



# MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) STORMWATER MANAGEMENT PLAN (SMP)

For

The University of Maine  
Orono, ME 04469  
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THE UNIVERSITY OF  
**MAINE**

*Prepared By*  
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## SEE 1 Introduction

### 1.1 Regulatory Overview

The University of Maine (UMaine) is subject to the General Permit for the Discharge of Stormwater from Small State and Federally Owned Municipal Separate Storm Sewer Systems (MS4s). The most recent permit was issued by the Maine Department of Environmental Protection (MDEP) on December 8, 2021, to be effective for 5 years beginning on October 1, 2022 (see **Attachment E**). The permit authorizes the direct discharge of stormwater from regulated MS4s to waters of the State, other than groundwater, pursuant to Water Pollution Control Law 38 M.R.S.A. § 413. The University of Maine (UMaine) submitted a Notice of Intent (NOI) to comply with the terms and conditions of the MS4 General Permit before November 1, 2021 (see **Attachment F**).

The General Permit covers operations or activities associated with stormwater runoff within identified municipal "urbanized areas" and state and federally owned facilities within. An urbanized area is a classification of the U.S. Census Bureau that is based on population density and amount of concentrated development – factors that result in increased stormwater volume and pollutant load to receiving waterbodies in the area.

The U.S. Environmental Protection Agency (USEPA) and MDEP began regulating communities and state and federally owned facilities for their stormwater discharges using the urbanized area criteria in 2003. University of Maine (UMaine) became regulated in 2003 based on the 2000 census. **Attachment A** shows a map of the Town of Orono urbanized area within which UMaine is regulated by the 2022 MS4 General Permit. This map was developed from the inclusive sum of the U.S. Census Bureau census conducted in 2000 and 2010. The 2022 MS4 General Permit does not include any modifications to urbanized area based on data from the 2020 U.S. Census.

UMaine encompasses a total land area of approximately 660 acres, all of which is within the City of Orono urbanized area.

Each of the four MS4 General Permits (effective 2003, 2008, 2013, and 2022) have required that the regulated MS4s develop and implement a Stormwater Management Plan (SMP) to coincide with the effective dates of the General Permit. The SMP is designed to reduce or eliminate polluted stormwater runoff to the maximum extent practicable (MEP) from its regulated MS4. The elements of the SMP are described in **Section 1.3**.

### 1.2 Cooperation Between Regulated Communities

There are 30 municipalities, two transportation agencies, and eight state/federal agencies in the State of Maine subject to MS4 General Permit regulation. Historically, there is a strong regional and/or state-wide collaborative effort among regulated entities to develop and carry out required permit activities. Most regulated MS4s (municipal, transportation, and state/federal) in the State are part of an established regional stormwater working group consisting of MS4 communities and supporting local organizations. These working groups include:

- Bangor Area Stormwater Working Group (BASWG);
- Androscoggin Valley (Lewiston-Auburn) Stormwater Working Group (AVSWG);
- Interlocal (Greater Portland) Stormwater Working Group (ISWG); and
- Southern Maine (York County) Stormwater Working Group (SMSWG).



UMaine is a member of BASWG, a coalition of seven MS4 municipalities (Bangor, Brewer, Hampden, Milford, Old Town, Orono, and Veazie) and five state/federally owned facilities (University of Maine, Eastern Maine Community College, University of Maine at Augusta - Bangor Campus, the Maine Air National Guard, and the Dorothea Dix Psychiatric Facility) in the greater Bangor area .

BASWG participants, including UMaine, have contributed to a regional BASWG SMP that addresses all collaborative practices implemented in an effort to comply with the 2022 MS4 General Permit. UMaine will continue to participate in and support implementation of regional practices outlined in the BASWG SMP (submitted to MDEP under separate cover). In addition, UMaine hires a third party-consultant to implement some requirements and implements other requirements using institutional staff. This plan describes which elements will be completed individually or as part of a regional effort.

### 1.3 Stormwater Management Plan

As mentioned in the Regulatory Overview, operators of a regulated small MS4 are required to design a stormwater management plan (SMP) that will effectively:

- Reduce the discharge of pollutants to the “maximum extent practicable” (MEP);
- Protect water quality; and
- Satisfy the appropriate water quality requirements of the USEPA’s Clean Water Act.

The SMP is a tool describing how a regulated entity plans to manage stormwater in a way that will limit pollutant loads and protect the quality of receiving waters. The plan is *not enforceable*, yet is *adaptive*, allowing the permittee to adjust approaches and practices throughout the permit cycle if needed, based on regular evaluation of their effectiveness, changing conditions, specific local concerns, and/or other factors. Some SMP modifications require MDEP review and approval and public notice.

Specifications of the MS4 General Permit are primarily based on qualitative *minimum control measures* (MCMs) of stormwater management, less so on quantitative requirements (e.g. numeric water quality criteria). This SMP describes how UMaine will implement Best Management Practices (BMPs) to meet the six MCMs that are defined in Part IV(C) of the 2022 MS4 General Permit:

- I - Education/Outreach Program
- II - Public Involvement and Participation
- III - Illicit Discharge Detection and Elimination Program
- IV - Construction Site Stormwater Runoff Control
- V - Post-Construction Stormwater Management in New Development and Redevelopment
- VI - Pollution Prevention/Good Housekeeping for Facility Operations

The 2022 MS4 General Permit requires that for each MCM, UMaine must:

- a) Define appropriate BMPs;
- b) Designate a person(s) responsible for implementing each BMP;
- c) Define a date or timeline with milestones for implementation of each BMP; and
- d) Define measurable goals for each BMP.



This SMP is developed in accordance with the terms and conditions of the MS4 General Permit reissued by the MDEP on December 8, 2021. Many of the BMPs in this plan continue or expand upon BMPs developed under prior MS4 General Permits. Specific requirements for addressing MCMs have changed though the six MCMs have remained the same for all permit cycles.

**Section 1.4** and **Section 1.5** describe UMaine’s water quality status, and the watershed(s) that are considered to be priorities for UMaine when considering stormwater management practices to prevent or alleviate impairment of waters. **Section 1.6**, **Section 1.7**, and **Section 1.8** describe how permit coverage is obtained, how the SMP is modified (when needed), when public notice is required, and annual reporting requirements.

The MDEP will review this SMP and determine if UMaine is controlling pollutants to the *maximum extent practicable* (MEP). MEP is the USEPA’s statutory standard for pollutant reduction requirements of permitted MS4s, and the term is flexible in consideration that pollutant control strategies will vary for each small MS4 based on unique local conditions and factors such as cost, existing technology, and logistics of BMPs. UMaine is allowed to consider these concepts as they select BMPs to meet permit requirements but the MDEP decides if UMaine is meeting the MEP standard. *Practices that were considered MEP under the MS4 2013 permit may no longer meet that standard and must be improved or expanded based on changed conditions.*

## 1.4 Discharges to Impaired Waters

Discharges to waterbodies with approved Total Maximum Daily Load (TMDL) or discharges causing or contributing to impairment have additional requirements in the 2022 MS4 General Permit:

1. If an MS4 has a point source discharge to a water with a TMDL approved before 12/8/2021, then the SWMP must propose clear, specific and measurable actions to comply with the TMDL waste load allocation (“WLA”) and any implementation plan.
  - If a TMDL is approved or modified by the EPA after 12/8/2021, the MDEP will notify the permittee if any changes are needed to the SMP, and may take other actions regarding the approved TMDL as identified in the 2022 MS4 General Permit.
2. If an MS4 has a discharge to an Urban Impaired Stream (UIS), it must develop and implement three (3) BMPs to address the water’s impairment, unless the MDEP has determined the MS4 discharge is not causing or contributing to the impairment.

### 1.4.1 UMaine Water Quality Status

The following named waterbodies receive discharges from UMaine’s MS4:

- The Penobscot River (Impaired - State-wide bacteria TMDL); and
- The Stillwater River (No impairments).

Neither of these waterbodies have impairment classifications (UIS/TMDLs other than Statewide) within the MS4 regulated area requiring additional actions by UMaine per the 2022 MS4 General Permit.

#### Penobscot River Water Quality Status

The Penobscot River borders the western edge of campus and receives discharges from the MS4 system. This waterbody was included in the state-wide bacteria TMDL (approved in 2009) therefore, no additional actions other than the implementation of UMaine’s IDDE Plan (**Attachment B**) are required, as per correspondence with MDEP staff. The Penobscot River is also classified by EPA as a (legacy) category 5-D river for polychlorinated biphenyls (PCBs), and is classified as a 4-B river for dioxin, dissolved oxygen (DO), and nutrients.



## 1.5 Priority Watersheds

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

## 1.6 Obtaining Coverage to Discharge

As required, a Notice of Intent (NOI) to comply with the 2022 MS4 General Permit was submitted to the MDEP with this SMP. A copy of UMaine's NOI is provided in **Attachment F**.

Following review of the SMP and NOI, the MDEP may issue a permittee specific DEP Order, establishing terms and conditions that are enforceable in addition to the language in the 2022 MS4 General Permit, which is also enforceable.

A 30-day Public Notice is required for both the NOI and the permittee specific DEP Order.

Once the MDEP issues authorization to discharge, the permittee has 60 days to update the SMP to reflect any new or changed requirements based on the DEP Order and any public comments. The new permit conditions will take effect on October 1st, 2022.

