements (i.e., scheduling) for a new BMP to be installed at a later date. “All reasonable steps” for purposes of complying with Conditions Requiring SWPPP Review to Determine if Modifications Are Necessary, when the permittee concludes a corrective action is, in fact, not necessary, could include documenting why a corrective action is unnecessary.*

- b. **Subsequent actions.** If the permittee determines that additional actions are necessary beyond those implemented in accordance with immediate action response, the permittee must complete the corrective actions (e.g., install a new or modified control and make it operational, complete the repair) before the next storm event if possible, and within 14 calendar days from the time of discovery of the corrective action condition. If it is infeasible to complete the corrective action within 14 calendar days, the permittee must document why it is infeasible to complete the corrective action within the 14-day timeframe. The permittee must also identify the schedule for completing the work, which must be done as soon as practicable after the 14-day timeframe but no longer than 45 days after discovery. If the completion of corrective action will exceed the 45-day timeframe, the permittee may take the minimum additional time necessary to complete the corrective action, provided that the permittee notifies the Department of the intention to exceed 45 days, the permittee’s rationale for an extension, and a completion date, which the permittee must also include in its corrective action documentation. Where the permittee’s corrective actions result in changes to any of the controls or procedures documented in your SWPPP, the permittee must modify the SWPPP accordingly within 14 calendar days of completing corrective action work.

**Part IV. Requirements (cont'd)**

- c. **Corrective Action Report (CAR).** A Corrective Action Report is a signed, certified report to document actions taken in response to triggering the need for corrective action. The existence of any of the conditions listed in Part IV(8)(a-f) of this GP triggers the need for corrective action review.

A complete CAR must contain the following information:

1. The existence of any of the conditions listed in Part IV(8)(a-f) of this GP and description of the condition triggering the need for corrective action review;
  2. For any spills or leaks: a description of the incident including material, date/time, amount, location, and cause for spill, and any leaks, spills or other releases that resulted in discharges of pollutants to the MS4 or waters of State, through stormwater or otherwise;
  3. Date the condition was identified in a facility or Department inspection;
  4. Description of immediate actions completed, including measures taken to prevent the reoccurrence of such releases;
  5. A description of the corrective actions taken or to be taken as a result of the identified conditions;
  6. The dates when each corrective action was initiated and completed (or is expected to be completed); and
- d. **Effect of corrective action.** If the event triggering the review is a violation of this GP correcting it does not remove the original violation. Additionally, failing to take corrective action in accordance with this section is an additional violation of this GP.

**D. Sharing responsibility**

1. **Reliance on other entity.** The permittee may satisfy the requirement to implement a BMP for a MCM by having a third party implement the BMP. For example, if a local watershed organization organized or funded by the permittee performs an annual “river clean-up”, this event may be used to satisfy a BMP for the Public Participation.

If the permittee is relying on a third party to implement one or more BMP(s), the permittee must note that fact in the SWMP and Annual Compliance Report required in Part IV (F). If the third party fails to implement the BMP(s), the permittee remains responsible for its implementation.

2. **Qualifying state or federal program.** If a BMP or MCM is the responsibility of a third party under another NPDES or MEPDES permit, the permittee is not required to include such BMP or MCM in its SWMP. The permittee must reference this qualifying program in their SWMP. However, the permittee is responsible for its implementation if the third party fails to perform. The permittee must annually confirm that the third party is still implementing this measure. If the third party fails to implement the measure, the SWMP must be modified to address the measure.

**Part IV. Requirements (cont'd)**

In the case of a permitted municipal industrial activity, such as a publicly owned treatment works covered by the Multi Sector General Permit For The Discharge of Stormwater Associated With An Industrial Activity (MSGP), the permittee may reference the industrial activity's SWPPP to address a portion of the permittee's SWMP.

3. **Other MS4 Permittees.** The permittee must identify interconnections within the regulated small MS4s and find ways to cooperate with other regulated or non-regulated entities. Where a portion of the separate storm sewer system within a municipality is owned, operated or otherwise the responsibility of another regulated small MS4, the two entities may coordinate the development and implementation of their respective SWMP to address all elements of Part IV B (1-6). At the very least, a clear description of their respective responsibilities for these elements must be included in each regulated small MS4's SWMP.

For example, a storm sewer system within a municipality may be operated and maintained by the Maine DOT, or other public or quasi-public entity. In cases such as these, the two entities must cooperate and coordinate their SWMP to reduce duplicative efforts to address the MCMs, particularly at the interconnections within storm sewer systems. Where an illicit discharge is detected from an outfall near an interface between two storm sewer systems and where there is more than one responsible entity, the two entities must coordinate their efforts to detect and ultimately eliminate the cause of the illicit discharge. These efforts must be noted in both the regulated small MS4's Annual Compliance Reports.

**E. Discharges To 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. This GP does not authorize a direct discharge that is inconsistent with the WLA of an approved TMDL. EPA approved TMDLs prior to the issuance date of this permit, can be found at <https://www.epa.gov/tmdl/region-1-approved-tmdls-state#tmdl-me>. This GP does not authorize a new or increased discharge of storm water to an impaired waterbody that contributes to the impairment at a detectable level.
2. If a TMDL is approved or modified by EPA subsequent to the issuance date of this GP, the Department will notify the permittee and may:
  - a. Require the permittee to review its permittee specific DEP Order and SWMP for consistency with the TMDL, and propose any necessary changes to the permittee specific DEP Order and SWMP to be submitted to the Department within six months of the receipt of notification concerning the TMDL;
  - b. Issue a watershed-specific general permit for the area draining to the impaired waterbody or
  - c. Require the permittee to apply to the Department for an individual permit.

**Part IV. Requirements (cont'd)**

This GP will not be reopened for modification to address a TMDL that is approved or modified by EPA subsequent to the issuance date of this GP. The Department may however, after proper notice to the permittee, modify the terms and conditions of the permittee specific DEP Order to be consistent with the newly approved or modified TMDL. Modification of the permittee specific DEP Order will be subject to public process as described in Part III A(1).

3. If the waterbody to which a point source covered by this GP discharges is an Urban Impaired Stream (UIS) (Appendix B of this permit) the permittee must propose and fully implement at least three structural or non-structural BMPs to be considered for inclusion in the permittee specific DEP Order, unless the Department has determined the MS4 discharge is not causing or contributing to the impairment. The BMPs must address a specific impairment from the MS4 discharge within the UA, be clear, specific and measurable. Structural or nonstructural BMPs may selected from a) MCMs 1-6, b) an existing Department approved Watershed Management Plan, or c) BMPs in Appendix D, *BMPs for Discharges to Urban Impaired Streams*, of this GP or more specifically developed by the permittee. For receiving waters impaired in whole or in part by nutrient loading, including UISs covered by the Impervious Cover TMDL, permittees may propose measures designed to reduce loads into the MS4 system. The permittee specific DEP Order will set forth those measures the permittee must take, and may include, in whole or in part, the measures proposed by the permittee.

**F. Record Keeping**

The permittee must keep all records required by this GP for at least three (3) years following its expiration or longer if requested by the Department or the USEPA. The permittee must make records, including its SWMP, available to the public during regular business hours.

**G. Annual Compliance Report**

By September 15 of each year, the permittee must electronically submit an Annual Compliance Report to the Department for review. Standardized Annual Compliance Report forms are to be provided by the Department or the permittee may submit an alternative form to the Department for review and approval.

MS4 Program Manager  
Department of Environmental Protection  
17 State House Station  
Augusta, Maine 04333-0017  
e-mail: [rhonda.poirier@maine.gov](mailto:rhonda.poirier@maine.gov).

## Final Permit

### General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

#### **Part IV. Requirements (cont'd)**

The Annual Compliance Report must include the following.

- a. The status of compliance with the terms and conditions of this GP and permittee specific DEP Order based on the implementation of the permittee's SWMP 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. A summary of information collected and analyzed, including monitoring data, if any, during the reporting period.
- c. A summary of the stormwater activities the permittee intends to undertake pursuant to its SWMP to comply with the terms and conditions of this GP and permittee specific DEP Order during the next reporting cycle.
- d. A change in any identified BMPs or measurable goals that apply to the SWMP.
- 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 this GP and its SWMP 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.

Changes to the report based on the Department's review comment(s) must be submitted to the Department within 60 calendar days of the receipt of the comment(s).

## Final Permit

### General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems

#### Part IV. Requirements (cont'd)

**H. Reopener.** This GP may be modified or reopened by the Department, after providing notice to the permittee's, as provided in Water Pollution Control, 38 M.R.S. § 414-A(5) as follows:

1. When necessary to correct legal, technical or procedural mistakes or errors;
2. When there has been or will be a substantial change in the activity or means of treatment that occurred after the time the permit was issued;
3. When new information other than revised rules, guidance or test methods becomes available that would have justified different conditions at the time the permit was issued;
4. When a pollutant not included in the permit may be present in the discharge in quantities sufficient to require treatment, such as when the pollutant exceeds the level that can be achieved by the technology-based treatment standards appropriate to the permittee or contribute to water quality violations;
5. When necessary to make changes as a result of the failure of one state to notify another state whose waters may be affected by a discharge; or

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## APPENDIX D: OPPORTUNISTIC INSPECTION SOP



CITY OF PORTLAND  
WATER RESOURCES DIVISION

Standard Operating Procedure for  
Illicit Discharge Opportunistic Inspection Program

Revised March 2021

**Definitions:**

An *Illicit Discharge* is a direct or indirect discharge to the municipal separate storm sewer system that is not composed entirely of storm water. The term does not include a discharge in compliance with an NPDES Storm Water Discharge Permit or a Surface Water Discharge Permit, or resulting from firefighting or other public safety activities exempted pursuant to Chapter 32 of the City of Portland Code of Ordinances.

**Purpose:** Illicit discharges may include sewage or other toxics that can cause or contribute to public health problems and water quality violations. The purpose of this Standard Operating Procedure (SOP) is to provide guidance for identification and elimination of illicit discharges to Portland's storm drain system and ultimately the receiving waters in the City as required by the City's MS4 General Permit and Stormwater Program Management Plan.

**Scope:** This SOP applies in the performance of Opportunistic IDDE inspections as required by Minimum Control Measure 3 Illicit Discharge Detection and Elimination, Best Management Practice (BMP) of the Stormwater Program Management Plan.

**References:**

Guidelines and Standard Operating Procedures for Stormwater Phase II Communities in Maine, Volume 1: Information for Program Managers; and

Guidelines and Standard Operating Procedures for Stormwater Phase II Communities in Maine Volume 2: Standard Operating Procedures and Forms.





Primary Responsible Party	Responsibilities
Public Works Director	<ul style="list-style-type: none"> <li>- Oversees Water Resources Division and ultimate authority for enforcement of ordinances</li> </ul>
Water Resources Manager	<ul style="list-style-type: none"> <li>- Oversees Compliance Section</li> <li>- Allocates staffing and resources when needed</li> </ul>
Compliance Section Coordinator	<ul style="list-style-type: none"> <li>- Oversees IDDE Program &amp; reviews annual documentation</li> <li>- Coordinates program goals with the Planning - Inspections Divisions</li> <li>- Coordinates with Portland Water District's Industrial Pretreatment Program</li> <li>- Coordinates enforcement activities</li> <li>- Provides coordination between Fats Oil and Grease program and IDDE Program</li> <li>- Administers Prohibited Discharges Article</li> </ul>
Stormwater Program Coordinator	<ul style="list-style-type: none"> <li>- Coordinates outfall investigation, screening and sampling activities</li> <li>- Reviews screening results and citizen complaints</li> <li>- Conducts employee training</li> <li>- Conducts public outreach</li> <li>- Compiles annual documentation</li> </ul>
Operations Supervisor, Operations Staff and Compliance Team	<ul style="list-style-type: none"> <li>- Conducts investigations, screening, and sampling</li> <li>- Conducts elimination activities</li> <li>- Conducts opportunistic inspections</li> </ul>
Planning & Urban Development Inspections Division	<ul style="list-style-type: none"> <li>- Manages building inspections and code enforcement</li> <li>- Alerts Department of Public Works of potential building/plumbing problems</li> <li>- Coordinates with Compliance Section Coordinator on elimination and enforcement activities (as necessary)</li> </ul>
Asset Information Management Specialist	<ul style="list-style-type: none"> <li>- Supports IDDE Program Data Management and provides data compilation for reporting purposes.</li> </ul>
Corporation Counsel	<ul style="list-style-type: none"> <li>- Supports IDDE Program enforcement when necessary</li> </ul>



### **Standard Operating Procedures:**

- Inspections shall be conducted in a safe manner and all required Personal Protective Equipment (PPE) shall be used.
- Suspected direct connection of an illicit discharge via visual indicators shall be noted in the Catch Basin Cleaning Form (when applicable) and followed by a call by a notification to Compliance Section Coordinator who will fill in the IDDE Incident Reporting Form and create a service request in City Works.
- Compliance Section staff and/or operations staff shall conduct investigation procedure in the area of suspected direct connection in accordance with the City of Portland IDDE Program Manual and within five (5) calendar days of receiving notification.
- Compliance Section staff and/or operations staff conducting the investigation shall complete the IDDE Incident Reporting Form and attach digital photographs of the area of suspected illicit discharge direct connection.
- If a direct connection is verified, the form and photographs shall be forwarded the Water Resources Manager, Stormwater Program Coordinator and Supervisor for elimination procedure.
- All indirect illicit discharges (i.e. oil/grease, dog waste bags, needles or other dumped material, etc.) locations shall be noted in the Catch Basin Cleaning Form (when applicable) or an IDDE Incident Reporting Form. Excessive dumping compromising the function of the stormwater drainage system or posing immediate public health threat shall be reported to Dispatch for service request development. Department employees shall attempt to remove and dispose of known material according to state laws; otherwise contaminated sediments shall not be removed by vactor truck or other mechanical means without approval of the Operations Supervisor.
- Sanitary Sewer Overflows that discharge into the MS4 shall be treated as an indirect illicit discharge and the Compliance Section Coordinator shall maintain SSO Reports for tracking and annual reporting.
- Upon completion of the catch basin cleaning season, the Compliance Section Coordinator and Operations Supervisor shall compile and review the results of indirect illicit discharges noted within Catch Basin Cleaning Forms for compilation. These locations shall be reviewed with Asset Information Management Specialist and the Stormwater Program Coordinator for development of targeted catch basin stenciling, outreach letters, door hangers or other compliance education options or investigation follow-up.
- Completed forms, emails and field notes on illicit discharges shall be reviewed



and compiled by May 1 of each year by the Stormwater Program Coordinator for inclusion in MS4 General Permit Annual Report.