## 1.7 SMP Modifications

The SMP must be amended during the permit term (2022 - 2027) if the MDEP or the regulated MS4s determine that:

- a) The actions required by the BMPs fail to control pollutants to meet the terms and conditions of the MS4 General Permit and the permittee specific DEP Order;
- b) The BMPs do not prevent the potential for a significant contribution of pollutants to Waters of the State other than groundwater; or
- c) New information results in a shift in the SMP's priorities.

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

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



If the changes being made are explicitly required by the 2022 MS4 General Permit or the permittee specific DEP order, the applicable processes will be followed:

- *Modifications initiated by UMaine:* UMaine will notify the MDEP prior to changing any elements by filing a permit application with the MDEP that includes a justification to formally modify the requirement; or
- *Modifications initiated by the MDEP:* MDEP will notify UMaine, and UMaine must respond within 30 days with a written explanation of intended SMP modifications. UMaine must then modify the SMP within 90 calendar days of UMaine's written response, or within 120 calendar days of the MDEP notice (whichever is less). Any such modification must be submitted to the MDEP for final review.

## 1.8 Annual Compliance Report and Record Keeping

By September 15th of each year, UMaine will electronically submit an Annual Compliance Report for the MDEP's review using the standardized form provided by the MDEP. UMaine will report on all activities up to June 30th of each year. The first permit year will be shortened to October 1st, 2022 to June 30th, 2023. All subsequent permit years will be from July 1st to June 30th. The Annual Compliance Report must be sent to:

Holliday Keen  
Municipal/Industrial Stormwater Coordinator  
Maine Department of Environmental Protection  
17 State House Station  
Augusta, ME 04333-0017  
[holliday.keen@maine.gov](mailto:holliday.keen@maine.gov)

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

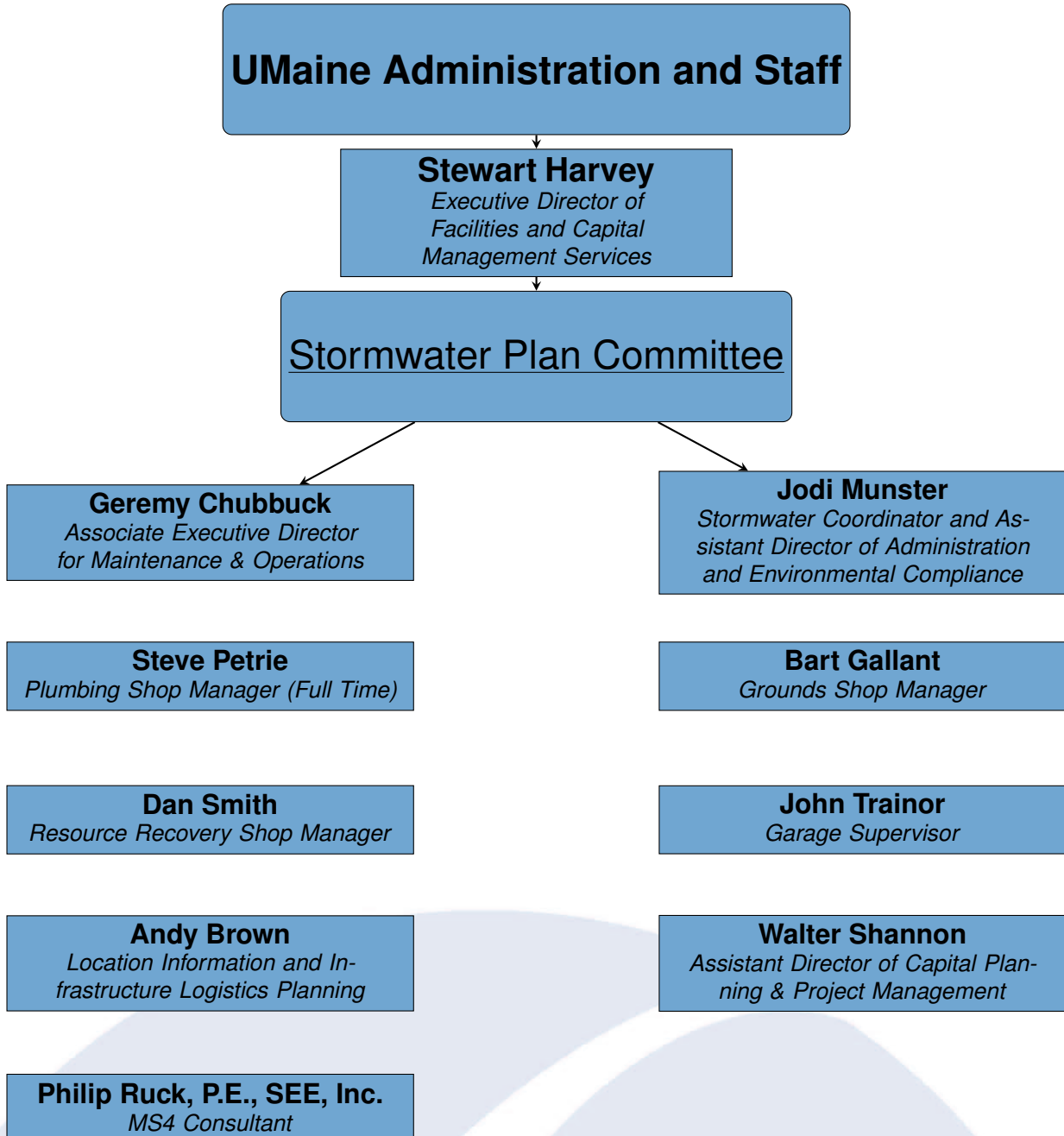
As a regulated MS4, UMaine must keep records required by the 2022 MS4 General Permit and permit modification for at least three (3) years following its expiration or longer if requested by the MDEP Commissioner. UMaine must make records (including this SMP) available to the public at reasonable times during regular business hours.





## SEE 2 SMP Organization

### 2.1 Plan Management Hierarchy





## 2.2 Additional Environmental Plans

UMaine implements the following existing environmental plans:

- Illicit Discharge Detection and Elimination (IDDE) Plan (**Attachment B**);
- Operations and Maintenance (O&M) Plan for Facility Operations (available upon request);
- Resource Recovery Program (available upon request);
- Composting Operation (available upon request);
- Site Location of Development Permit (available upon request);
- Campus Master Plan (available upon request);
- Erosion and Sedimentation Control Requirements in UM Project Manuals and Bid Documents (available upon request);
- Snow Removal Plan (available upon request);
- Hazardous Waste Management Program (available upon request);
- Chemical Inventory Program (available upon request);
- Stormwater Pollution Prevention Plan (SWPPP) (available upon request); and
- Spill Prevention Control and Countermeasure Plan (SPCC) (available upon request).



## 3 Minimum Control Measures

### 3.1 MCM I - Education/Outreach Program

MS4 permittees must fully comply with MCM I by developing and implementing an ongoing Education/Outreach Program that will educate the general public and targeted group(s). The program must be designed to address stormwater issues of significance including the impacts of stormwater discharges on waterbodies, and steps that can be taken to reduce pollutants in stormwater runoff. The goal is to *change the behavior* of target audiences that will help to minimize stormwater impacts.

#### 3.1.1 BMP1A - Develop and Implement Education and Outreach Program

The education/outreach program must include at least one *Outreach to Raise Awareness* campaign of stormwater pollution issues targeted at the permittee's community members, and at least one *Outreach to Change Behavior* campaign delivered to small, targeted segments of the population.

UMaine selected Best Management Practices (BMP's) for the Education/Outreach MCM of this SMP. The outreach to raise awareness campaign targeted at the general public and the outreach to change behavior campaign to one targeted audience will be conducted through participation in BASWG. UMaine has opted to participate in BASWG's homeowner winter maintenance campaign as its one outreach to change behavior campaign. Please see the BASWG SMP under separate cover for specifics about these campaigns.

#### 3.1.2 BMP1B - Evaluate Campaign Effectiveness

The 2022 General Permit requires each MS4 permittee to identify methods it will use to evaluate the effectiveness of each awareness and behavior change campaign. A relevant baseline evaluation (e.g. from previous permit cycle) must be conducted prior to each campaign, followed by an evaluation in year five of this permit to assess the overall effectiveness of the outreach program. Any message or delivery mechanism found ineffective or of unsatisfactory efficacy, must be modified accordingly.

#### **Description:**

UMaine will collect Education/Outreach program data to show evidence that progress toward the defined awareness and behavior goals of the program is achieved. Both of UMaine's campaigns will be evaluated by BASWG. See the BASWG SMP under separate cover for more information.



## 3.2 MCM II - Public Involvement and Participation

MS4 permittees must fully comply with MCM II by involving the public in the planning and implementation process of improving water quality and reducing stormwater quantity via their stormwater program. BMPs for this MCM must support active involvement of the public and stakeholders.

UMaine will fulfill the requirements for Public Involvement and Participation through relevant BASWG practices and by implementing additional BMPs.

### 3.2.1 BMP2A - Public Notice of Stakeholder Involvement

The MS4 permittee must comply with applicable state and local public notice requirements using effective mechanisms for reaching the public and comply with the Maine Freedom of Access Act when stakeholders are involved with implementation of the permit. The permittee must document the stakeholder meetings and attendance in the annual report as a way of measuring this goal.

**Description:**

UMaine will follow state and local Public Notice requirements when involving stakeholders, including BASWG and UMaine administration, in the implementation of the 2022 MS4 General Permit.

**Measurable Goal:**

There will be public notification and public access to documentation of all UMaine meetings with MS4 permit stakeholders throughout the permit cycle.

**Implementation Tools:**

UMaine will comply with public notice and access requirements by:

1. Providing public notice of BASWG meetings, and posting BASWG agendas and minutes through a link to the BASWG website via the UMaine website; and
2. Posting the SMP on the UMaine website.

**Responsible Party:** Stormwater Coordinator

### 3.2.2 BMP2B - Public Events

The permittee or regional stormwater group of which the permittee is a member must annually host/conduct or participate in a public event that includes a pollution prevention and/or water quality theme.

**Description:**

As a member of the BASWG, UMaine participates in public events. Each year the BASWG coordinates multiple street and stream cleanup and stormdrain stenciling events throughout the Bangor region. The BASWG also coordinates an educational and interactive stormwater booth at the annual Maine Science Festival in Bangor, or a similar event. These events increase public involvement and participation in reducing stormwater pollution.



**Measurable Goal:**

Each permit year UMaine will participate in at least one public event coordinated by the BASWG with a pollution prevention and/or water quality theme.

**Implementation Tools:**

To meet the goals and the MS4 permit requirements for public events, UMaine will participate in BASWG events each permit year. Please see the BASWG SMP, under separate cover, for more detailed information concerning these events.

**Responsible Party:** Stormwater Coordinator



### 3.3 MCM III - Illicit Discharge Detection and Elimination

Each MS4 permittee must implement and enforce a program to detect and eliminate illicit discharges and unauthorized non-stormwater discharges. The program must address 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.

To meet MS4 General Permit requirements for this MCM, UMaine will continue to implement its Illicit Discharge Detection and Elimination (IDDE) program, which includes:

- A watershed-based map of UMaine's stormwater management system;
- A written IDDE Plan which includes;
  - Inspections of outfalls owned/operated by UMaine (and monitoring of outfalls that flow during dry weather);
  - Investigations of potential illicit discharges;
  - UMaine's illicit discharge policy; and
  - A Quality Assurance Project Plan (QAPP).
- Development of a prioritized list of outfalls that have the potential to cause illicit discharges during wet weather.

The following BMPs will be implemented to meet this MCM.

#### 3.3.1 BMP3A - IDDE Plan

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 the General Permit.

**Description:**

UMaine developed an IDDE Plan as part of the 2013 MS4 General Permit, and has updated the IDDE Plan (see **Attachment B**) to meet requirements of the 2022 MS4 General Permit.

**Measurable Goal:**

As part of its IDDE program, UMaine will review its IDDE Plan each permit year and revise the plan, as necessary.

**Implementation:**

UMaine will continue to refine their IDDE program.

**Responsible Party:** Stormwater Coordinator



### 3.3.2 BMP3B - Watershed Based Storm Sewer System Infrastructure Map

Permittees must maintain a map(s) of their state and/or federally owned or operated storm sewer system. The map(s) must show the location of all stormwater catch basins, connecting surface and subsurface infrastructure, 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 as well as 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.

#### **Description:**

UMaine developed and refined a watershed based storm sewer system infrastructure map during previous MS4 permit cycles. UMaine utilizes an AutoCAD based mapping system to manage all MS4 related storm sewer system components.

#### **Measurable Goals:**

UMaine will annually review its storm sewer infrastructure maps and revise, as necessary. The review will encompass all existing storm sewer system infrastructure, including but not limited to:

- The location of all stormwater catch basins;
- Connecting surface and subsurface infrastructure depicting the direction of in-flow and out-flow pipes; and
- The locations and receiving waters for all facility stormwater outfalls within the regulated area.

#### **Implementation:**

UMaine will continue to refine their infrastructure mapping system as necessary during each year of the current MS4 permit cycle to address potential changes to their stormwater management system. UMaine will rely on the annual storm sewer system infrastructure inspection program described in **BMPs 3D** and **6E** below to maintain awareness of system changes and necessary mapping updates.

**Responsible Party:** Andy Brown - Location Information and Infrastructure Logistics Planning

### 3.3.3 BMP3C - Dry Weather Outfall Inspection

Permittees must implement a dry weather outfall inspection program that includes all elements outlined in Part IV(C)(3)(e)(i - viii) of the General Permit.

#### **Description:**

UMaine performs dry weather inspections of all identified stormwater outfalls, and has identified priority areas where illicit discharges might be present. Dry weather outfall inspections are included as part of this priority IDDE program. The inspection program is designed to identify potential illicit discharges within UMaine's stormwater management system, and is a critical component for minimizing stormwater pollution to receiving waterbodies.

#### **Measurable Goals:**

1. Annually inspect at least 20% of outfalls within UMaine's regulated area (minimum); and
2. If possible, annually inspect 100% of outfalls within UMaine's regulated area (above and beyond).



**Implementation:**

UMaine will continue to annually perform its existing dry weather outfall inspection program. Stormwater Team members involved in the inspection program will be trained as necessary on how to conduct and record dry weather inspections. Inspection results will be documented in a database management system or other record keeping system for compliance purposes. UMaine will rely on available resources specifically addressing illicit discharge detection and elimination, including, but not limited to UMaine's IDDE Plan.

**Responsible Party:** Stormwater Coordinator

**3.3.4 BMP3D - Wet Weather Assessment for Potential Illicit Discharges**

Prior to the expiration date of the 2022 MS4 General Permit, 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 those listed in Part IV(C)(3)(f) of the General Permit. 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 General Permit, the permittee must identify these wet weather outfalls in its written IDDE plan, identify specific parameters 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 this assessment prior to the expiration date of the GP and permittee specific DEP Order, the permittee must implement the wet weather monitoring immediately.

**Description:**

UMaine will conduct a wet weather assessment in accordance with the 2022 MS4 General Permit Part IV(C)(3)(f), and will incorporate the wet weather assessment into their IDDE Plan by the end of PY5 (6/30/2027).

**Measurable Goals:**

UMaine's wet weather assessment will identify all outfalls in the regulated area that have the potential for illicit discharges during wet weather events, identify targeted wet weather outfalls for monitoring during the next permit cycle, and incorporate the wet weather assessment into the UMaine IDDE Plan by the end of PY5.

**Implementation:**

UMaine will conduct a comprehensive wet weather outfall assessment over the course of the 2022 MS4 permit cycle.

**Responsible Party:** Stormwater Coordinator





### 3.3.5 BMP3E - Identify Allowable Non-stormwater Discharges that Contribute Pollutants

The permittee must include if it has identified any allowable non-stormwater discharges that are significant contributors of pollutants to the MS4. The non-stormwater discharges authorized by the General Permit are listed in Part IV(C)(3)(h) of the permit. If sources are identified, 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.

#### **Description:**

UMaine has prioritized hydrant flushing runoff as a facility generated allowable non-stormwater discharge to its MS4. UMaine relies on Plumbing Department personnel for the flushing of all UMaine owned fire hydrants. UMaine's Stormwater Management Team developed and implemented a standard operating procedure (SOP) for the flushing of all facility owned hydrants within the regulated area. This SOP, included in the UMaine's IDDE plan found in **Attachment B**, ensures that discharges from UMaine's MS4 to receiving waterbodies as a result of hydrant flushing activities are not significant contributors of pollutants.

#### **Measurable Goals:**

UMaine will meet the following goals to control pollutant contributions from the identified allowable non-stormwater discharges:

1. Annual review of the UMaine hydrant map, including where discharges drain to the MS4 and receiving waters;
2. Prepare an annual water quality report concerning hydrant flushing activities; and
3. Address any other allowable non-stormwater discharges (see General Permit Part IV(C)(3)(h)) that are identified as significant contributors of pollutants to the MS4.

#### **Implementation:**

UMaine will implement the following measures to control pollutant contributions from UMaine's allowable non-stormwater discharges:

1. UMaine will review and update the campus infrastructure map to maintain location points of all hydrants;
2. UMaine will prepare an annual water quality report documenting all best management practices implemented for hydrant flushing activities as well as the total residual chlorine testing results for these discharges; and
3. Each permit year, UMaine will include a summary of all hydrant flushing activities conducted within the regulated area in their MS4 Annual Report.

**Responsible Party:** Steve Petrie - Plumbing Shop Manager



## 3.4 MCM IV - Construction Site Stormwater Runoff Control

Each permittee must implement and enforce a program to minimize or eliminate pollutants in any stormwater runoff from construction activities that disturb one acre or more of land within the urbanized area. 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.

UMaine selected the following Best Management Practices (BMPs) to meet requirements of MCM IV, ensuring that construction does not impact water resources.

### 3.4.1 BMP4A - Regulatory Mechanism

The General Permit requires that the MS4 permittee have a regulatory mechanism in place that requires the use of erosion and sediment control BMPs at construction sites consistent with the minimum standards outlined in Attachment C of the 2022 MS4 General Permit. Permittees who have an existing regulatory mechanism must evaluate and update it as needed within one (1) year of the effective date of this GP. Permittees without an existing regulatory mechanism must develop one within one (1) year of the effective date of this GP and have an approved regulatory mechanism in place with the necessary enforcement authority within two (2) years of the effective date of this General Permit.