**Corrective Action:**

When investigation confirms an illicit discharge, the Compliance Section Coordinator shall notify the Stormwater Program Coordinator, Operations Supervisor, the Water Resources Manager, the Public Works Director, and Planning and Economic Development Department – Inspections Division (when applicable) via email with Incident Reporting Form and photographs of the illicit discharge or illicit discharge general location. Elimination procedures shall follow those outlined in the IDDE Program Manual.

**Record Keeping and Program Evaluation:**

The Compliance Section Coordinator shall:

- Maintain all inspection records in paper and/or digital form.
- Take appropriate action (i.e. outreach letters, doorhangers, targeted catchbasin cleaning) in areas of consistent indirect illicit discharges.
- At least annually review all field forms, IDDE Incident Reporting Forms and emails for accuracy and conformance with the SOPs and the IDDE Program Manual.
- Annually tabulate field notes and emails and include a summary for submission in the MS4 General Permit Annual Report

The Compliance Section Coordinator shall review annually an enforcement summary for submission within the MS4 General Permit Annual Report.

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# APPENDIX E: DRY WEATHER OUTFALL INSPECTION FORM

# DRY WEATHER OUTFALL INSPECTION FORM

## Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.):	Last 24 hours:	Last 48 hours:
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	
Land Use in Drainage Area (Check all that apply):			
<input type="checkbox"/> Industrial		<input type="checkbox"/> Open Space	
<input type="checkbox"/> Ultra-Urban Residential		<input type="checkbox"/> Institutional	
<input type="checkbox"/> Suburban Residential		Other: _____	
<input type="checkbox"/> Commercial		Known Industries: _____	
Notes (e.g., origin of outfall, if known):			

## Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE	DIMENSIONS (IN.)	SUBMERGED
<input type="checkbox"/> Closed Pipe	<input type="checkbox"/> RCP <input type="checkbox"/> CMP <input type="checkbox"/> PVC <input type="checkbox"/> HDPE <input type="checkbox"/> Steel <input type="checkbox"/> Other: _____	<input type="checkbox"/> Circular <input type="checkbox"/> Single <input type="checkbox"/> Elliptical <input type="checkbox"/> Double <input type="checkbox"/> Box <input type="checkbox"/> Triple <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____	Diameter/Dimensions: _____	In Water: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully  With Sediment: <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Fully
<input type="checkbox"/> Open drainage	<input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> rip-rap <input type="checkbox"/> Other: _____	<input type="checkbox"/> Trapezoid <input type="checkbox"/> Parabolic <input type="checkbox"/> Other: _____	Depth: _____ Top Width: _____ Bottom Width: _____	
<input type="checkbox"/> In-Stream	(applicable when collecting samples)			
Flow Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <i>If No, note if there is Seepage Flow then skip to Section 5</i>			
Flow Description (If present)	<input type="checkbox"/> Trickle <input type="checkbox"/> Moderate <input type="checkbox"/> Substantial      Seepage Flow Around Pipe (Possible Pipe Break?) <input type="checkbox"/> Yes <input type="checkbox"/> No			

## Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER	RESULT	UNIT	EQUIPMENT	
<input type="checkbox"/> Flow #1	Volume	Liter	Bottle	
	Time to fill	Sec		
Temperature		°F	Probe	
Conductivity		µS/cm	Probe	
Salinity (as Applicable)		ppt	Probe	
Ammonia		mg/L	Field test kit	
Surfactants		mg/L	Field test kit	
Chlorine		mg/L	Field test kit	

## Outfall Reconnaissance Inventory Field Sheet

### Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow?  Yes  No (If No, Skip to Section 5)

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	<input type="checkbox"/>	<input type="checkbox"/> Sewage <input type="checkbox"/> Rancid/sour <input type="checkbox"/> Petroleum/gas <input type="checkbox"/> Sulfide <input type="checkbox"/> Other:	<input type="checkbox"/> 1 – Faint	<input type="checkbox"/> 2 – Easily detected	<input type="checkbox"/> 3 – Noticeable from a distance
Color	<input type="checkbox"/>	<input type="checkbox"/> Clear <input type="checkbox"/> Brown <input type="checkbox"/> Gray <input type="checkbox"/> Yellow <input type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Red <input type="checkbox"/> Other:	<input type="checkbox"/> 1 – Faint colors in sample bottle	<input type="checkbox"/> 2 – Clearly visible in sample bottle	<input type="checkbox"/> 3 – Clearly visible in outfall flow
Turbidity	<input type="checkbox"/>	See severity	<input type="checkbox"/> 1 – Slight cloudiness	<input type="checkbox"/> 2 – Cloudy	<input type="checkbox"/> 3 – Opaque
Floatables -Does Not Include Trash!!	<input type="checkbox"/>	<input type="checkbox"/> Sewage (Toilet Paper, etc.) <input type="checkbox"/> Suds <input type="checkbox"/> Petroleum (oil sheen) <input type="checkbox"/> Other:	<input type="checkbox"/> 1 – Few/slight; origin not obvious	<input type="checkbox"/> 2 – Some; indications of origin (e.g., possible suds or oil sheen)	<input type="checkbox"/> 3 – Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

### Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present?  Yes  No (If No, Skip to Section 6)

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	<input type="checkbox"/>	<input type="checkbox"/> Spalling, Cracking or Chipping <input type="checkbox"/> Peeling Paint <input type="checkbox"/> Corrosion	
Deposits/Stains	<input type="checkbox"/>	<input type="checkbox"/> Oily <input type="checkbox"/> Flow Line <input type="checkbox"/> Paint <input type="checkbox"/> Other:	
Abnormal Vegetation	<input type="checkbox"/>	<input type="checkbox"/> Excessive <input type="checkbox"/> Inhibited	
Poor pool quality	<input type="checkbox"/>	<input type="checkbox"/> Odors <input type="checkbox"/> Colors <input type="checkbox"/> Floatables <input type="checkbox"/> Oil Sheen <input type="checkbox"/> Suds <input type="checkbox"/> Excessive Algae <input type="checkbox"/> Other:	
Pipe benthic growth	<input type="checkbox"/>	<input type="checkbox"/> Brown <input type="checkbox"/> Orange <input type="checkbox"/> Green <input type="checkbox"/> Other:	

### Section 6: Overall Outfall Characterization

<input type="checkbox"/> Unlikely <input type="checkbox"/> Potential (presence of two or more indicators) <input type="checkbox"/> Suspect (one or more indicators with a severity of 3) <input type="checkbox"/> Obvious
---

### Section 7: Data Collection

1. Sample for the lab?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
2. If yes, collected from:	<input type="checkbox"/> Flow	<input type="checkbox"/> Pool	
3. Intermittent flow trap set?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	If Yes, type: <input type="checkbox"/> OBM <input type="checkbox"/> Caulk dam

### Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

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## APPENDIX F: OUTFALL PRIORITIZATION

**RISK SCORES FOR STORMWATER SYSTEM DISCHARGE LOCATIONS (RE: Illicit Discharges)  
CITY OF PORTLAND, MAINE**

LIKELIHOOD OF FAILURE RISK	5 VERY HIGH	4 HIGH	3 MODERATE	2 LOW	1 VERY LOW	SCORING SPECIAL NOTES
<b>LAND USE</b>	N/A	Industrial/Commercial % >50 of catchment	Residential >50% of catchment	All Others	N/A	---
<b>MEAN AGE OF DEVELOPMENT WITHIN CATCHMENT</b>	>50 YEARS OLD	N/A	25-50 YEARS OLD	N/A	<25 YEARS OLD	---
<b>CATCHMENT SIZE</b>	>100 ACRES	50-100 ACRES	25-50 ACRES	10-25 ACRES	<10 ACRES	---
<b>MEAN AGE OF SEWER PIPE WITHIN CATCHMENT</b>	> 80 YEARS OLD	60-80 YEARS OLD	40-60 YEARS OLD	20-40 YEARS OLD	< 20 YEARS OLD	* Scoring based on frequency distribution and a mean age of 44 years
<b>SEWER PIPE DENSITY WITHIN CATCHMENT</b>	300-375 FEET PER ACRE	225-300 FEET PER ACRE	150-225 FEET PER ACRE	75 -150 FEET PER ACRE	0 -75 FEET PER ACRE	* Scoring based on frequency distribution and a mean of 160 ft/acre
<b>SEWER PIPE - STORMWATER PIPE CROSSINGS</b>	>32	24-32	16-24	8-16	<8	* Scoring based on frequency distribution and a mean of 18 crossings
CONSEQUENCE OF FAILURE RISK	5 VERY HIGH	4 HIGH	3 MODERATE	2 LOW	1 VERY LOW	SCORING SPECIAL NOTES
<b>ENVIRONMENTAL HEALTH</b>	Discharge to Class B Waterbody (Dole Brook)	N/A	Discharge to Lower Presumpscot, Capisic Brook, Fall Brook, or Nasons Brook	N/A	Discharge to All Other Waters	---
<b>PUBLIC HEALTH</b>	Discharge point within approximately 250' of identified primary contact water access location	N/A	Discharge point within approximately 500' of primary or secondary contact water access location	N/A	Discharge to All Other Waters	---
<b>RISK FACTOR</b>	<b>PRIORITY</b>	<b>HIGH</b>	<b>MODERATE</b>	<b>LOW</b>		
<b>Risk Total</b>	>8.25	2.5-8.25	2.75-5	<2.75		



### Summary of Priority MS4 Outfalls (2015)

Unique_ID	Latitude (WGS 84)	Longitude (WGS 84)	Pipe_Size	Pipe_Material
SWDP-1006	43.66813	-70.30591	60"	Reinforced Concrete
SWDP-0962	43.70101	-70.29617	30"	Reinforced Concrete
SWDP-0554	43.70066	-70.30301	12"	Corrugated Metal
SWDP-0393	43.70319	-70.32436	No pipe connectivity to determine	Vitrified Clay
SWDP-0394	43.70540	-70.30769	15"	PVC
SWDP-0620	43.70566	-70.30945	12"	Reinforced Concrete
SWDP-1020	43.71510	-70.30849	No pipe connectivity to determine	No pipe connectivity to determine
SWDP-0666	43.70453	-70.30117	15"	PVC
SWDP-0968	43.69923	-70.29840	12"	No Data
SWDP-0711	43.67140	-70.32048	54"	Corrugated Metal
SWDP-0237	43.70317	-70.30368	42"	Reinforced Concrete
SWDP-0634	43.70972	-70.30340	42"	Reinforced Concrete
DA_124	43.67082	-70.30879	60"	No Data
SWDP-0736	43.67866	-70.26242	60"	Reinforced Concrete
SWDP-1082	43.66978	-70.27731	No pipe connectivity to determine	No pipe connectivity to determine
SWDP-0623	43.66639	-70.26233	72"	Reinforced Concrete
SWDP-0975	43.69055	-70.30589	Egg-shaped	Reinforced Concrete
DA_129	43.69427	-70.28210	8'x5' box culvert	No Data
SWDP-0976	43.67992	-70.31754	No Data	No Data
SWDP-0901	43.70435	-70.30109	18"	Reinforced Concrete

Notes: Outfall IDs with DA\_ in the ID have not been identified as outfalls within the DPW GIS and will need to be confirmed in the field.