#### **Description:**

UMaine will continue to enforce an existing program to reduce pollutants in any stormwater runoff to the MS4 from construction activities resulting in a land disturbance of greater than or equal to one acre within UMaine's urbanized area. UMaine will continue to rely on existing construction contract documents developed during a previous permit cycle. The facility relies on the MDEP's administration and enforcement of the Maine Construction General Permit (MCGP) and Chapter 500 requirements. Chapter 500 Appendix C describes housekeeping performance standards, including construction site waste control, for permitted construction projects.

#### **Measurable Goal:**

In PY1, UMaine will evaluate and update its existing regulatory mechanism, as necessary, to include references to the requirements found in Attachment C of the MS4 General Permit. These requirements include the provisions detailed in the MDEP Chapter 500 Appendix A - Erosion and Sediment Control, Appendix B - Inspections and Maintenance, and Appendix C - Housekeeping. If updates to UMaine's existing regulatory mechanism are required, they will be completed by July 1, 2023.

#### **Implementation:**

UMaine will rely on the MDEP's administration and enforcement of Chapter 500 for all projects resulting in a land disturbance of greater than or equal to one acre on campus.

**Responsible Party:** Stormwater Coordinator



### 3.4.2 BMP4B - Procedures for Site Plan Review

The MS4 permittee must develop and implement 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, and procedures to consider information submitted by the public.

#### **Description:**

UMaine has existing Campus Planning Review procedures applicable to projects that disturb one or more acres of land. These procedures include the provisions detailed in the 2022 MS4 General Permit (consideration of potential water quality impacts, erosion control, waste storage, the ability for the public to comment at publicly noticed meetings, as well as procedures to consider information submitted by the public). The UMaine Campus Planning Committee is authorized to review and act on all site plans for development requiring site plan review. The Campus Planning Committee incorporates environmental protection into overall campus planning. All UMaine Campus Planning Committee meetings are open to the campus community.

#### **Measurable Goals:**

UMaine will meet the following goals for implementing Site Plan Review procedures to address MS4 permit requirements:

1. In PY1, evaluate the Site Plan Review procedures, as applicable to the MS4 program, updating the procedures as necessary;
2. Notify the UMaine campus community of all Campus Planning Committee meetings reviewing MS4 regulated construction projects;
3. UMaine will continue to notify the public of all construction resulting in a land disturbance of greater than or equal to one acre through Site Location of Development (SLODA) requirements; and
4. Consider all input related to site plan reviews and actions.

#### **Implementation:**

UMaine will continue implementation and enforcement of its Site Plan Review procedures, specifically:

1. Throughout the 2022 permit cycle, UMaine will review and update its Site Plan Review procedures, as necessary, to incorporate consideration of stormwater runoff control at applicable construction sites;
2. Continue to notify and invite the campus community to UMaine Campus Planning Committee meetings reviewing MS4 regulated construction projects; and
3. Solicit public comment on site plan reviews applicable to MS4 regulation through SLODA public notice requirements.

**Responsible Party:** Walter Shannon- Assistant Director of Capital Planning & Project Management



### 3.4.3 BMP4C - Procedures for Notification

The permittee's construction site runoff program must include procedures for notifying construction site developers and operators of the requirements for registration under the Maine Construction General Permit and Chapter 500, Stormwater Management.

#### **Description:**

As required by the MS4 permit, UMaine will notify construction site developers and operators of the requirements for registration under the Maine Construction General Permit or Chapter 500. This notification applies to construction activity at UMaine disturbing one or more acres.

#### **Measurable Goals:**

During each permit year, UMaine will rely on contract documents which include notification of the requirement for registration under the MCGP or Chapter 500 requirements. UMaine will also confirm contractors are notified of the requirements in a pre-construction meeting for each project. During each permit year, UMaine will provide a brief summary of all projects meeting the requirements for notification in the MS4 Annual Report submitted to MDEP.

#### **Implementation:**

Construction site developers and operators will be made aware of this requirement through contract documents and pre-construction meetings for applicable projects.

**Responsible Party:** Walter Shannon- Assistant Director of Capital Planning & Project Management

### 3.4.4 BMP4D - Construction Site Inspections and Documentation

The permittee must document construction activity that disturbs one or more acres within the urbanized area. Written procedures for site inspection and enforcement authority must be documented. Construction site inspections must be completed following minimum requirements outlined in Part IV(4)(a)(v)(b) of the General Permit.

#### **Description:**

To maintain the effectiveness of construction site stormwater control best management practices (BMPs), regular inspection of control measures is essential. UMaine will continue to inspect applicable construction projects for erosion and sediment control (E&SC) and good housekeeping/pollution prevention, as required by the MS4 General Permit. UMaine will also develop a construction site inspection plan, detailing inspection procedures and follow-up actions for applicable construction sites within the regulated area.

#### **Measurable Goals:**

UMaine will meet the following goals for construction site inspections and documentation:

1. By the General Permit effective date (October 1st, 2022), develop written procedures for site inspection and enforcement of E&SC measures;
2. Inspect each applicable construction site for E&SC compliance at least three times during the active earth-moving phase of the operation (see **Attachment C** for a paper example of the electronic form used for these inspections);
3. Inspect each applicable construction site for E&SC compliance annually until the operation reaches substantial completion;



4. Inspect each applicable construction site for E&SC compliance at project completion to ensure that the site has reached permanent stabilization and all temporary erosion and sediment controls have been removed;
5. Document all construction inspections, enforcement action and corrective actions taken; and
6. Summarize the inspection program results in the MS4 Annual Report submitted to MDEP each permit year.

**Implementation:**

Qualified UMaine personnel will perform, or contract with a qualified third party inspector to perform, applicable construction site inspections on a frequency sufficient to determine whether sites are in compliance with the MCGP or Chapter 500. For sites not in compliance, the inspector(s) will provide site operators with guidance on how to come into compliance. Sites which are not brought into compliance with the MCGP within a reasonable period after receiving guidance from the inspector(s) or after other measures are taken by the MS4, will be reported to the MDEP for non-compliance with the MS4 permit.

**Responsible Party:** Walter Shannon- Assistant Director of Capital Planning & Project Management



## **3.5 MCM V - Post-Construction Runoff Control for 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.

UMaine selected the following Best Management Practices (BMPs) for the Post-Construction Stormwater Management MCM of this SMP.

### **3.5.1 BMP5A - Low Impact Development**

On or before December 31, 2022, each permittee must develop and begin implementation of an enforceable program for stormwater management on new and redevelopment sites which establishes performance standards that are at least as stringent as the LID techniques contained in Table 1 of Attachment F of this permit unless such techniques are infeasible on a site. The enforceable program should, at a minimum, refer to Attachment F for guidance.

#### **Description:**

As part of their program to address post-construction stormwater runoff to the maximum extent practicable, UMaine will develop and adopt an enforceable program to require Low Impact Development (LID), based on LID techniques and measures defined in Appendix F of the 2022 general permit.

#### **Measurable Goal:**

By December 1, 2022 UMaine will develop and begin implementation of an enforceable program for stormwater management on new and redevelopment sites which establishes performance standards that are at least as stringent as the LID techniques contained in Table 1 of Attachment F of the 2022 MS4 General Permit.

#### **Implementation:**

UMaine will enforce a program to require LID for projects greater than or equal to an acre within the urbanized area to the maximum extent practicable as part of its Site Plan Review procedures. This program will be as least as stringent as the measures found Table 1 of Attachment F of the 2022 MS4 General Permit.

**Responsible Party:** Walter Shannon- Assistant Director of Capital Planning & Project Management

### **3.5.2 BMP5B - Post-Construction Discharge Program**

Each MS4 permittee must have and implement a post-construction discharge program. Per the program, applicable BMPs must be inspected annually to document their proper function and any completed maintenance. This program must also include provisions for the timely correction of any identified deficiencies.

#### **Description:**

UMaine will continue to rely on their existing Post-Construction Stormwater Management program developed during a previous permit cycle.



**Measurable Goals:**

1. UMaine's Post-Construction Stormwater Management program will be reviewed and updated to meet current MS4 General Permit requirements by the effective date of the permit (October 1st, 2022);
2. During each permit year, UMaine will ensure applicable post-construction stormwater management BMPs discharging to its regulated MS4 are functioning properly, as required by the General Permit; and
3. A summary of all post-construction inspections performed for MS4 permit compliance will be provided in the MS4 Annual Report submitted to MDEP each permit year.

**Implementation:**

The UMaine Post-Construction Stormwater Management program will be updated to contain the following specific requirements:

- UMaine must conduct an annual inspection, completed by a qualified inspector documenting that all on-site BMPs are adequately maintained and functioning as intended; and
- If a post-construction BMP requires maintenance, UMaine must take corrective action(s) no later than 60 days following the date the deficiency was identified. If 60 days is not possible, then UMaine must establish an expeditious schedule to complete the maintenance and establish a record of the deficiency and corrective action(s) taken.

**Responsible Party:** Stormwater Coordinator



## 3.6 MCM VI - Pollution Prevention/Good Housekeeping for Facility Operations

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

UMaine selected BMPs for the Pollution Prevention/Good Housekeeping for Facility Operations MCM of this SMP.

### 3.6.1 BMP6A - Operation and Maintenance Activities

Permittees must inventory and implement written operation and maintenance (O&M) procedures for all operations conducted in, on, or associated with the permittee's facilities, including buildings, roads, travel ways, parks and open space owned or operated by the permittee that have the potential to cause or contribute to stormwater or surface water pollution. O&M procedures must reduce stormwater pollution to the maximum extent practicable and address stormwater treatment and controls that are used to achieve compliance with the conditions of the permit.

#### **Description:**

For previous MS4 permit cycles, UMaine developed an O&M Plan for all activities occurring on facility owned properties that have the potential to impact stormwater runoff. The O&M Plan contains an inventory of these facility operations.

The Plan inventory includes, at a minimum, the following activities:

- Automobile Maintenance;
- Hazardous Materials Storage;
- Landscaping and Lawn Care;
- Parking Lot and Street Cleaning;
- Roadway Maintenance;
- Pest Control;
- Road Salt Application and Storage;
- Spill Response and Prevention;
- Storm Drain System Cleaning;
- Vehicle Washing; and
- Vehicle Fueling System.

#### **Measurable Goals:**

1. UMaine will annually review and update its inventory of facility operations that have the potential to cause or contribute to stormwater pollution;
2. UMaine will evaluate the O&M Plan annually to iteratively improve strategies and practices to eliminate or better control pollutant discharges; and
3. A summary of the O&M activities and any proposed changes to the O&M Plan based on annual evaluations will be provided in the MS4 Annual Report submitted to MDEP each permit year.





**Implementation:**

UMaine will update its O&M Plan to meet 2022 MS4 permit requirements by the permit effective date (October 1st, 2022), and review the plan annually thereafter. During all years of the 2022 permit cycle, UMaine will implement this O&M Plan for facility activities occurring on campus that have the potential to impact stormwater runoff.

**Responsible Party:** Stormwater Coordinator

**3.6.2 BMP6B - Facility Employee Training**

The permittee must conduct annual employee training to prevent and reduce stormwater pollution from facility operations subject to the MS4 permit. Compliance measures related to trainings must be documented and reported to MDEP annually, including the types of trainings presented, names and titles of attendees, the percentage of facility staff, and their occupation, that received training, the length of the training, and training content delivered.

**Description:**

UMaine provides facility employee training on an as needed basis, but at a minimum annually. The training programs focus on facility activities occurring on campus which have a potential to impact stormwater runoff. Typical facility operations with this potential have been identified in the O&M Plan in **BMP6A**.

**Measurable Goals:**

1. UMaine will annually evaluate and identify training needs and materials for staff regarding facility O&M procedures.
2. Each permit year UMaine will provide an appropriate employee training program that addresses means to reduce stormwater pollution from facility operations.
3. UMaine will document the following MS4 permit compliance measures for each annual training:
  - Types of training presented;
  - Percentage of facility staff trainees;
  - Occupations of facility staff trainees;
  - Duration of the training program; and
  - Content delivered during the training program.
4. UMaine will report compliance measures related to facility trainings in the MS4 Annual Report submitted to MDEP each permit year.



**Implementation:**

Each permit year, UMaine will evaluate and identify specific training needs for facility staff regarding UMaine's O&M procedures. UMaine will then develop and gather materials appropriate for the topic to be presented. Topics to be covered by the training program may include, but are not limited to:

- Maintenance activities, maintenance schedules, and long-term inspection procedures for structural and non-structural stormwater controls to reduce pollutants discharged from the MS4;
- Controls for reducing or eliminating the discharge of pollutants into the MS4 from streets, roads, highways, parking lots, maintenance and storage yards, fleet or maintenance shops with outdoor storage areas, salt/sand storage locations, snow disposal areas, and waste transfer stations; and
- Procedures for disposing of waste removed from the MS4 and areas listed above in accordance with all regulatory requirements (such as dredge spoil, accumulated sediments, floatables, and other debris).

UMaine may opt to coordinate employee trainings through a regional effort sponsored by the BASWG. UMaine staff have participated in similar regional training programs as a cost saving measure during previous MS4 permit cycles. Details of regional training approaches by the BASWG for its MS4 members is provided in the group's SMP submitted under separate cover to MDEP.

**Responsible Party:** Stormwater Coordinator

**3.6.3 BMP6C - Street Sweeping**

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.

**Description:**

UMaine employs a regular sweeping program on all UMaine owned parking lots and roads. UMaine personnel involved with winter maintenance operations also perform street sweeping. Winter maintenance staff will be apprised of all requirements UMaine must comply with for the MS4 permit program compliance.

**Measurable Goals:**

1. UMaine will perform street sweeping of all facility owned/operated roads and parking lots at least one time each year as soon as possible after snowmelt;
2. As necessary, UMaine will modify their winter road and parking lot maintenance program based on annual evaluations of street sweeping activities; and
3. A summary of annual sweeping activities and any program modifications will be provided in the MS4 Annual Report submitted to MDEP each permit year.

**Implementation:**

During each permit year, UMaine will continue to implement a sweeping program for all facility owned parking lots and roads. UMaine will annually evaluate the effectiveness of their street sweeping program and alter the program, as necessary to meet their winter maintenance goals. Sweeping of all UMaine owned roads and parking lots occurs as soon as possible after snowmelt.

**Responsible Party:** Bart Gallant- Grounds Shop Manager



### 3.6.4 BMP6D - Catch Basin Inspection and Cleaning

The permittee must develop and implement a program to inspect catch basins and other stormwater structures that accumulate sediment. All catch basins and stormwater structures must be inspected at least once every other year and cleaned with a frequency appropriate to the accumulation identified. Sediment must be removed in accordance with current state law.

#### **Description:**

UMaine's stormwater management system consists of a system of open ditches, catch basins, and interconnecting storm drains collecting runoff that discharges to identified outfalls.

#### **Measurable Goals:**

Per MS4 permit requirements, UMaine will meet the following stormwater structure inspection and cleaning goals:

1. During each permit year, UMaine will inspect and clean (as necessary) storm drains and catch basins in the storm sewer system to meet the following required frequency and conditions:
  - Inspect and clean a minimum of 50% of all catch basins, so that all catch basins are inspected and cleaned over the course of two years;
  - Clean catch basins more frequently if inspections indicate excessive accumulation (50% of the sump is filled) of sediment.
    - If two consecutive inspections show excess accumulation, then UMaine will clean those catch basins every year.
    - If two annual inspections show a decrease in sediment accumulation to less than 25% of the sump, then inspections can be resumed at a frequency of once every two years.
2. UMaine will perform opportunistic inspections of the catch basins during the cleaning process to detect potential illicit discharges;
3. Inspections will be documented in a database system used by UMaine to manage all MS4 related inspections. See **Attachment D** for an example of the form used for these inspections; and
4. Inspections and cleaning of catch basins beyond the enforceable number (50% annually) will be considered an above and beyond measure.

#### **Implementation:**

UMaine will continue to inspect every year and clean, as necessary, (see measurable goals above) all University owned catch basins at a minimum of every other year.

**Responsible Party:** Stormwater Coordinator

### 3.6.5 BMP6E - Maintenance and Upgrading of Stormwater Conveyance System

The permittee must evaluate and implement a prioritized schedule, as necessary, for repairing or upgrading the conveyances, structures, and outfalls within the regulated area.

#### **Description:**

UMaine's stormwater conveyance system primarily consists of a system of open ditches, catch basins and interconnecting storm drains collecting runoff that discharges to identified outfalls.



### **Measurable Goals:**

1. During each permit year, UMaine will continue to evaluate and implement a maintenance schedule for conveyances, structures and outfalls owned and operated by the MS4; and
2. A summary of annual activities will be provided in the MS4 Annual Report submitted to MDEP each permit year.

### **Implementation:**

UMaine will continue to evaluate their stormwater conveyance system each year. Based on the results of dry weather outfall inspections, catch basin inspections (**BMPs 3D, 6D**), and other factors, UMaine will plan and implement (as necessary), a repair schedule of facility owned conveyances, structures and outfalls.

**Responsible Party:** Bart Gallant- Grounds Shop Manager

### **3.6.6 BMP6F - Stormwater Pollution Prevention Plan (SWPPP)**

The permittee must implement written procedures outlined in a stormwater pollution prevention plan (“SW-PPP”) for operations or facilities that are owned or operated by the permittee and not already regulated under the Maine Industrial Stormwater Program: vehicle or equipment maintenance areas, fueling areas, and from all other vehicle and equipment cleaning facilities. SWPPP implementation must address long-term operation of structural and non-structural controls that reduce stormwater pollution to the maximum extent practicable.

### **Description:**

During the previous permit cycle, UMaine developed a SWPPP for relevant UMaine operations and facilities. The SWPPP includes compliance with similar requirements under the MDEP’s Multi-Sector General Permit (MSGP) for Industrial Activities.

### **Measurable Goals:**

1. UMaine will perform necessary quarterly visual monitoring and other compliance tasks each year, as described in their current SWPPP;
2. UMaine will make the SWPPP available to appropriate facility staff, MDEP staff, and USEPA staff, and keep a copy of the SWPPP on-site at all times for reference and review;
3. UMaine will amend the SWPPP to comply with the requirements specified in Part IV(C)(6)(d) of the MS4 general permit by the permit effective date of October 1st, 2022;
4. UMaine will further amend the SWPPP within 30 calendar days of completion of any of the following:
  - A change in design, construction, operation or maintenance that may have a significant effect on the discharge or potential for discharge of pollutants including the addition or reduction of industrial activity;
  - Monitoring, inspections, or investigations by UMaine, local, state or federal officials that determine the SWPPP is ineffective in eliminating or significantly minimizing the intended pollutants; or
  - A discharge occurs that is determined by the MDEP to cause or have the reasonable potential to cause or contribute to the violation of an applicable water quality standard.
5. UMaine will maintain the proper documentation for inspections and monitoring activities;
6. Annual training for SWPPP activities will be provided as part of MS4 related trainings for relevant UMaine staff; and



7. A summary of SWPPP related activities will be provided in the MS4 Annual Report submitted to MDEP each permit year.

**Implementation:**

During each permit year, UMaine will implement stormwater pollution control measures, non-numeric effluent limitations, and pollution prevention practices identified in the most current SWPPP. UMaine staff will perform necessary tasks to maintain compliance with the MSGP requirements, including quarterly visual monitoring.