Drainage ID	Former ID	Drainage Acres	Size Rank	Commercial/Industrial Acres	Commercial/Industrial % of Drainage	Residential Acres	Residential % of Drainage	Other Use Acres	Other Use % of Drainage	No Analysis Acres	No Analysis % of Drainage	Land Use Rank	Sanitary Sewer Pipe Mean Age	Sanitary Sewer Pipe Mean Age Rank	Sanitary Sewer Pipe Density (/ft-acre)	Sanitary Sewer Pipe Density Rank	Sewer Crossings	Sewer Crossings Rank	Development Mean Age	Development Rank	EH Rank	PH Rank	Consequence Score	Likelihood Score	Risk Total
SWDP-1006	DA_125	169.4	5	18.0	10.6	88.5	52.3	20.8	12.3	42.1	24.8	3	74.3	4	178.7	3	150	5	84.1	5	3	3	4.2	4.2	12.5
SWDP-0962	DA_128	137.7	5	22.5	16.8	71.4	53.4	23.5	17.6	16.3	12.2	3	45.1	3	29.2	5	43	5	64.2	5	5	1	3.7	3.7	11.0
SWDP-0554	DA_156	68.5	4	1.8	2.6	41.3	60.2	9.5	13.9	15.9	23.2	3	37.5	2	161.9	1	40	5	60.2	5	5	1	3	3	11.0
SWDP-0393	DA_46	14.2	2	10.6	74.2	0.4	2.8	1.1	7.4	2.2	15.5	4	23.4	2	103.9	2	6	1	64.9	5	3	5	4	4	10.7
SWDP-0394	DA_127	46.2	3	0.5	1.2	34.7	75.2	3.4	7.4	7.5	16.3	3	22.4	2	130.4	2	34	5	54.8	5	5	1	3	3	10.0
SWDP-0620	DA_130	31.7	3	1.2	3.8	17.1	54.0	2.6	8.1	10.8	34.0	3	40.2	3	220.0	3	15	2	62.7	5	5	1	3	3	9.5
SWDP-1020	DA_01	10.2	2	5.5	53.7	0.1	0.8	2.6	25.2	2.1	20.3	4	48.0	3	181.1	1	6	1	58.5	5	5	1	3	3	9.0
SWDP-0666	DA_38	25.2	3	0.3	25.2	20.3	80.3	0.0	0.1	20.3	46.9	3	54.5	3	153.6	3	16	3	46.2	5	3	5	1	2	9.0
SWDP-0968	DA_79	11.4	2	0.2	6.3	6.3	54.7	1.0	8.3	4.1	35.6	3	52.6	3	176.3	3	9	2	64.7	5	5	1	3	3	9.0
SWDP-0711	DA_94	107.4	5	74.8	69.6	3.7	3.4	21.7	20.2	7.3	6.8	4	39.8	2	40.4	1	5	1	58.5	5	3	3	3	3	9.0
SWDP-0237	DA_154	35.5	3	1.9	5.4	18.9	53.3	7.2	20.3	7.4	20.9	3	23.7	2	114.0	2	12	2	55.8	5	1	12	3	2	8.5
SWDP-0634	DA_06	33.9	3	0.1	0.3	27.7	81.9	0.3	1.0	5.7	16.7	3	28.7	2	119.3	2	19	3	33.8	3	5	1	3	2	8.0
DA_124	DA_124	138.5	5	18.5	13.8	75.2	53.4	23.5	17.6	16.3	12.2	3	45.1	3	29.2	5	43	5	71.6	5	5	1	2	4	8.0
SWDP-0736	DA_136	53.1	4	8.9	16.8	21.4	40.3	9.1	17.1	13.7	25.8	2	60.2	4	248.4	4	40	5	82.1	5	3	1	2	2	8.0
SWDP-1082	DA_141	69.5	4	6.3	9.0	39.6	57.0	7.9	11.4	15.7	22.6	3	68.3	4	211.0	3	66	5	92.5	5	1	3	2	4	8.0
SWDP-0623	DA_118	19.3	2	9.8	50.7	0.4	2.1	4.9	25.7	4.1	21.5	4	66.1	4	271.5	4	28	4	57.9	5	1	3	2	2	4.0
SWDP-0975	DA_126	155.2	5	12.4	8.0	18.1	105.7	9.1	5.8	28.1	18.1	3	50.7	3	146.6	2	100	5	61.8	5	3	1	2	2	3.8
DA_129	DA_129	405.2	5	80.6	19.9	225.7	55.7	44.9	11.1	54.1	13.3	3	45.0	3	146.3	2	281	5	63.1	5	3	1	2	2	3.8
SWDP-0976	DA_83	51.0	4	26.3	51.6	4.6	9.0	11.2	22.8	8.9	17.4	4	38.5	2	163.0	3	35	5	62.9	5	3	1	2	2	3.8
SWDP-0901	DA_39	9.9	1	0.0	0.0	7.2	72.3	0.3	3.1	2.4	24.6	3	31.9	2	226.5	4	9	2	35.7	3	4	1	3	3	2.5
SWDP-1080	DA_107	39.3	3	2.6	24.7	62.9	1.5	3.7	10.5	26.7	3	66.5	4	3.7	218.6	3	27	4	82.9	5	1	3	2	2	3.7
SWDP-1090	DA_113	33.2	3	9.9	29.7	12.4	37.4	1.3	3.8	9.7	29.1	2	81.4	5	220.0	3	30	4	106.2	5	1	3	2	2	3.7
SWDP-0359	DA_123	106.0	5	17.4	16.4	46.6	21.9	20.6	17.4	16.4	2	2	56.9	3	146.7	2	52	5	74.8	5	1	3	2	2	3.7
SWDP-0992	DA_142	61.4	4	5.2	61.4	36.3	59.1	2.1	3.4	36.3	17.9	3	92.7	5	219.3	3	2	2	90.9	5	1	3	2	2	3.7
SWDP-0236	DA_65	231.8	5	78.7	33.9	71.4	30.8	43.7	18.9	28.1	2	2	511.1	2	29.5	5	3	116	70.9	5	3	1	2	2	3.7
SWDP-0631	DA_139	39.4	3	0.0	0.1	29.4	74.8	0.4	1.0	9.5	24.2	3	56.7	3	201.5	3	26	2	74.4	5	1	3	2	2	3.5
SWDP-0630	DA_158	28.4	3	3.0	10.7	19.2	67.7	0.4	1.4	5.7	20.2	3	47.6	3	153.9	3	27	4	71.7	5	1	3	2	2	3.5
SWDP-1064	DA_64	48.1	3	26.6	55.3	4.5	9.4	8.6	17.9	8.4	4	4	61.8	4	126.2	2	21	3	68.5	5	3	1	2	2	3.5
SWDP-0633	DA_07	12.1	2	0.0	0.2	9.9	82.4	0.0	0.0	2.1	0.2	3	42.6	3	119.2	2	6	1	47.7	3	5	1	3	3	2.3
SWDP-0897	DA_08	0.1	1	11.5	0.8	8.4	73.0	0.6	5.5	2.4	20.7	3	51.4	2	106.4	3	7	1	51.4	0.8	3	1	2	2	2.3
SWDP-1024	DA_55	58.1	4	37.7	64.8	3.5	6.0	7.1	12.2	9.8	17.9	4	57.6	3	85.3	2	15	2	62.9	5	3	1	2	2	3.3
SWDP-1041	DA_73	58.2	4	1.1	1.9	27.8	47.7	18.3	31.4	11.1	19.0	2	48.1	3	117.0	2	28	4	59.9	5	3	1	2	2	3.3
SWDP-0985	DA_86	13.0	2	0.0	0.0	8.3	63.9	1.1	8.7	3.6	27.3	3	50.8	3	234.1	4	17	3	62.9	5	3	1	2	2	3.3
SWDP-0694	DA_90	3.2	1	0.0	0.0	0.0	54.8	0.0	1.7	3.0	45.2	3	93.0	5	302.8	5	7	1	73.0	5	3	1	2	2	3.3
SWDP-0898	DA_12	16.4	2	0.0	0.0	11.6	71.2	2.4	14.8	2.3	0.0	3	29.4	2	119.9	2	3	1	39.3	3	5	1	3	3	2.2
SWDP-0260	DA_120	4.5	1	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	1	0.0	1	0	1	66.0	5	3	1	2	2	6.5
SWDP-0607	DA_44	8.0	1	7.6	94.6	0.0	0.0	0.0	0.0	0.0	5.4	4	No Data		No Data		1	1	38.6	3	5	1	3	3	2.2
SWDP-1072	DA_45	13.3	2	8.6	65.0	0.2	1.3	0.0	0.0	4.5	33.7	4	26.8	2	74.4	1	3	1	48.5	3	5	1	3	3	2.2
SWDP-0993	DA_106	53.5	4	42.5	79.3	15.6	0.1	0.2	2.5	79.5	4.8	4	64.3	4	33.8	1	4	1	58.3	5	3	1	2	2	6.3
SWDP-0915	DA_23	38.2	3	0.9	2.5	26.9	70.5	1.5	3.9	8.8	23.1	3	47.9	3	143.7	3	20	3	62.1	5	3	1	2	2	3.2
DA_62	DA_62	16.0	2	0.0	0.0	16.1	111.8	0.3	1.8	62.3	4	24.7	3	11.8	62.3	4	24.7	2	59.8	5	3	1	2	2	6.3
SWDP-0869	DA_77	37.3	3	3.2	8.7	25.5	68.3	1.4	3.7	3.2	19.3	3	21.0	2	182.6	3	22	2	63.3	5	3	1	2	2	3.2
SWDP-0628	DA_119	44.9	3	22.3	49.5	1.3	3.0	45.9	8.5	18.8	2	2	59.3	3	79.4	2	17	3	57.3	5	1	3	2	2	3.0
SWDP-0974	DA_61	16.9	2	0.0	0.0	9.8	58.0	2.9	17.0	4.2	25.0	3	59.5	3	161.8	3	10	2	64.8	5	3	1	2	2	3.0
SWDP-1070	DA_69	19.4	2	1.2	6.4	8.2	42.3	4.3	22.0	5.7	29.3	2	89.8	5	167.8	3	4	1	75.9	5	3	1	2	2	3.0
SWDP-0983	DA_84	3.3	1	0.0	0.0	2.2	67.0	0.0	0.0	1.1	0.0	3	62.6	4	269.5	4	6	1	61.4	5	3	1	2	2	3.0
SWDP-0987	DA_99	0.0	0	0.0	0.0	0.0	41.7	0.0	2.4	53.9	6.0	3	41.7	3	18.5	5	3	1	66.7	5	3	1	2	2	3.0
SWDP-0706	DA_105	44.2	3	38.3	86.6	4.6	10.5	0.0	0.0	1.3	4.7	4	47.3	3	14.4	1	4	1	50.2	5	3	1	2	2	2.8
SWDP-0687	DA_133	18.8	2	0.4	2.0	9.1	48.6	4.5	24.1	4.8	25.4	2	65.7	4	124.2	2	9	2	57.4	5	3	1	2	2	2.8
SWDP-0893	DA_16	58.7	4	19.9	33.8	24.1	40.9	6.6	11.3	8.2	14.0	2	34.5	2	105.5	2	11	2	52.0	5	3	1	2	2	2.8
SWDP-0742	DA_71	1.8	1	0.0	0.0	0.9	53.2	0.5	27.2	0.4	19.7	3	61.6	4	220.5	3	1	1	65.7	5	3	1	2	2	2.8
SWDP-1045	DA_97	3.9	1	0.0	0.0	2.6	67.3	0.0	0.0	2.6	11.2	3	54.0	3	289.5	4	5	1	51.5	5	3	1	2	2	2.8
SWDP-0909	DA_91	3.5	1	0.2	4.5	2.1	59.8	0.0	0.4	1.2	35.3	3	25.3	2	104.4	1	5	2	74.6	5	3	1	2	2	2.7
SWDP-0902	DA_58	8.9	1	0.0	0.0	8.9	100.0	0.0	0.0	0.0	0.0	3	No Data		102.9	2	1	1	36.1	3	5	1	3	3	1.8
SWDP-0944	DA_04	21.6	2	1.3	0.0	6.1	72.7	4.6	21.2	0.0	0.0	3	24.0	2	84.8	2	9	2	76.8	5	3	1	2	2	5.3
SWDP-0921	DA_24	10.0	2	0.0	0.0	6.9	68.7	0.3	3.0	2.8	27.8	3	37.5	2	234.8	4	10	2	46.9	3	3	1	2	2	2.7
SWDP-0926	DA_35	41.9	3	0.9	2.1	31.8	76.0	0.3	0.6	8.9	21.3	3	36.7	2	140.3	2	23	3	45.2	3	3	1	2	2	5.3
SWDP-1044	DA_72	0.4	1	0.4	2.5	0.0	52.1	0.6	13.7	0.5	24.7	3	51.0	3	6	6	6	2	69.2	5	3	1	2	2	5.3
SWDP-0741	DA_76	11.0	2	2.7	24.6	6.0	54.6	0.0	0.0	2.3	20.8	3	36.7	2	233.9	4	14	2	31.1	3</					