**Responsible Party:**

- Stormwater Coordinator



## SEE 4 General Requirements

### 4.1 Plan Approval

UMaine is committed to reduce the discharge of pollutants from its regulated small MS4 to the maximum extent practicable, and maintains the highest standards for stormwater management through regular review, updating, and implementation of this Stormwater Management Plan.

  
Signature

  
Date

  
Printed Name, Title

### 4.2 Plan Location and Public Access

The SMP and documents will be kept on file at UMaine's Facilities Management Office, an electronic copy will be posted on the UMaine website, and a backup copy will be kept at SEE, Inc. in Orono, Maine. Copies and review of documents will be made available when requested by appropriate government agencies and public safety groups.

## 5 References

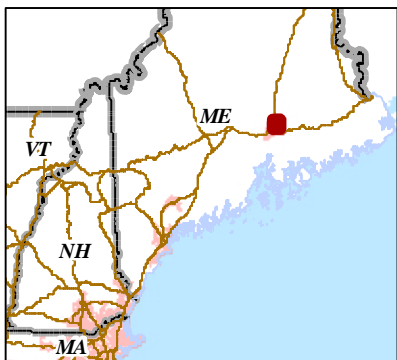
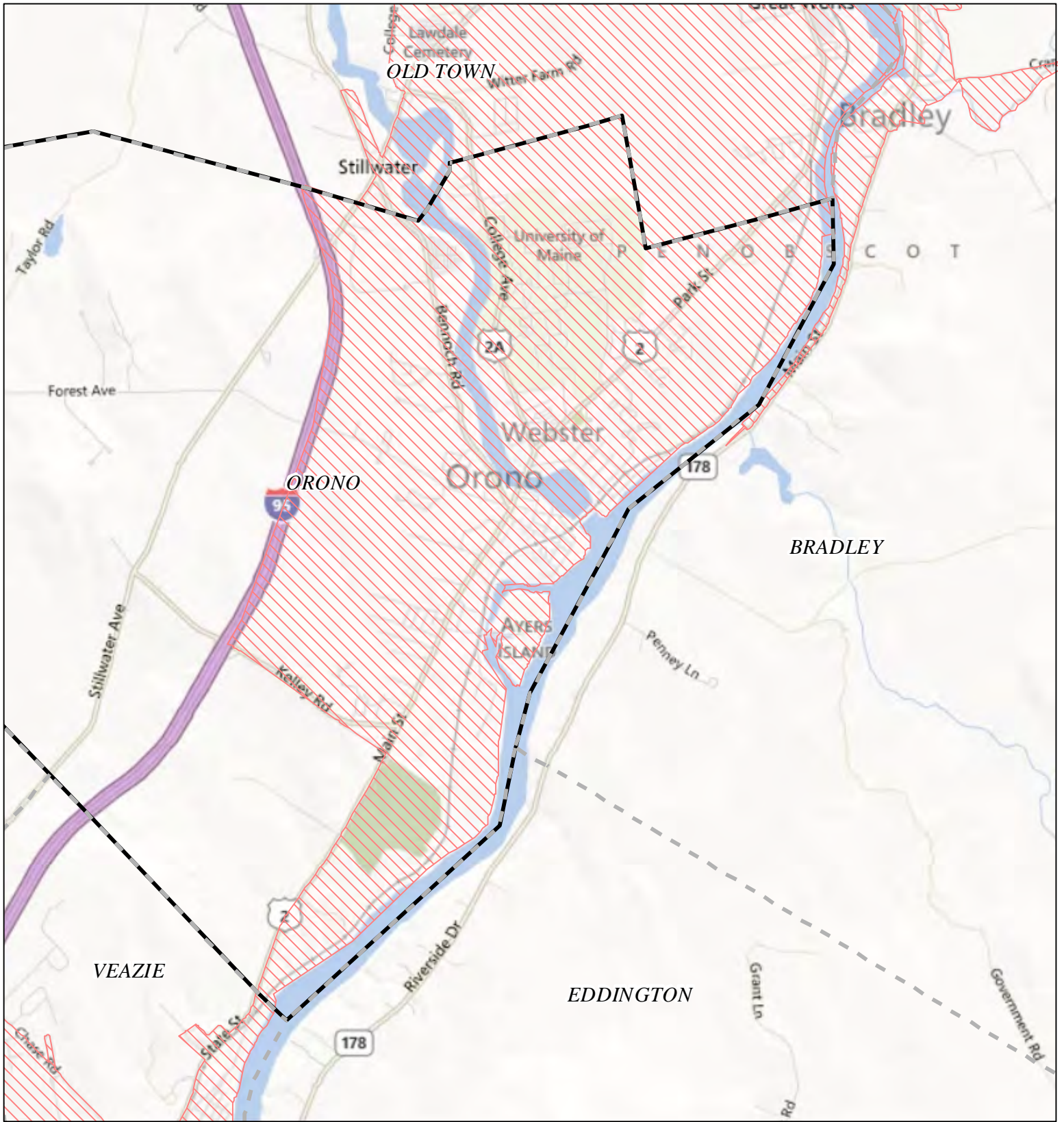
Portions of the Introduction and select areas of this document were adapted from a SMP Template prepared by Integrated Environmental Solutions for the Interlocal Stormwater Working Group (ISWG).





**SEE A Urbanized Area Map**

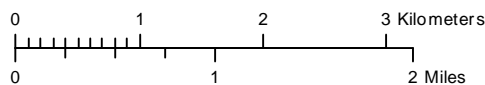




**NPDES Phase II Stormwater Program  
Automatically Designated MS4 Areas**

**Orono ME**

 Regulated Area (2000 + 2010 Urbanized Area)



Town Population: 10380  
Regulated Population: 9390  
(Populations estimated from 2010 Census)



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



**SEE B Illicit Discharge Detection and Elimination (IDDE) Plan**



# Illicit Discharge Detection and Elimination Program

For

The University of Maine  
Facilities Safety and Regulatory Compliance  
5765 Service Building, Orono, ME 04469  
(207) 581-3049



THE UNIVERSITY OF  
**MAINE**

*Prepared By*

Stillwater Environmental Engineering, Inc.

June 2015

Updated: February 24, 2022

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## SEE 1 Illicit Discharge, Detection, and Elimination (IDDE) Introduction

Due to the Town of Orono's population density and because the University of Maine (UMaine) is located inside the Town, UMaine is subject to the requirements of the Maine Department of Environmental Protection (MDEP) General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4 General Permit).

An urbanized area map, for the Town of Orono urbanized area, can be found in **Appendix A**. Infrastructure maps for the UMaine can be found in the UMaine's AutoCAD and can be made available upon request.

There are six Minimum Control Measures (MCM's) which the MS4 General Permit requires UMaine to address throughout the campus. These MCM's include:

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

This Plan, which details the IDDE program for the University of Maine, fulfills the requirements of MCM 3 as specified in Part IV(C)(3)(b) of the 2022 MS4 General Permit. Details concerning measurable goals and deadlines for MCM 3 can be found in UMaine's Stormwater Management Plan (SMP).

### 1.1 IDDE Program Amendments, Updates, and Records

MS4 General Permits are written to provide coverage for five-year periods. The current MS4 General Permit coverage became effective on July 1, 2013 and has been administratively continued beyond five years, to expire on September 30, 2022. At the expiration of the current MS4 permit, the new 2022 MS4 General Permit, issued on December 8, 2021, will be in effect for five years beginning on October 1, 2022. This new permit will continue to provide coverage for the University of Maine for stormwater discharges. This IDDE Plan has been updated to meet the requirements of the 2022 MS4 General Permit. This Plan must be further updated or amended if any of the following occur:

- Changes in requirements associated with a permit re-issuance;
- UMaine determines that this Plan is not effective; and/or
- Changes to facility operations which effect this Plan.

UMaine's Facilities Management Department (FM) is responsible for MS4 General Permit compliance. FM Staff, will modify this IDDE Plan as necessary, or utilize an outside consultant for the task.

The Facilities Management Department or a consultant will retain paper or electronic files of inspections and investigations including laboratory reports, for a minimum of three years after expiration of the MS4 General Permit term.



## SEE 1.2 Typical Illicit Discharges

The MDEP defines an illicit discharge as any discharge to an MS4 which is not:

- Composed entirely of stormwater;
- An allowable non-stormwater discharge (see **Section 3** for a list of allowable non-stormwater discharges); or
- Permitted under another MDEP permit.