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## APPENDIX G: TRAINING MATERIALS

# Dry Weather Stormwater Outfall Inspections



**DPW Water Resources Division**  
**Training Guide**  
**2020**



# Dry Weather Outfall (DWO) Inspection Training Topics

- **Stormwater Program: Elements of the MS4 General Permit**
- **Why DWO Inspections Are Important**
- **When To Conduct DWO Inspections**
- **What To Look For During DWO Inspections**
- **How To Enter Inspection Data Using Cityworks Mobile**

# Stormwater Program Elements

Pollution Prevention & Good Housekeeping



Public Education & Outreach



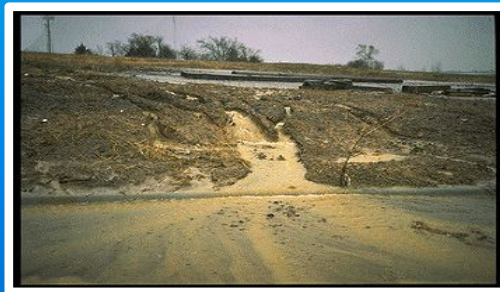
Post-Construction Stormwater Management



Public Involvement & Participation



Construction Site Stormwater Runoff Control



Illicit Discharge Detection & Elimination



**MS4 = Municipal Separate Storm Sewer System**

# Why Conduct Dry Weather Outfall Inspections?

## Opportunistic Illicit Discharge Detection:

- If a storm drain or open drainage channel is still flowing several days after the last rain event there *might* be a sewer-storm drain cross-connection
- Look for Evidence of:
  - Sewage Contamination
  - Spills or Leaks of Petroleum Product or Other Hazardous Chemicals
  - Illegal Dumping
  - High Concentrations of Fertilizer/Nutrients
  - Sediment Discharges
  - Other Sources of Water Pollution
- Opportunity to Identify Storm Drain or Open Drainage Maintenance Needs:
  - Brush Clearing
  - Sediment Removal
  - Pipe or Open Ditch Cleaning
  - Outfall, ditch or Pipe Repairs
  - Erosion Below the Outfall

# When To Conduct Dry Weather Outfall Inspections

- ***Dry Weather*** is defined as a 72 hour period with less than 1/10-inch rainfall and *no snow melt*
- **Best Time to Conduct Dry Weather Outfall Inspections:**
  - **Before the First Snow Fall or Several Weeks After Final Snow Melt to Avoid Runoff or Groundwater Discharge Situations**
  - **When the Vegetation is Low and the Outfalls Are Easier to Locate and Access**



# What To Look For During A Dry Weather Outfall Inspection

## ➤ Visible Signs of Water Pollution

- Pipe or Ditch Flow/Seepage Flow*
- Water Color
- Water Clarity & Turbidity
- Foam/Suds
- Oil, Grease, Paint, Other Chemicals
- Sewage
- Algae/Bacterial Growth
- Pet Waste Bags
- Trash/Floatables

## ➤ Odors

- Sewage/Septic
- Oil, Gasoline, Petroleum
- Musty

## ➤ Maintenance Needs:

- Illegal Trash/Yard Waste Disposal
- Outfall Overgrown By Vegetation
- Pipe or Open Ditch Needs Cleaning
- Outfall Needs Repairs

# Pipe or Open Drainage Flow: Might Indicate A Sewer-Storm Drain Cross-Connection



**Dry Weather Flow:** Is this a Cross-Connection, Ground Water/Brook Flow or Allowable/Non-Allowable Input to Catch Basin?

**Dry Weather Flow  
Requires  
Follow-up  
Investigation**



**Dry Weather Flow With Suds:** Sink, Dishwasher, Washing Machine Sewer Cross-Connection or Car/Truck Washing (Homeowner or Professional)???

# Sewage Indicators



Visible Sewage  
Human Waste  
Toilet Paper  
Hygiene Products  
“Flushable” Wipes



Other Indicators  
Gray, Cloudy Color  
Stringy Gray “Sewage” Algae  
Sewage/Septic Odor  
Suds/Foam



# Pipe or Open Ditch Flow With Sediment Discharge

➤ **Indicates Ongoing or Recent Construction or Repair Activity:**

- Water Line Break
- Utility Site Dewatering
- Construction Site Dewatering

➤ **Requires *Immediate* Investigation to Identify & Eliminate the Source of the Pollutant**

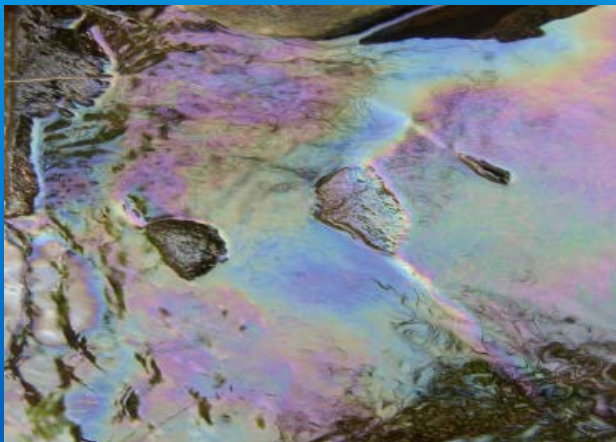
➤ **No Entity Has the Right to Pollute or Impact the City's MS4 & Should Have an ESC Plan to Prevent Such Illicit Discharges**



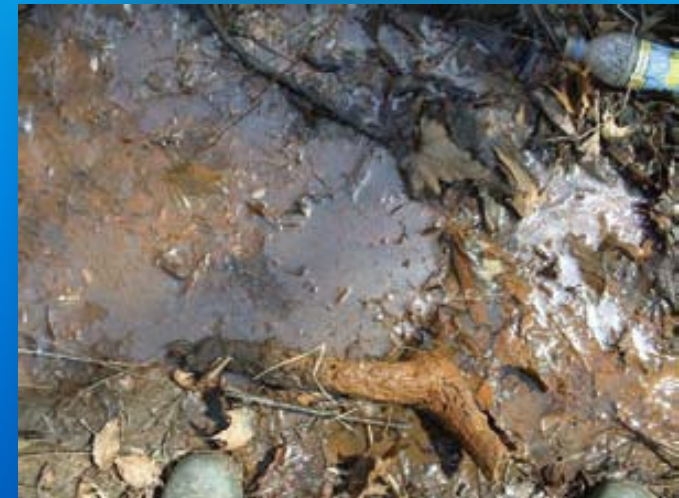
# Oil Sheen: Petroleum Products, Cooking Oil or Bacterial Activity?



- Oil, diesel, gasoline & hydraulic fluid have a distinctive odor
- When stirred, the slick will cling & recombine
- The stronger the odor, the larger the spill



- Cooking oil or grease appears to be more tan/brown & has a rancid odor
- Iron bacteria produce a slight oily sheen that has no petroleum smell
- The slick breaks up when stirred
- Orange, granular appearance
- Commonly found in standing water



# Benthic/Algae (Non-Sewage)

## ➤ Indicates Nutrient Loading:

- Fertilizers/Compost (Nitrogen, Phosphorus)
- Animal Waste (Dogs, Waterfowl, etc.)
- Metals (Iron, Manganese, etc.)
- Human Waste – Less likely unless close to septic system

## ➤ Additional Investigation Needed to Identify Obvious Sources



## Green, Blue-Green & Brown Algae:

- Might be stringy, hair-like along the channel bottom
- Might form clumps or dense mats on the water surface
- High N and/or P discharges



## Bright Red or Reddish-brown Bacteria (Iron Floc):

- High iron and/or manganese concentrations
- Not typically associated with illicit discharges; Usually natural

# Other Illicit Discharges

There is no limit to the kinds of things that can be spilled or dumped into the storm drain system



**Tile Cutting Dust & Grit**



**Paint Wash Water**

**Coolant or Dye Test?**



**Brew Mash: P.U.!!!**

**Cool, No "Eye" Test Required!!!**



# Pet Waste



## ➤ Poor Pet Waste Disposal Practices Are A Growing Problem Near Trails & Popular Dog-walking Routes

- Clog Up Catch Basins & Outfall Areas
- Bacteria, Excess Nutrients, Odor & Plastic Waste
- Tracking Will Help Education/Outreach & Waste Management Efforts – Targeted Signage





# Illegal Trash or Yard Waste Dumping

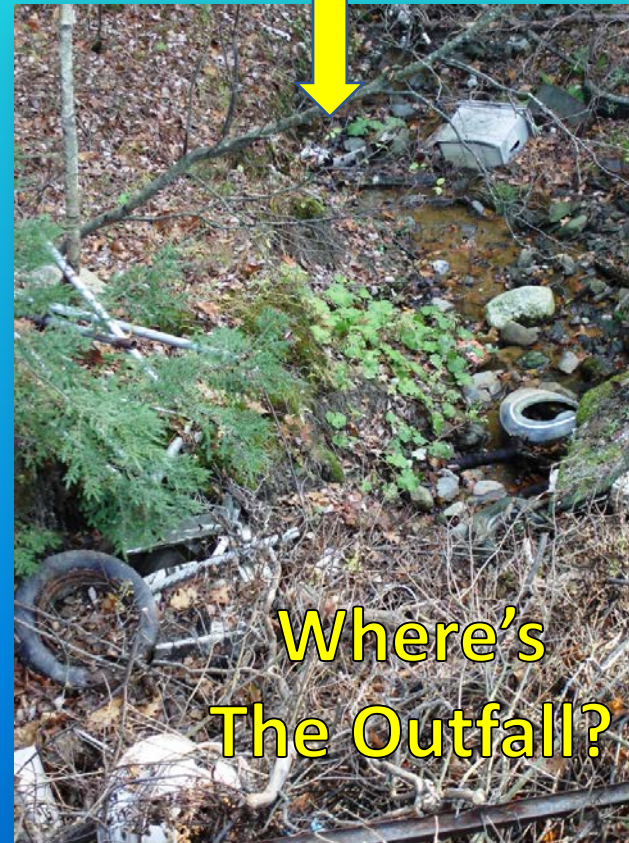
## ➤ Illegal Dumping:

- Residential Appliances, Debris & Trash
- Commercial Construction Debris & Yard Waste
- Residential Yard Waste

## ➤ Challenges of Illegal Dumping:

- Makes it difficult to find, inspect & maintain a stormwater outfall
- Safety hazard for WR personnel
- Expensive & hard to clean up
- Difficult to identify the offender & prevent in the future

Illegal Dumping



Illegal Commercial Dumping



# Outfall Overgrown



- Sometimes It's Difficult to Locate Outfalls After Only One Season's Growth
- It's Important to Document When Brush & Vegetation Are Becoming An Inspection & Maintenance Issue

Where's  
The Outfall?



Ummm . . .  
Houston,  
we have a  
problem . . .

# Outfall Maintenance/Repair Required



- When Conducting an Inspection Be Sure to Identify Repair & Maintenance Needs
- The Sooner Problems are Identified, the Sooner They Can Be Addressed
- This Saves Time, Money, Prevents Water Pollution and Reduces the City's Property Damage Liability
- Be Specific When Describing the Problem & Take a Photo



## These Are Just A Few Examples of Maintenance & Repair Needs:

- Pipe Joint Failure/Segment Disconnected
  - Erosion Around or Below Outfall
- Pipe/Ditch Clogged by Sediment or Debris
  - Corroded or Broken Pipe
- Hanging Pipe (Caused by progressive slope erosion)
  - Headwall Failure
- Plunge Pool Repair or Sediment Removal



# Using Cityworks Mobile for Inspection Data Entry in the Field

- There's an SOP for that!!!
- iPad passcode: XXXX(xx)
- Cityworks login: user-specific
- Any questions?

City of Portland, Department of Public Works Water Resources Division			
Department	Water Resources	Document #	WR-000-11
Prepared by:	Allison Fisher	Date:	5/5/2017
Supersedes:		Date Issued:	

## Standard Operating Procedure (SOP) Title: Cityworks Mobile for DWO Inspections

**Document Owner:**  
Asset Management Team/City of Portland

**Affected Parties:**  
Asset Management Team, Stormwater Program Coordinator, Water Resources O&M

**Purpose:**  
This SOP outlines how to use Cityworks mobile app in the field to enter inspections performed on dry weather outfalls.

**Scope: (Activities and Responsibilities)**  
The user must be able to navigate the iPad. It is geared toward operators and staff that perform inspections on dry weather outfalls in the field.

**Resources and training:**  
DWO Inspector must attend training offered by Stormwater Program Coordinator prior to performing inspections. For digital inspections, Cityworks login (password and username), Cityworks Mobile (Cityworks 4 app), connection to wifi or data (MiFi, 3G, 4G LTE, etc.), and iPad are required.

**Definitions:**  
This section will include definitions in a table format for any uncommon words, phrases and abbreviations used in this document.

DWO	Dry weather outfall
IDDE	Illicit Discharge Detection & Elimination

**Appendix:**  
Appendix Items

# Inspections and Work Orders

- **Inspections are created by SW Coordinator or Asset Management Team**
  - Then they are visible in Cityworks Mobile
- **Work Orders are created by SW Coordinator, Asset Management Team and sometimes WR team**
  - Then they are visible in Cityworks Mobile
  - They can be for any of the maintenance needs discussed previously
  - They can be for IDDE investigation or follow-up



Now...Less talking, more exploring the iPads!



Questions?



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## APPENDIX H: EPA REGION 1 PROTOCOLS



# **EPA New England Bacterial Source Tracking Protocol**

## Draft – January 2012

### **Purpose**

This document provides a common framework for EPA New England (“EPA-NE”) staff to develop and implement bacterial source tracking sample events, and provides a recommended approach to watershed association, municipal, and State personnel. Adopted from Boston Water and Sewer Commission (“BWSC”) (2004), Pitt (2004), and based upon fieldwork conducted and data collected by EPA-NE, the protocol relies primarily on visual observations and the use of field test kits and portable instrumentation during dry and wet weather to complete a screening-level investigation of stormwater outfall discharges or flows within the drainage system. When necessary, the addition of more conclusive chemical markers may be included. The protocol is applicable to most typical Municipal Separate Storm Sewer Systems (“MS4s”) and smaller tributary streams. The smaller the upstream catchment area and/or more concentrated the flow, the greater the likelihood of identifying an upstream wastewater source.

### **Introduction**

The protocol is structured into several phases of work that progress through investigation planning and design, laboratory coordination, sample collection, and data evaluation. The protocol involves the concurrent collection and analyses of water samples for surfactants, ammonia, total chlorine, and bacteria. When more precise confirmation regarding the presence or absence of human sanitary sewage is necessary, and laboratory capacity is available, the additional concurrent collection of samples for select Pharmaceutical and Personal Care Product (“PPCP”) analysis is advised. When presented with a medium to large watershed or numerous stormwater outfalls, the recommended protocol is the screening of all outfalls using the surfactant, ammonia, total chlorine, and bacterial analyses, in addition to a thorough visual assessment. The resulting data and information should then be used to prioritize and sample a subset of outfalls for all parameters, including PPCP compounds and additional analyses as appropriate. Ideally, screening-level analyses can be conducted by state, municipal, or local watershed association personnel, and a prioritized sub-set of outfalls can be sampled through a commercial laboratory or by EPA-NE using more advanced confirmatory techniques.

### **Step I – Reconnaissance and Investigation Design**

Each sample event should be designed to answer a specific problem statement and work to identify the source of contamination. Any relevant data or reports from State, municipal, or local watershed associations should be reviewed when selecting sample locations. Aerial photography, mapping services, or satellite imagery resources are available free to the public through the internet, and offer an ideal way to pre-select locations for either field verification or sampling.

Sample locations should be selected to segregate outfall sub-catchment areas or surface waters into meaningful sections. A common investigative approach would be the identification of a

specific reach of a surface water body that is known to be impaired for bacteria. Within this specific reach, stormwater outfalls and smaller tributary streams would be identified by desktop reconnaissance, municipal outfall mapping, and field investigation when necessary. Priority outfalls or areas to field verify the presence of outfalls should be selected based on a number of factors, including but not limited to the following: those areas with direct discharges to critical or impaired waters (e.g. water supplies, swimming beaches); areas served by common/twin-invert manholes or underdrains; areas with inadequate levels of sanitary sewer service, Sanitary Sewer Overflows (“SSOs”) or the subject of numerous/chronic sanitary sewer customer complaints; formerly combined sewer areas that have been separated; culverted streams, and; outfalls in densely populated areas with older infrastructure. Pitt (2004) provides additional detailed guidance.

When investigating an area for the first time, the examination of outfalls in dry-weather is recommended to identify those with dry-weather flow, odor, and the presence of white or gray filamentous bacterial growth that is common (but not exclusively present) in outfalls contaminated with sanitary. For those outfalls with dry-weather flow and no obvious signs of contamination, one should never assume the discharge is uncontaminated. Sampling by EPA-NE staff has identified a number of outfalls with clear, odorless discharges that upon sampling and analyses were quite contaminated. Local physical and chemical conditions, in addition to the numerous causes of illicit discharges, create outfall discharges that can be quite variable in appearance. Outfalls with no dry-weather flow should be documented, and examined for staining or the presence of any obvious signs of past wastewater discharges downstream of the outfall.

As discussed in BWSC (2004), the protocol may be used to sample discreet portions of an MS4 sub-catchment area by collecting samples from selected junction manholes within the stormwater system. This protocol expands on the BWSC process and recommends the concurrent collection of bacteria, surfactant, ammonia, and chlorine samples at each location to better identify and prioritize contributing sources of illicit discharges, and the collection of PPCP compounds when more conclusive source identification is necessary.

Finally, as discussed further in Step IV, application of this sampling protocol in wet-weather is recommended for most outfalls, as wet-weather sampling data may indicate a number of illicit discharge situations that may not be identified in dry weather.

## **Step II – Laboratory Coordination**

All sampling should be conducted in accordance with a Quality Assurance Project Plan (“QAPP”). A model QAPP is included as Attachment 1. While the QAPP details sample collection, preservation, and quality control requirements, detailed coordination with the appropriate laboratory staff will be necessary. Often sample events will need to be scheduled well in advance. In addition, the sampling team must be aware of the strict holding time requirements for bacterial samples – typically samples analysis must begin within 6 hours of sample collection. For sample analyses conducted by a commercial laboratory, appropriate coordination must occur to determine each facilities respective procedures and requirements.

The recommendations in this protocol are based on the use of a currently unpublished EPA-NE modification to *EPA Method 1694 – Pharmaceuticals and Personal Care Products in Water, Soil, Sediment, and Biosolids by HPLC/MS/MS*. Several commercial laboratories may offer Method 1694 capability. EPA-NE recommends those entities wishing to utilize a contract laboratory for PPCP analyses ensure that the laboratory will provide quantitative analyses for acetaminophen, caffeine, cotinine, carbamazepine, and 1,7-dimethylexanthine, at Reporting Limits similar to those used by EPA-NE (See Attachment 2). Currently, the EPA-NE laboratory has limited capacity for PPCP sampling, and any proposed EPA-NE PPCP sample events must be coordinated well in advance with the appropriate staff.

### **Step III – Sample Collection**

Once a targeted set of outfalls has been selected, concurrent sampling and analyses for surfactants, ammonia, and total chlorine (which can all be done through the use of field kits), in addition to bacteria (via laboratory analysis) should be conducted. When numerous outfalls with dry-weather flow exist, sample locations should be prioritized according to the criteria mentioned above. In addition, field screening using only the field kits may occur during the field reconnaissance. However, it must be emphasized that the concurrent sampling and analyses of bacteria, surfactant, ammonia, and total chlorine parameters is the most efficient and cost-effective screening method.

When first observed, the physical attributes of each outfall or sampling location should be noted for construction materials, size, flow volume, odor, and all other characteristics listed on the data collection form (Attachment 3). In addition, GPS coordinates should be collected and a photograph of the sample location taken. Whenever possible, the sampling of storm drain outfalls should be conducted as close to the outfall opening as possible. Bacterial samples should be collected first, with care to not disturb sediment materials or collect surface debris/scum as best possible. A separate bottle is used to collect a single water sample from which aliquots will be analyzed for surfactants, ammonia, and total chlorine. A sample for PPCP analysis is recommended to be collected last, as the larger volume required and larger bottle size may cause some sediment disturbance in smaller outfalls or streams. If necessary, a second smaller, sterile and pre-cleaned sampling bottle may be used to collect the surface water which can then be poured into the larger PPCP bottle. Last, a properly calibrated temperature/specific conductance/salinity meter should be used to record all three parameters directly from the stream or outfall. When flow volume or depth is insufficient to immerse the meter probe, a clean sample bottle may be utilized to collect a sufficient volume of water to immerse the probe. In such instances, meter readings should be taken immediately.

As soon as reasonably possible, sample aliquots from the field kit bottle should be analyzed. When concurrent analyses are not possible, ammonia and chlorine samples should be processed first, followed by surfactant analysis, according to each respective Standard Operating Procedure as appropriate based on the particular brand and type of field test kit being used. All waste from the field test kits should be retained and disposed of according to manufacture instructions. Where waste disposal issues would otherwise limit the use of field kits, EPA-NE recommends

that, at a minimum, ammonia test strips with a Reporting Limit below 0.5 mg/L be utilized. Such test strips typically are inexpensive and have no liquid reagents associated with their use. Results should be recorded, samples placed in a cooler on ice, and staff should proceed to the next sample location.

Upon completion of sampling and return to the laboratory, all samples will be turned over to the appropriate sample custodian(s) and accompanied by an appropriate Chain-of-Custody (“COC”) form.

#### Step IV – Data Evaluation

Bacterial results should be compared to the applicable water quality standards. Surfactant and ammonia concentrations should be compared to the thresholds listed in Table 1. Evaluation of the data should include a review for potential positive results due to sources other than human wastewater, and for false negative results due to chemical action or interferences. In the EPA-NE region, field sampling has indicated that the biological breakdown of organic material in historically filled tidal wetlands may cause elevated ammonia readings, as can the discharge from many landfills. In addition, salinity levels greater than 1 part per thousand may cause elevated surfactant readings, the presence of oil may likewise indicate elevated levels, and fine suspended particulate matter may cause inconclusive surfactant readings (for example, the indicator ampule may turn green instead of a shade of blue). Finally, elevated chlorine from leaking drinking water infrastructure or contained in the illicit wastewater discharge may inhibit bacterial growth and cause very low bacterial concentrations. Any detection of total chlorine above the instrument Reporting Limit should be noted.

**Table 1 – Freshwater Water Quality Criteria, Threshold Levels, and Example Instrumentation**<sup>1</sup>

Analyte/ Indicator	Threshold Levels/ Single Sample <sup>3</sup>	Instrumentation
E. coli <sup>2</sup>	235 cfu/100ml	Laboratory via approved method
Enterococci <sup>2</sup>	61 cfu/100ml	Laboratory via approved method
Surfactants (as MBAS)	≥ 0.25 mg/l	MBAS Test Kit (e.g. CHEMetrics K-9400)
Ammonia (NH <sub>3</sub> )	≥ 0.5 mg/l	Ammonia Test Strips (e.g. Hach brand)
Chlorine	> Reporting Limit	Field Meter (e.g. Hach Pocket Colorimeter II)
Temperature	See Respective State Regulations	Temperature/Conductivity/Salinity Meter (e.g. YSI Model 30)

<sup>1</sup> The mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. EPA

<sup>2</sup> 314 CMR 4.00 MA - Surface Water Quality Standards - Class B Waters.

<sup>3</sup> Levels that may be indicative of potential wastewater or washwater contamination

Once dry-weather data has been examined and compared to the appropriate threshold values, outfalls or more discreet reaches of surface water can be selected for sampling or further investigation. Wet-weather sampling is also recommended for all outfalls, in particular for those that did not have flow in dry weather or those with dry-weather flow that passed screening thresholds. Wet-weather sampling will identify a number of situations that would otherwise pass unnoticed in dry weather. These wet-weather situations include, but are not limited to the following: elevated groundwater that can now cause an exchange of wastewater between cracked or broken sanitary sewers, failed septic systems, underdrains, and storm drains; increased sewer volume that can exfiltrate through cracks in the sanitary piping; increased sewer volume that can enter the storm drain system in common manholes or directly-piped connections to storm drains; areas subject to capacity-related SSO discharges, and; illicit connections that are not carried through the storm drain system in dry-weather.

### Step V – Costs

Use of field test kits and field instruments for a majority of the analytical parameters allows for a significantly reduced analytical cost. Estimated instrument costs and pro-rated costs per 100 samples are included in Table 2. The cost per 100 samples metric allows averaged costs to account for reagent refills that are typically less expensive as they do not include the instrument cost, and to average out the initial capital cost for an instrument such as a temperature/ conductivity/salinity meter. For such capital costs as the meters, the cost over time will continue to decrease.