The Center for Watershed Protection (CWP) developed a comprehensive IDDE Manual in 2004 (updated in 2011), which classifies illicit discharges based on their characteristics:

- **Discharge Frequency**

- **Continuous:** Discharges which occur most or all of the time, are usually easier to detect, and typically produce the greatest pollutant load.
- **Intermittent:** Discharges which occur over a shorter period of time, such as, a few hours per day or a few days per year. Due to their infrequency, intermittent discharges are hard to detect, but can still represent a serious water quality problem, depending on their flow type. (See below)
- **Transitory:** Discharges which occur rarely, usually in response to a singular event such as an industrial spill, ruptured tank, sewer break, transport accident or illegal dumping episode. These discharges are extremely hard to detect with routine monitoring, but under the right conditions, can exert severe water quality problems on downstream receiving waters.

- **Discharge Flow Type**

- **Sewage and Septage:** Flows produced from sewer pipes and septic systems.
- **Wash water:** Flows composed of:
  - \* Gray water (laundry) from homes;
  - \* Commercial carwash wash water;
  - \* Fleet wash water;
  - \* Commercial laundry wastewater; and
  - \* Floor washing shop drain wastewater.
- **Liquid Wastes:** Flows containing contaminants such as:
  - \* Oil;
  - \* Paint;
  - \* Process water (radiator flushing water, plating bath wastewater, boiler blowdown, etc.); and
  - \* Any other potentially hazardous chemicals.
- **Tap Water**
- **Landscape Irrigation**
- **Groundwater and Spring water**

- **Mode of Entry**

- **Direct:** The discharge is directly connected to the storm drain pipe through:
  - \* Sewage pipes; and
  - \* Shop drains or other kinds of pipes.
- **Indirect:** Flows which enter through stormdrain inlets or by infiltration through joints or breaks in a stormdrain pipe.



Illicit discharges may be detected by various means such as:

- By UMaine's Campus Safety department;
- UMaine staff during normal daily activities;
- Through annual inspections; and
- During infrastructure maintenance and repair.

By analyzing the different types of discharges and the means by which they may be discovered or reported, UMaine has developed a comprehensive IDDE program that will enable UMaine to identify and eliminate illicit discharges as quickly as possible. A table listing typical illicit discharges and their characteristics can be found below. This table is not an exhaustive list of illicit discharges, but a list of typical discharges which may be found at UMaine.

Table 1: Typical Illicit Discharge Characteristics

Discharge	Flow Type	Frequency*			Mode of Entry		Detection Method
		Cont	Inter	Trans	Direct	Indirect	
Spills/Leaks	Liquid Wastes			X		X	Campus Safety & MDEP
Sanitary Sewer Connections	Sewage	X	X		X		Outfall Inspections
Waste Dumping	Liquid Wastes			X		X	Campus Safety & Inspections
Floor Drain Connections	Liquid Wastes		X		X		Inspections
Sewer Line Leaks	Sewage	X	X			X	Inspections & Sampling
Contaminated Groundwater	Groundwater	X	X	X		X	Sampling
Industrial Materials/ Stockpiles	Liquid Wastes/ Sediment		X	X		X	Campus Safety & Inspections
Irrigation & Lawn Watering	Tap Water		X			X	Inspections & Sampling
Commercial/Industrial Washdowns	Wash Water		X			X	Campus Safety & Inspections
Sanitary Sewer Overflows	Sewage			X		X	Campus Safety & Orono Sewer Dept.

\*Frequency types: Cont = Continuous; Inter = Intermittent; Trans = Transitory





## **SEE 1.3 Overview of IDDE Program Components**

In order to be compliant with the MS4 General Permit an IDDE program must be developed, implemented, and contain the following components:

1. Development/maintenance of a Watershed-Based Storm Sewer Map;
2. Identification of High Priority Areas for Inspections;
3. Procedures to Locate Illicit Discharges;
4. Procedures to Investigate and Remove Illicit Discharges; and
5. Procedures to Document Illicit Discharges.

The following sections offer detailed information concerning each component of UMaine's IDDE program.



## SEE 2 Watershed-Based Storm Sewer Map

The first component of UMaine's IDDE program is the mapping of UMaine's storm sewer system. These maps enable the UMaine to accurately track and locate the source of illicit discharges. UMaine's infrastructure maps contain features that meet or exceed the minimum requirements of the MS4 General Permit such as:

- The locations of all:
  - Catch basins;
  - Connecting surface and subsurface stormwater infrastructure;
  - Outfalls; and
  - Sanitary sewer lines.
- A unique identifier for all outfalls and catch basins; and
- The direction of in-flow and out-flow of all storm sewer connections;

For each outfall the following information is collected:

- Type;
- Material;
- Size; and
- Name and location of the nearest receiving waterbody.

An outfall is the location where concentrated stormwater discharges from an MS4 community enter Waters of the State or leave the MS4. Items that are not considered outfalls include:

- Driveway culverts connecting ditch segments;
- Stormdrains which convey streams/rivers under roadways; and
- Pipes that discharge to other stormwater infrastructure.

The University of Maine maintains electronic copies of its existing watershed-based storm sewer maps. These maps were created using GPS data, transportation infrastructure maps, and existing stormwater infrastructure information. When possible, field verification of stormwater infrastructure is conducted in order to ensure accurate mapping.

### 2.1 Infrastructure Naming Protocols

To improve existing infrastructure maps, UMaine has delineated watersheds in its urbanized area using the United States Geological Survey (USGS) StreamStats online tool. A total of 13 watersheds have been delineated within the campus. This watershed delineation was used to aid UMaine during the IDDE Prioritization detailed in **Section 4** below.

In addition, infrastructure (catch basins and outfalls) in UMaine's infrastructure map are assigned unique alpha-numeric tags, which aid in identification for illicit discharge investigations and infrastructure maintenance.



## **SEE 2.2 Procedures to Update Infrastructure Map**

Infrastructure maps are updated, as necessary, when new or previously unmapped infrastructure is located. UMaine utilizes mobile data collection devices with sub-meter GPS capabilities while conducting annual stormwater inspections, in addition to as-built drawings from new development. This information is used to update the stormwater infrastructure maps, as necessary. UMaine's Location Information and Infrastructure Logistics Planner is responsible for ensuring accurate data are being collected and that the infrastructure maps are updated when necessary.



## SEE 3 Non-Stormwater Discharge Regulatory Mechanism

UMaine has authority to prohibit illicit discharges through their Illicit Discharge Policy (**see Appendix I**). See the attached policy for details on UMaine's authority to administer, implement, and enforce the provisions of the policy.

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

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

\*Discharges of hydrant and water line flushing are required to be dechlorinated if they are to be discharged to a portion of the MS4 system which discharges to a small stream. In accordance with the MDEP 11/18/2016 Issue Profile for Drinking Water System Discharges to Regulated Small MS4s, the UMaine Plumbing Department either aerates or dechlorinates during flushing to meet Total Residual Chlorine (TRC) acute water quality criteria. For fresh water this value is 19 ug/L TRC (adjusted to 50 ug/L, per the MDEP as the reporting limit for available reliable and consistent test methods).

The UMaine plumbing department flushes the system every year and prepares an annual report to the UMaine describing water dechlorination methods in use and testing results for any flushing conducted. The Hydrant Flushing SOP, developed during the previous permit cycle, is attached as **Appendix G**.



## SEE 4 Identification of Priority Areas

Prior MS4 General Permits required that permittees identify areas that may need special protection from illicit discharges. UMaine will prioritize illicit discharge inspections in these priority areas if limited facility resources prevent UMaine from conducting its typical annual inspection schedule, which is more frequent than the schedule required by the 2022 MS4 permit. UMaine may also use this prioritization for illicit discharge investigations, in the event there are insufficient resources to address all potential illicit discharges simultaneously.

During the 2013 MS4 permit cycle, UMaine's Stormwater Team identified priority areas where illicit discharges might be present, and identified areas that may need special protection from illicit discharges. Assisted by contracted service providers, UMaine staff implemented a prioritization method developed by the Center for Watershed Protection, that consisted of the following steps:

1. Dividing UMaine into areas that could be evaluated for illicit discharge potential.
2. Selecting illicit discharge potential screening factors that apply to one or more of the areas and identifying the criteria to be used to evaluate each area.
3. Evaluating each area using the screening factors and assigning a numeric score based on their illicit discharge potential.

UMaine reviewed the screening factors presented in **Table 2 of Appendix H**, to assess their applicability to each of the areas. The listing shows which screening factors were retained and eliminated, as well as the rationale for elimination.

Using the screening factors that were retained as applicable to UMaine, each drainage area was evaluated and assigned a score to describe whether the area exhibited a high potential for the factor to be present. Once all the areas were assigned scores for all of the screening factors, the scores were averaged and a final score for the area was obtained. A score of '3' represents a high priority area, a score of '2' represents a medium priority areas, and a score of '1' represents a low priority area.

The worksheet located in **Appendix H** shows the prioritization scoring scheme using retained screening factors for each of the areas identified for UMaine. Based on this procedure, areas having the highest normalized priority scores were determined to have the highest illicit discharge potential. As such, illicit discharge inspections are to be focused in the following drainage areas:

1. Drainage Area 1 (score of 2.1): This drainage area has many industrial operations, high density of stormwater infrastructure, high amount of impervious cover, large number of sewer crossings, many petroleum storage areas, and many building perimeter drains.
2. Drainage Area 3 (score of 2.1): This drainage area has a high density of stormwater infrastructure, high amount of impervious cover, many steam underdrains and building perimeter drains, very old stormwater infrastructure, and a large number of sewer crossings.