**Table 2 – Estimated Field Screening Analytical Costs <sup>1</sup>**

Analyte/ Indicator	Instrument or Meter <sup>2</sup>	Instrument or Meter Cost/No. of Samples	Cost per Sample (Based on 100 Samples) <sup>3</sup>
Surfactants (as MBAS)	Chemetrics K- 9400	\$77.35/20 samples ((\$58.08/20 sample refill))	\$3.09
Ammonia (NH <sub>3</sub> )	Hach brand 0 – 6 mg/l	\$18.59/25 samples	\$0.74
Total Chlorine	Hach Pocket Colorimeter II	\$389/100 samples ((\$21.89 per 100 sample refill))	\$3.89
Temperature/ Conductivity/ Salinity	YSI	\$490 (meter and cable probe)	\$4.90

<sup>1</sup> Estimated costs as of February 2011

<sup>2</sup> The mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. EPA

<sup>3</sup> One-time meter costs and/or refill kits will reduce sample costs over time

From Table 2, the field analytical cost is approximately \$13 per outfall. Typical bacterial analyses costs can vary depending on the analyte, method, and total number of samples to be

performed by the laboratory. These bacterial analyses costs can range from \$20 to \$60. Therefore, the analytical cost for a single outfall, based on the cost per 100 samples, ranges from \$33 to \$73. As indicated above, these costs will decrease slightly over time due to one-time capitals costs for the chlorine and temperature/conductivity/salinity meters.

## **Step VI – Follow-Up**

Once all laboratory data has been reviewed and determined final in accordance with appropriate quality assurance controls, results should be reviewed with appropriate stakeholders to determine next steps. Those outfalls or surface water segments that fail to meet the appropriate water quality standard, and meet or exceed the surfactant and ammonia threshold values, in the absence of potential interferences mentioned in Step IV, indicate a high likelihood for the presence of illicit connections upstream in the drainage system or surface water. Whereas illicit discharges are quite variable in nature, the exceedance of the applicable water quality standard and only the ammonia or surfactant threshold value may well indicate the presence of an illicit connection. When available, the concurrent collection and analyses of PPCP data can greatly assist in confirming the presence of human wastewater. However, such data will not be available in all instances, and the collective data set and information regarding the physical characteristics of each sub-catchment or surface water reach should be used to prioritize outfalls for further investigation. As warranted, data may be released to the appropriate stakeholders, and should be accompanied by an explanation of preliminary findings. Release of EPA data should be fully discussed with the case team or other appropriate EPA staff.

## **References Cited**

Boston Water & Sewer Commission, 2004, *A systematic Methodology for the Identification and Remediation of Illegal Connections*. 2003 Stormwater Management Report, chap. 2.1.

Pitt, R. 2004 *Methods for Detection of Inappropriate Discharge to Storm Drain Systems*. Internal Project Files. Tuscaloosa, AL, in The Center for Watershed Protection and Pitt, R., *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*: Cooperative Agreement X82907801-0, U.S. Environmental Protection Agency, variously paged. Available at: <http://www.cwp.org>.

## **Instrumentation Cited (Manufacturer URLs)**

MBAS Test Kit - CHEMetrics K-9400: <http://www.chemetrics.com/Products/Deterg.htm>

Portable Colorimeter – Hach Pocket Colorimeter II: <http://www.hach.com/>

Ammonia (Nitrogen) Test Strips: <http://www.hach.com/>

Portable Temperature/Conductivity/Salinity Meter: YSI Model 30:  
<http://www.ysi.com/productsdetail.php?30-28>

***Disclaimer: The mention of trade names or commercial products in this protocol does not constitute endorsement or recommendation for use by the U.S. EPA.***

**Attachment 1**

Stormwater Monitoring Program QAPP  
5/17/12  
Revision 1  
Page 1 of 7

**Stormwater Monitoring Quality Assurance Project Plan  
2012-2017**

RFA #

**Sampling Plan Acceptance**

EPA OES Enforcement and Project Manager/Coordinator  <b>Signature:</b>	   <b>Date:</b>
EPA OEME Project Managers/Coordinator  <b>Signature:</b>	   <b>Date:</b>
EPA OEME QA Officer  <b>Signature:</b>	   <b>Date:</b>
EPA Chemistry Team Lead  <b>Signature:</b>	   <b>Date:</b>

## **Attachment 1**

Stormwater Monitoring Program QAPP

5/17/12

Revision 1

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### **1.0 Background**

U.S. EPA Administrative Order 5360.1 requires that “all projects involving environmental monitoring performed by or for the U.S. EPA shall not be undertaken without an adequate Quality Assurance Project Plan (QAPP).” The purpose of this document is to describe the process used to develop, select, manage, and finalize stormwater monitoring projects. In describing this process, quality assurance goals and methods will be established, thus ensuring that the overall program and each monitoring project will meet or exceed EPA requirements for quality assurance.

The objective of these projects will be to collect data that is usable by EPA OES enforcement staff for enforcement actions and information requests. The primary focus of this project will be on urban water stormwater outfalls in the New England Region watersheds.

### **2.0 Sampling overview**

Monitoring will be conducted on pre-scheduled days with the Laboratory. Samples will be retrieved from surface water, in stream or outfalls at suspected hotspots or areas that need further delineation. Sample sites will be located using GPS, with an accuracy goal of  $\pm 1$  meter and PDOP less than 6. Less accurate GPS reading or coordinates from maps will be accepted when site or other conditions do not allow  $\pm 1$  meter accuracy.

The primary focus of this sampling will be used to identify illegal discharges. Results from the sampling will be used by EPA enforcement staff for enforcement purposes. For this project, sampling will be conducted according to EPA’s Ambient Water Sampling SOP (Table 3). Volunteers and watershed association staff may assist in sampling. All procedures will be followed that are specified in Table 3. Parameter to be sampled will be predetermined by enforcement (OES) and OEME staff, based on data needs.

#### **A. Locations**

Site locations will be determined from field or desktop reconnaissance by project staff. Sample analyses will be predetermined based on conditions known about the sampling location prior to sampling. These may include data from previous sampling or from data collected from Mass DEP or local watershed associations. Any of the parameters listed in table 2 may be analyzed.

#### **B. Analytical Methods and Reporting limits**

Sample analyses will be conducted by EPA Laboratories.

This effort will test and compare the most appropriate analytical methods including, but not limited to; laboratory analysis, test kits and field analysis to determine the most effective and cost-efficient outfall and in-stream sampling approach.

Multiple and repeated testing will occur at each location to compare different method for identifying sewage contamination.

PPCPs, E.coli and enterococcus will be analyzed by EPA’s Laboratory. Surfactants, ammonia, total chlorine will be analyzed with field test kits. Potential additional laboratory analyses include nitrogen (nitrate/nitrite), TSS, BOD, surfactants, ammonia and TPH. The Laboratory used



## Attachment 1

Stormwater Monitoring Program QAPP  
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for each sampling event will be determined prior to sampling by the OEME Project Manager based on required analyses Laboratory availability and contract funds available.

Where available, a known concentration sample will be used to evaluate the performance of each test method. The known concentration sample will be processed in the field and Laboratory as a routine sample. The analyst or field technician will not know the concentration of the sample prior to analyzing and reporting the sample result. Sampling for PPCP testing will be done using extreme care not to contaminate the sample. No caffeine products should be consumed prior to sampling.

**Table 1: Parameter specifications**

<b>Parameter (lab - equipment)</b>	<b>Preservation</b>	<b>Holding time</b>
PH	None	Immediate
Temperature	None	Immediate
Sp Cond	None	Immediate
DO	None	Immediate
Total Phosphorus (EPA)	H <sub>2</sub> SO <sub>4</sub> (pH <2) + Ice	28 days
TSS (EPA)	Ice	7 days
TSS (Alpha)	Ice	7 days
BOD (Alpha)	Ice	48 hours
Surfactants (Alpha)	Ice	48 hours
Surfactants (field kit – Chemetrics)	None	Immediate
Ammonia (alpha)	H <sub>2</sub> SO <sub>4</sub> (pH <2) + Ice	28 days
Ammonia (test strips)	None	Immediate
TPH Petroleum ID (alpha)	Ice	7 Days to extraction 40 days after extraction
E. Coli (EPA)	Ice	6 hrs to lab
Enterococcus (EPA)	Ice	6 hrs to lab
PPCP	Ice (acidified in Lab)	7 day to extraction 40 days after extraction
Chlorine (Field kit – Hach)	None	Immediate

## Attachment 1

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**Table 2: Analytical References and Quality Control Goals**

		Water Quality Criteria or Guidelines (MA or EPA)	Quality Assurance Goals		
Parameter (lab- equipment)	Reporting Limits		Precision	Accuracy	Completeness
PH	4 to 10 units	6.5 - 8.3	0.02 unit	± 0.3 units	90%
Temperature	0 to +40°C	28.3°C	0.1 °C	± 0.15°C	90%
Sp Cond	0 to 100 mS/cm	NA	5 uS/cm	±10% cal std (uS/cm)	90%
DO	0.5mg/l to Sat	≥5 mg/l , ≥60% saturation	0.02mg/l	± .5 mg/l	90%
Total Phosphorus (EPA)	5.0 ug/l	NA	Field dup 30% RPD	MS 70-130%	90%
TSS (EPA)	5mg/L	NA	Field dup 30% RPD	See SOP	
TSS (Alpha)	5 mg/L	NA	Field dup 30% RPD	See SOP	90%
BOD (Alpha)	2 mg/L	NA	Field dup 30% RPD	See SOP	90%
Surfactants (field kit – Chemetrics)	0.25 mg/L <sup>1</sup>	0.25 mg/L	Field dup 30% RPD	TBD	90%
Ammonia (test strips)	0.25 mg/L <sup>1</sup>	1.0 mg/L	Field dup 30% RPD	TBD	90%
TPH Petroleum ID (alpha)	Variable	NA	Field dup 30% RPD	See SOP	
E. Coli (EPA)	4 col./ 100 ml	<=126 col./100 ml* <= 235 col./100 ml	±100 col/100ml or 30% RPD	N/A	90%
Enterococcus (EPA)	1 col/100ml	<=33 col./100 ml* <= 61 col./100 ml	±100 col/100ml or 30% RPD	See SOP	90%
PPCP	TBD	NA	Field dup 50% RPD	TBD	90%
Chlorine (Field kit – Hach)	0.02 mg/l	NA	Field dup 30% RPD	TBD	90%

Note

\*Geometric mean Criteria

TBD = To be determined, Field methods and some colorimeter methods do not have accuracy criteria determined.

<sup>1</sup> Needs field verification to confirm

## Attachment 1

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**Table 3: Field and Laboratory References**

Parameter	Analytical Method Reference	SOP reference
	<b>Field References- 5/2005</b>	
pH		
Conductivity		
Temperature		
dissolved oxygen	n/a	ECASOP-YSISondes9
Ambient water samples	n/a	ECASop-Ambient Water Sampling2
Chain of custody of samples	n/a	EIASOP-CHAINOFCUST
Sample login, tracking, disposition	n/a	EIASOP-ADMLOG14
	<b>Lab. References- 5/2005</b>	
Total Phosphorus (EPA)	EPA 365.3	EIASOP-INGTP8
TSS (EPA)	EPA 160.2	EIASOP-INGTSS-TDS-VRES5
TSS (Alpha)	EPA 160.2,SM2540D	SOP/07-29
BOD (Alpha)	EPA 405.1,SM5210B	SOP/07-13
Surfactants (field kit – Chemetrics)	Chemetrics	Draft
Ammonia (test strips)	Hach	Draft
TPH Petroleum ID (alpha)	8015B (M)	0-017
E. Coli (EPA)	SM9230	ECASOP- TC/EC Colilert2
Enterococcus (EPA)	SM9230	ECASOP-Enterolert1
PPCP	EPA 1694	TBD
Chlorine (Field kit – Hach)	Hach	TBD

\*Specific conductance is the only parameter identified as non critical

Bottle list

**Table 4: Bottle Sampling List**

Parameter (lab - equipment)	Bottle	Preservation
<b>Primary analyses</b>		
E. Coli (EPA)	(2) 120ml or 250ml sterile	Ice
Enterococcus (EPA)		Ice
PPCP	1 Liter Amber	Ice (acidified in Lab)
<b>Optional analyses</b>		
Chlorine (Alpha)	500 ml	Ice
Total Phosphorus (EPA)	125 ml	H <sub>2</sub> SO <sub>4</sub> (pH <2) + Ice
TSS (EPA)	1 liter	Ice
TSS (Alpha)	1 liter	Ice
BOD (Alpha)	1 Liter	Ice
TPH Petroleum ID (alpha)	2 -1 Liter Amber Glass tephlon lined	Ice
E. Coli (Alpha)	120 ml sterile	Ice
Enterococcus (Alpha)	120 ml sterile	Ice

## Attachment 1

Stormwater Monitoring Program QAPP

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### **C. Quality Control**

- Calibration: EPA will calibrate its sondes according to the EPA sonde calibration SOP.
- Field duplicate: One duplicate sample will be collected per sampling event or approximately for every ten samples.
- Trip Blank: OEME Chemist will run appropriate QA samples for PPCP's. One blank sample will be collected for approximately every ten bacteria samples. Reported data that is less than 5 times the trip (field) blank concentration will be flagged.
- QC Criteria: Are specified in table 2, data not meeting this criteria will be reviewed by the Project Manager. Data that does not meet laboratory QA/QC criteria will be flagged by the laboratory.

### **D. Chain of Custody**

Chain of custody procedures will follow the OEME/Investigations Office SOP (Table 3)

### **3.0 Data Review**

EPA Microbiology data will be reviewed by the Biology QAO. Alpha generated microbiology samples will be reviewed by the OEME Project Manager. All field data and draft data reports will be reviewed by the OEME Project manager. Laboratory generated data (from Alpha and EPA) will be reviewed by the Chemistry Team Leader.

### **4.0 Data reports**

Data reports will be reviewed by the Project Coordinator and the OEME Project Manager before a final report is release to the Enforcement Coordinator. Draft reports may be released without a complete review.

## Attachment 1

Stormwater Monitoring Program QAPP  
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### 5.0 Attachments

- 1) Standard Operating Procedure Enterococcus (SM9230B), Multiple Tube Technique. SOP/07-01 *Alpha Analytical, Inc. May 28, 2005*
- 2) Standard Operating Procedure E. Coli (SM9213D). SOP/07-41 *Alpha Analytical, Inc. May 28, 2005*
- 3) Standard Operating Procedure MBAS, Ionic Surfactants. Draft SOP *EPA Laboratory. January 28, 2010*
- 4) Standard Operating Procedure Nitrogen Ammonia. Draft SOP *EPA Laboratory. February 10, 2011*
- 5) Standard Operating Procedure Total Chlorine. Draft SOP *EPA Laboratory. February 12, 2010*
- 6) Standard Operating Procedure TSS/ TVSS (SM2540 D, EPA 160.2). SOP/07-29 *Alpha Analytical, Inc. September 29, 2007*
- 7) Standard Operating Procedure BOD-5day, SBOD-5day, and cBOD-5day (SM 5210B, and EPA 405.1). SOP/07-13 *Alpha Analytical, Inc. September 29, 2007*
- 8) Standard Operating Procedure TPH 8015D – Modified 0-017 (EPA 8015D Modified) *Alpha Analytical, Inc. March 04, 2008*
- 9) Standard Operating Procedure determination of Trace Elements in Water and Wastes by Inductively Coupled Plasma- Mass Spectrometry (200.8). SOP/06-11 *Alpha Analytical, Inc. July 13, 200*
- 10) Standard Operating Procedure Inductively Coupled Plasma – Mass Spectrometry (6020). SOP/06-10 *Alpha Analytical, Inc. October 25, 2007*

# Target Compounds, Uses, and Reporting Limits

Target Compound	Major Use	RL (ng/L)	Daily Dose (ng)
Caffeine	Natural Stimulant	5.0	200,000,000
1,7-DMX	Metabolite of caffeine	2.5	N/A
Acetaminophen	Pain Reliever	2.5	650,000,000
Carbamazepine	Anti- depressant / bi-polar Anti-convulsant (epilepsy)	0.5	100,000,000
Primidone	Anti- epilepsy drug (AED)	5.0	100,000,000
Atenolol	Beta Blocker High Blood Pressure	2.5	50,000,000
Cotinine	Metabolite of Nicotine	0.5	3,500-7,200 (ng/mL)
Urobilin	By-product of hemoglobin breakdown (mammals)	5.0	1,300,000 ng/g in feces
Azithromycin	Antibiotic	1.6	200,000,000

# STORMWATER MONITORING

## Field Collection Requirements (To be recorded at each site)

### Sample-

Site Name \_\_\_\_\_

Time collected \_\_\_\_\_

Date collected \_\_\_\_\_

### Inspection-

**\*\*Take picture at site\*\***

Outfall diameter \_\_\_\_\_ ('na' if open stream)

Flow estimate \_\_\_\_\_ ('na' if open stream)

Odor \_\_\_\_\_

Color \_\_\_\_\_

Turbidity \_\_\_\_\_

Floatables \_\_\_\_\_

Other observations \_\_\_\_\_

\_\_\_\_\_

### YSI Meter (calibrate in lab)-

Salinity \_\_\_\_\_

Temp \_\_\_\_\_

Conductivity (give both #'s)

\_\_\_\_\_

### Location information-

Short description of where sample was collected at site \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

GPS \_\_\_\_\_

\_\_\_\_\_

**Field Kits** listed in the order they should be conducted in, include any applicable notes-

NH3 strip \_\_\_\_\_

Cl2 kit \_\_\_\_\_

Hach meter – (3 min wait)

Surfactant \_\_\_\_\_

Chemetrics K-9400 Blue box/detergent test kit

### **Additional Notes:**

(Note any changes in weather conditions) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## **STORMWATER MONITORING (PAGE 2)**

### **Field Equipment List**

#### **Waste Containers (2 total – clearly labeled):**

- 1 liter amber plastic for surfactants/detergents kit waste
- 1 liter amber plastic for Cl2 kit waste

#### **Sample Bottles (3 total for each sample location)-**

- 120ml sterile – E.coli/entero
- 1 Liter amber glass: PPCP, EPA (Peter Philbrook)
- 120ml-250ml plastic – Field Kit Bottle – to be used on site for kits listed above

\*\*\*Fill out chain of custody

#### **In Carboy Container**

- Log book
- COC forms
- Extra sample bottles
- Colored tape
- Sharpies
- Write-On-Rain Pens
- Paper towels
- GPS
- Sampling plan & GPS locations
- Regular length Powder Free Gloves
- Squirt bottle of DI Water
- Coolers with Ice
- Waders/Boots
- YSI multi parameter Meter



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**APPENDIX I: STORMWATER MONITORING QUALITY  
ASSURANCE PROJECT PLAN (QAPP)**



## City of Portland, Maine

# Stormwater Monitoring Quality Assurance Project Plan (QAPP)

March 2021

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# Stormwater Monitoring Quality Assurance Project Plan (QAPP)

## 1.0 Background and Scope

Portland is 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 Portland conduct dry weather inspections on 100% of City owned 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.

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

The purpose of this Quality Assurance Project Plan (QAPP) is to provide sampling personnel information that will assist 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.

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.

Portland has a written Illicit Discharge Detection and Elimination Plan (IDDE) as required by the MS4 General Permit. This QAPP has been developed with the help of the Interlocal Stormwater Working Group (ISWG) and is included in the City's IDDE Plan as Appendix I. While conducting outfall inspections, if there is evidence of an illicit discharge, the City will conduct additional investigations to identify the source and work with responsible parties to remove the source. The IDDE Plan describes the processes and procedures 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.

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.

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.

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. 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 internal plumbing.

### 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.

This QAPP does not specify CWA methods or Maine DEP certification for use of field equipment/test kit(s). The IDDE Plan does include possible methods and equipment for sampling.

**Table 1** 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 1** include CWA methods, field equipment, and test kits, where applicable. **Table 1** 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. Considerations will be made with regards to waste products from the sampling event.

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 1 Sampling Parameters, Analysis Methods, and Sample Preservation and Holding Times

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)
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 <sub>2</sub> SO <sub>4</sub> (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 (within 15 minutes) in Field	Field jar or beaker	Reagent contains Mercury, Generates a Toxic Hazardous Waste (D009)
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 (within 15 minutes) in Field	Field jar or beaker	
Chlorine	Industrial test Systems Ultra-Low Total Chlorine Test	None	Immediate	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

Table 1 Sampling Parameters, Analysis Methods, and Sample Preservation and Holding Times

	Strips and other mid range chlorine test strips		(within 15 minutes) in Field		these should be used simultaneously with a mid range (0.5 to 10 mg/l) test strips to double check range.
<b>Temperature and Conductivity (use both)</b>	<b>CWA Method, Field Equipment, or Test Kit</b>	<b>Preservation</b>	<b>Holding time</b>	<b>Bottle needed</b>	<b>Notes on Use</b>
Temperature	Temperature/ Conductivity probe	None	Immediate (within 15 minutes) in Field	Field jar or beaker	Use to distinguish between groundwater and surface water.
Conductivity	Temperature/ Conductivity probe	None	Immediate (within 15 minutes) in Field	Field jar or beaker	Use to distinguish between salt water and fresh water.
<b>Optical Enhancers or Surfactants (select one)</b>	<b>CWA Method, Field Equipment, or Test Kit</b>	<b>Preservation</b>	<b>Holding time</b>	<b>Bottle needed</b>	<b>Notes on Use</b>
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 <b>Addendum 2</b> )	None	Immediate (within 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.
<b>Other Optional Parameters</b>	<b>CWA Method, Field Equipment, or Test Kit</b>	<b>Preservation</b>	<b>Holding time</b>	<b>Bottle needed</b>	<b>Notes on Use</b>
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.

Table 1 Sampling Parameters, Analysis Methods, and Sample Preservation and Holding Times

Other Optional Parameters	CWA Method, Field Equipment, or Test Kit	Preservation	Holding time	Bottle needed	Notes on Use
Total Phosphorus	EPA 365.3	Sulfuric Acid (pH <2) + Ice (4°C)	28 days	250 ml glass bottle from lab.	Provides data regarding nutrient contributions to receiving waters which can originate from paved surfaces, fertilizers and eroding soils.
Personal Care Products	EPA 1694	Sulfuric Acid (pH <2) + Ice (4°C)	7 day to extraction 40 days after extraction	1000 ml amber jar	EPA recommends analyzing only for following subset: Caffeine, 1,7-DMX (metabolite of caffeine), Acetaminophen, 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, erodision 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 City will use either a Maine Certified Laboratory or one of the field equipment/test kit methods listed in **Table 1** to assess dry weather flow.

Each of the test kits listed in **Table 1** has a use range that is appropriate for the work being conducted, and which meets the MS4 required reporting limits.

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

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

**4.1 Duplicate Samples** To assess the precision of the dry weather flow monitoring, the municipality MAY choose to 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 2** 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 2 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 3** are exceeded.

**Table 3 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)
Ammonia	≥ 0.50 mg/L	This is the effective reporting limit of the Ammonia test strips and was taken from USEPA Draft 2012 Bacteria Source Tracking Protocol.
Chlorine	≥ 0.05 mg/L	Limit of test kit and was taken from USEPA Draft 2012 Bacteria Source Tracking Protocol.
Surfactants	≥ 0.25 mg/L	Taken from USEPA Draft 2012 Bacteria Source Tracking Protocol.

The City may 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 City's 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 City's IDDE Plan.

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

**Revisions:**

1. Original document 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 3
3. Example Chains of Custody

**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 Science and Technology Letters 2015, 2, 270-275.

**Addendum 1**  
**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: _____			
Facility ID Location: _____			
Sample Notes: _____			
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			Surfactants ≥ 0.25 mg/L
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	
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: \_\_\_\_\_

Sampler: \_\_\_\_\_ Date: \_\_\_\_\_  
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## Addendum 2

### Reference E-mails



## Kristie Rabasca

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**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?

**EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

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 90<sup>th</sup> 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](mailto:Bryant.J.Lewis@maine.gov)>  
**Sent:** Thursday, October 31, 2019 2:33 PM

**To:** Kristie Rabasca <[krabasca@integratedenv.com](mailto:krabasca@integratedenv.com)>; Wahle, Benjamin <[Benjamin.Wahle@maine.gov](mailto:Benjamin.Wahle@maine.gov)>

**Subject:** RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

Kristie,

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

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

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

---

**From:** Kristie Rabasca <[krabasca@integratedenv.com](mailto:krabasca@integratedenv.com)>

**Sent:** Wednesday, October 30, 2019 9:00 AM

**To:** Lewis, Bryant J <[Bryant.J.Lewis@maine.gov](mailto:Bryant.J.Lewis@maine.gov)>; Wahle, Benjamin <[Benjamin.Wahle@maine.gov](mailto:Benjamin.Wahle@maine.gov)>

**Subject:** RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

**EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

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

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

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

Hopefully you understand my question....

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

---

**From:** Lewis, Bryant J <[Bryant.J.Lewis@maine.gov](mailto:Bryant.J.Lewis@maine.gov)>

**Sent:** Monday, October 28, 2019 10:16 AM

**To:** Wahle, Benjamin <[Benjamin.Wahle@maine.gov](mailto:Benjamin.Wahle@maine.gov)>; Kristie Rabasca <[krabasca@integratedenv.com](mailto:krabasca@integratedenv.com)>

**Subject:** RE: simple summary of Fecal concentrations for open vs seasonal vs restricted vs prohibited?

Kristie,

This webpage explains the classifications.

<https://www.maine.gov/dmr/shellfish-sanitation-management/programs/growingareas/howclassified.html>

The NSSP Model Ordinance dictates how we calculate water quality scores. A 90<sup>th</sup> percentile based on the most recent 30 samples providing a score of 31 or less is Approved, 32-163 is Restricted and above 163 is Prohibited. There is a link to the Model Ordinance on our website, if needed. It describes how to calculate scores for systematic random sampling using membrane filtration.

<https://www.maine.gov/dmr/shellfish-sanitation-management/programs/growingareas/index.html>

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

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

---

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

Hi Kristie,

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

-Ben

---

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

**EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Good Morning Ben,

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

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

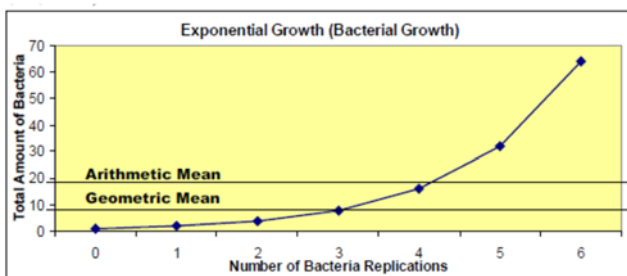
I am working on a QAPP for the stormwater folks and want to provide them with a reference that is accurate and truthed by DMR for when they are sampling outfalls near shellfishing areas.

Thanks for any help you can provide.

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

### Geometric Mean (Geomean):

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

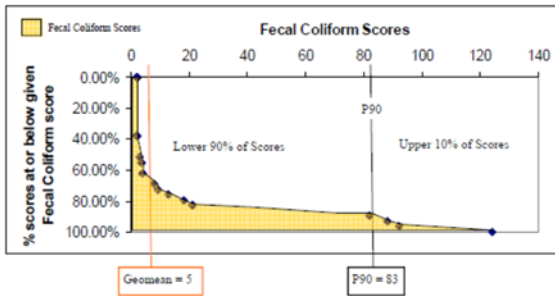
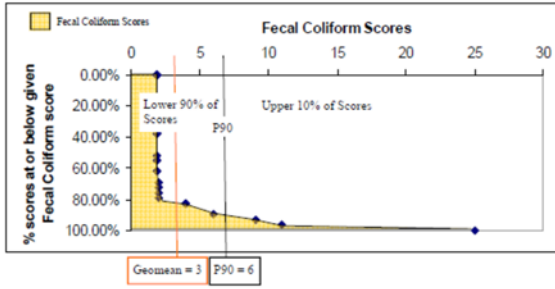


**Figure 1.** The graph illustrates exponential growth. The arithmetic mean for the scores is 18.1 while the geomean is 8.

### 90th Percentile (P90)

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

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



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

### Fecal Coliform Standards by Shellfish Growing Area Classification Category

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

## Kristie Rabasca

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**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 D001 and D022 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 chooses 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](mailto: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](mailto: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](http://www.maine.gov/dep)

---

**From:** Poirier, Rhonda  
**Sent:** Monday, October 07, 2019 9:37 AM  
**To:** Hudson, Michael S <[Michael.S.Hudson@maine.gov](mailto: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](http://www.maine.gov/dep)

---

**From:** Kristie Rabasca <[krabasca@integratedenv.com](mailto:krabasca@integratedenv.com)>  
**Sent:** Tuesday, October 01, 2019 4:02 PM  
**To:** Poirier, Rhonda <[Rhonda.Poirier@maine.gov](mailto:Rhonda.Poirier@maine.gov)>  
**Cc:** Aimee Mountain ([Aimee.Mountain@gza.com](mailto:Aimee.Mountain@gza.com)) <[Aimee.Mountain@gza.com](mailto:Aimee.Mountain@gza.com)>; Damon Yakovleff <[dyakovleff@cumberlandswcd.org](mailto: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 ml of the n-propanol and the chloroform organic phase in a very small glass ampule.

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

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

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

**My questions are:**

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

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



Kristie L. Rabasca, P.E

Integrated Environmental Engineering, Inc.

12 Farms Edge Road

Cape Elizabeth, ME 04170

207-415-5830



# Addendum 3

## Chains of Custody



600 Technology Way  
 P.O. Box 540  
 Scarborough, ME 04070  
 Tel: (207) 874-2400  
 Fax: (207) 775-4029

# Chain of Custody

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

LAB USE ONLY	Work Order #: Katahdin Project Number				Analysis and Container Type Preservatives									
	Remarks:	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	Filt. Y/N	Filt. Y/N	Filt. Y/N
Shipping Info:	FEDEX	UPS	CLIENT											
Airbill No:														
Temp C	Temp Blank	Intact	Not Intact											

*	Sample Description	Date/Time Collected	Matrix	No. of Containers	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:

The terms and conditions on the following page hereof shall govern services, except when a signed contractual agreement exists.

# KATAHDIN ANALYTICAL SERVICES, Inc.

## Terms and Conditions

### 1.0 DEFINITIONS

- 1.1** KATAHDIN” shall mean KATAHDIN Analytical Services, Inc. and its employees, agents, and representatives.  
**1.2** “CLIENT” shall mean the individual, partnership, corporation, firm, association or other person or entity who or which delivers a sample(s) to KATAHDIN , including its employees, agents, representatives, and his, her or its heirs, successors, assigns and/or legal or personal representatives.  
**1.3** “Acceptance” of a sample means the determination by KATAHDIN to proceed with work following receipt and inspection of such sample(s).

### 2.0 SCOPE- KATAHDIN reserves the right to refuse sample delivery of any sample(s) which, in KATAHDIN’s sole judgement, may pose a risk in handling, transporting or processing for any health, safety, environmental or other reason.

Services will be performed upon receipt of a purchase order, contract, or signed order acknowledgement. In the absence of one of the above, submission of samples to KATAHDIN shall serve as authorization to perform services, in accordance with these Terms and Conditions.

If a CLIENT cancels an order or portions of an order after acceptance of the sample(s) the CLIENT will be responsible for any work completed prior to the request to cancel, as well as a \$50.00 cancellation charge.

### 3.0 CLIENT RESPONSIBILITIES –

**3.1** The CLIENT will provide all criteria and full information as to its requirements including objectives, constraints, or other standards which the CLIENT has. If the CLIENT is working under a permit, consent order, sampling or quality assurance plan, the CLIENT shall provide KATAHDIN copies of relevant portions prior to initiation of work.

**3.2** The CLIENT shall designate in writing a person to act as the CLIENT’s representative with respect to services to be rendered under this agreement.

**3.3** CLIENT represents and warrants that any samples containing known hazardous materials or substances will be disclosed to KATAHDIN prior to or with delivery of the samples.

**3.4** The CLIENT is responsible for all samples until acceptance of the samples are accepted by KATAHDIN. This includes ensuring the samples are shipped in compliance with all applicable federal and state regulations.

**3.5** The CLIENT is responsible for notifying KATAHDIN if the samples to be analyzed originated outside the U.S. If the samples are imported and the CLIENT fails to notify KATAHDIN in writing of such prior to delivery, KATAHDIN shall not be liable for any claims, penalties, awards, judgements, costs expenses, attorney’s fees, and any other legal obligations and liabilities incurred by the CLIENT.

**3.6** The CLIENT will respond, within a reasonable time, to KATAHDIN’s requests for decisions, authorizations for changes, or changes in schedule.

### 4.0 GENERAL CONSIDERATIONS

**4.1** KATAHDIN will perform its services in a timely manner, but it is agreed that KATAHDIN cannot be responsible for delays occasioned by factors beyond its control, nor by factors which could not reasonably have been foreseen at the time services were authorized.

**4.2** KATAHDIN will perform its services using generally accepted analytical techniques, which are in substantial conformance with methods specified by the U. S. EPA, state agencies, ASTM, AOAC, Standard Methods, or other recognized methods at the time the services are rendered. KATAHDIN reserves the right to make interpretations of the methods and reserves the right to deviate from these methodologies if necessary due to the nature or composition of the sample or otherwise, based on the reasonable judgement of KATAHDIN, which deviations, if any, will be made consistent with recognized standards of the industry and/or KATAHDIN’s Standard Operating Procedures.

**4.3** KATAHDIN’s reports, notes, calculations, and other documents related to the analysis of samples are provided as instruments of service. They are not represented to be suitable for reuse by the CLIENT or others for projects other than the initial project. Any reuse without written verification from KATAHDIN will be at the CLIENT’s sole risk and without liability or legal exposure to KATAHDIN. KATAHDIN will retain analytical records for five years.

**4.4** KATAHDIN shall not disclose, or permit disclosure of any information designated by the CLIENT as confidential, except (1) to its employees who need such information in order to properly perform the services under this Agreement, (2) to comply with any governmental or judicial order or directive, or (3) information already in the public domain.

**4.5** KATAHDIN will dispose of samples 14 days after submission of the data report/package to the CLIENT. Samples will be disposed of in accordance with applicable regulations. All sample materials held longer than the stated policy, at the CLIENT’s request, will be subject to a storage fee of \$0.50 per day per sample. KATAHDIN reserves the right to return highly hazardous, samples which do not fit a KATAHDIN waste stream, or acutely toxic samples to the CLIENT.

### 5.0 PAYMENT – Services performed by KATAHDIN will be in accordance with prices quoted or as stated on the price schedule, which prices are subject to change periodically without notice. The CLIENT shall confirm with KATAHDIN the current price prior to placing an order for work. Pricing does not include any sales, use or other taxes. Such taxes when applicable will be added to invoice prices for payment by CLIENT.

**5.1** Invoices shall be issued upon completion of a Work Order. Payment terms are net 30 days from the date of invoice by KATAHDIN. Payments due KATAHDIN under this agreement shall be subject to late charges of one and one-half percent (1 ½ %) per month commencing thirty (30) days after the date of the invoice.

**5.2** If a CLIENT fails to make payments to KATAHDIN, KATAHDIN may suspend its services on the basis of non-performance on the part of the CLIENT. The CLIENT agrees to pay all reasonable attorney and collection fees, in the event of default of payment.

### 6.0 INSURANCE – KATAHDIN shall maintain in force during the performance of services under these Terms and Conditions, Workers Compensation Insurance (Statutory), Commercial General Liability (limit of \$1,000,000 per occurrence and \$2,000,000 aggregate), and Comprehensive Automotive Liability.

### 7.0 LIMITATION OF LIABILITY – It is expressly understood by the CLIENT that, in the event of KATAHDIN’s non-compliance with one or any of its obligations under these Terms and Conditions, the CLIENT’s exclusive and sole remedy in law or equity against KATAHDIN shall be to require reanalysis of the samples submitted. In no event shall KATAHDIN be liable to the CLIENT for any liabilities, damages, lost profits or consequential damages that the CLIENT may incur as a result of, or in connection with KATAHDIN’s non-compliance with one or more of its obligations under these Terms and Conditions and this Agreement. NO WARRANTY, EXPRESSED OR IMPLIED, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE OR IMPLIED.

### 8.0 INDEMNIFICATION - The CLIENT shall indemnify and hold KATAHDIN harmless from and against any and all liabilities, claims, demands, expenses and causes of action which he, she, or it may incur or suffer, including claims from third persons not parties to this Agreement, regardless of whether such liabilities, claims, etc. arise out of or as a result of negligent or intentional acts or omissions of CLIENT, except to the extent that such liabilities are caused by negligent acts or omissions of KATAHDIN.

### 9.0 SUCESSOR and ASSIGNS – The CLIENT and KATAHDIN each binds itself and its successors, executors, administrators, assigns and legal representatives to the other party to this agreement and to the successors, executors, administrators, and legal representatives of such party, in respect to all covenants, agreements, and obligations of this agreement. Nothing herein shall be construed to give any rights or benefits hereunder to anyone other than the CLIENT and KATAHDIN.

### 10.0 GOVERNING LAW - This Agreement and these Terms and Conditions, represent the entire and integrated Agreement between KATAHDIN and the CLIENT and superseded all prior negotiations, representations, or agreements, either written or oral, and shall be construed and interpreted under, and all respective rights of the parties shall be governed by, the laws of the State of Maine.



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## APPENDIX J: SAMPLE OUTREACH LETTER



CITY OF PORTLAND  
Department of Public Works  
Christopher C. Branch, P.E., Director

**DATE**

**ABUTTER'S NAME**  
**ABUTTER'S ADDRESS**

Dear Resident:

**Your neighborhood has a drainage system** in place to ensure that homes and streets do not flood. The City of Portland maintains this drainage system through its Department of Public Works and provides regular drainage system cleaning services to its residents in an effort to keep our City and our environment clean and safe. **During recent cleaning activities, dog waste bags were found in your neighborhood's drainage system.** Please note that the catch basins in your streets do not lead to a wastewater treatment plant; these basins discharge to our beaches, streams and rivers.

**Dumping dog waste into the City's drainage system is prohibited** in accordance with state and federal law and Chapter 32 of the Portland City Code of Ordinances. Illegal dumping contributes to pollution of water bodies and can pose a hazard to public health.



Catch basins help to drain roadways and neighborhoods. The drain does not lead to a treatment facility.

If you have questions or wish to provide information about this issue, please contact your City's Water Resources Compliance Section Coordinator, Benjamin Pearson, at [bnp@portlandmaine.gov](mailto:bnp@portlandmaine.gov) or (207) 874-8843.

Sincerely,

Christopher Branch,  
City of Portland  
Department of Public Works