## 5 Procedures to Locate Potential Illicit Discharges

UMaine utilizes the following methods to detect illicit discharges:

- Observations during catch basin inspections and cleaning;
- Dry weather outfall inspections and monitoring;
- Community reports of illicit discharge issues; and
- Personnel reports of illicit discharge issues.

The sections below provide more detailed information concerning the items listed above.

### 5.1 Catch Basin Inspections and Cleaning

Inspections are conducted during catch basin cleaning, which is completed at least annually in the spring as soon as possible after snow melt. Although inspections are only required every two years by the MS4 General Permit, each year inspections are attempted for all UMaine's accessible catch basins to assess which need to be cleaned. These inspections are documented using a hand held mobile device and an electronic inspection form. These data are then integrated with the UMaine's GIS system. During the inspections the amount of accumulated sediment and the general structural condition of the catch basin is noted, along with the presence of:

- Debris;
- Oil sheen;
- Odors; and/or
- Other evidence of an illicit discharge.

### 5.2 Personnel Reports of Illicit Discharges

UMaine has established a "hotline" to handle possible illicit discharge reports. Residents, field staff, and outside agencies that suspect an illicit discharge, connection, or illegal dumping incident can report electronically using the online incident report form or directly call Facilities Management Work Control at (207) 581-4400 to report the incident.

Any illicit discharge incidents that are reported electronically or by phone are handled by FM staff. These calls are documented using an electronic form that can be accessed by computer or on a mobile device. Incident report data are then used to help UMaine staff locate and eliminate the potential illicit discharge as quickly as possible.

#### 5.2.1 Public Awareness

UMaine understands that both facility personnel and public awareness is a vital part of a successful IDDE program. The public must be made aware of what does and does not constitute an illicit discharge. The UMaine conducts education and outreach efforts along with the Bangor Area Stormwater Group (BASWG) in order to educate the public about stormwater issues including illicit discharges. The UMaine also conducts an annual catch basin stenciling program, where catch basins are labeled to inform residents that they drain to a waterway.

Information concerning illicit discharges and how to report them is provided during annual training programs held for UMaine staff.



## SEE 5.3 Dry Weather Outfall Inspections

Dry weather outfall inspections are conducted annually campus-wide. The MS4 General Permit requires that 100% of identified outfalls are inspected over the course of the five-year term. UMaine attempts to inspect all MS4 outfalls every year, if time and resources allow, in accordance with the following:

- Inspections will be performed during periods of dry weather (less than 1/4 inch of rain in the previous 72 hours) whenever possible;
- Inspections will be performed where they can be done in a safe and efficient manner;
- Inspections will be performed during periods of no or minimal snow cover and prior to the growth of vegetation (or after leaves have fallen) such that outfalls may be easily spotted;
- Observations will include the following, at a minimum: observations of sheen, discoloration, foaming, evidence of sanitary sewage, excessive algal growth and similar visual indicators, and detection of odor;
- Photographs are taken at the time of inspection for maintenance and/or illicit discharge documentation;
- MS4 outfalls are inspected where UMaine has safe and legal access to the structure to be inspected, otherwise inspection occurs at the next structure upstream from the outfall; and
- When maintenance or potential illicit discharge issues are identified, the Stormwater Coordinator will be informed so that he/she may prioritize the work with other required work for UMaine.

Properly trained municipal staff or consultants conduct these inspections and document using an electronic inspection form on a mobile device. Data that are documented include:

- Time since last precipitation;
- General condition of the outfall;
- The presence or absence of multiple illicit discharge indicators; and
- If flow is present, any sampling data that was collected. (See QAPP in **Appendix E**).

UMaine has developed an SOP document for dry weather outfall inspections, which can be found in **Appendix D.1**.

### 5.3.1 Outfall Indicator Sampling and Analysis

Outfall sampling and analysis is required under the 2022 MS4 General permit when an outfall is observed to be flowing during dry weather conditions whether or not it has exhibited evidence of an illicit discharge. A sample will be collected by the inspector for either field screening or laboratory analysis, depending on the conditions encountered. Sampling and analysis must include, but is not limited to:

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



**SEE**

A Quality Assurance Project Plan (QAPP) for MS4 Dry Weather Outfall Monitoring has been developed to provide sampling personnel the information that will assist them in collecting samples for field and/or laboratory analysis, using field equipment and test kits, and documenting results. The QAPP (**Appendix E**) describes the sampling procedures as well as the appropriate analytical methods and field equipment to be used for investigating potential illicit discharges and flowing outfalls. The QAPP also provides guidance on interpretation of the results obtained so that investigators can make informed decisions about whether to continue investigating a potential source, or whether the results indicate a flowing outfall might be from a natural source.





## SEE 6 Procedures to Investigate and Remove Illicit Discharges

### 6.1 Illicit Discharge Investigation

Investigations of illicit discharges are conducted by the FM Department. UMaine relies on visual observations of the location where the illicit discharge was reported as a first step in identifying the source of the illicit discharge (see Illicit Discharge Tracing SOP in **Appendix D.1**). If the evidence of the illicit discharge is still present in the initial structure or location where it was reported, UMaine staff or contracted personnel use their knowledge of the UMaine's infrastructure to systematically inspect other structures upstream of the initial location until either the evidence of the illicit discharge is no longer present, or until they locate the source of the illicit discharge.

For example, if evidence of gray water was observed during catch basin cleaning, UMaine staff would inspect drain manholes and/or catch basins upstream of the initial observation until they could isolate one or more locations from which the gray water was likely emanating.

In the event visual observations of the structures cannot identify the source of an illicit discharge, FM staff may employ televising, systematic dye testing, or smoke testing to identify the source. The Facilities Management Department could conduct dye testing but would need to hire a third party for smoke testing and camera work. Sampling and analysis may also be conducted as described in **Section 5.3.1** to help trace the source of an illicit discharge.

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

### 6.2 Illicit Discharge Removal

Once the potential source of the illicit discharge is identified, the Stormwater Coordinator would contact the responsible party in order to initiate removal or discontinuation of the illicit discharge.

If the illicit discharge is caused by a private entity, the procedures in the Illicit Discharge Policy will be followed. (**Appendix I**). In the event the illicit discharge is caused by UMaine, FM would contact the department responsible and work with them to remove or discontinue the illicit discharge. In either case, UMaine would require the responsible entity to eliminate the illicit discharge within 60 calendar days of identification of the source or would work with the responsible entity to establish an expeditious schedule to remove the illicit discharge.

UMaine has developed an SOP document for illicit discharge source removal, which can be found in **Appendix D.3**. For more in-depth information concerning the investigation and removal of illicit discharges see Chapters 13 and 14 of *Illicit Discharge Detection and Elimination*, Center for Watershed Protection, 2004.



## SEE 7 Procedures to Document Illicit Discharges

UMaine will track the progress of the investigation and removal of illicit discharges using their electronic data management system. Each year, UMaine is required to complete an annual report summarizing the activities completed under the MS4 Program. All illicit discharge incidents will be documented in this report and all illicit discharge reports will be made available upon request. For more detailed information concerning the tracking of illicit discharges see Chapter 10 of *Illicit Discharge Detection and Elimination*, Center for Watershed Protection, 2004.



## 8 Coordination with Nearby Communities

### 8.1 Possible Inflow and Outflow Locations

Preventing and responding to possible illicit discharges requires that an MS4 permittee have a thorough understanding of its storm sewer system. An integral part of this understanding involves mapping and inspecting all inflow and outflow locations within the regulated area. Locating all possible inflow and outflow locations prepares the permittee to not only prevent a discharge from its regulated area, but to also respond quickly and efficiently to prevent discharges in nearby MS4s from entering its storm sewer system.

During the previous MS4 permit cycle, UMaine mapped all possible inflow and outflow locations within its regulated area, and added these locations to its infrastructure maps (see **Appendix B**).

### 8.2 Communication with Adjacent MS4s

UMaine maintains communication with all adjacent, interconnected MS4 communities in order to facilitate a quick and coordinated response to any possible illicit discharges that may leave or enter its storm sewer system either from UMaine itself or from a neighboring MS4.

Contact information and documentation of correspondence with interconnected MS4s, including any coordinated responses to illicit discharge events, is contained in **Appendix C** of this IDDE Plan.



## SEE 9 References

Center for Watershed Protection. 2011, *Illicit Discharge Detection and Tracking Guide*.

City of Bangor, Maine. August 2013, revised March 2014, *Illicit Discharge Detection and Elimination Program*.

CWP and Robert Pitt. October 2004, *Illicit Discharge Detection and Elimination Manual - A Guidance Manual for Program Development and Technical Assessments*. Available at [www.cwp.org](http://www.cwp.org)

Integrated Environmental Engineering. December 2014, revised February 2021, *Illicit Discharge Detection and Elimination Program, for the Town of Cape Elizabeth, Maine*.

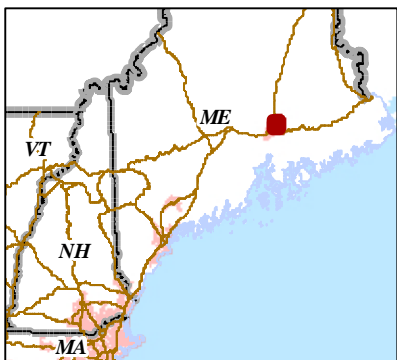
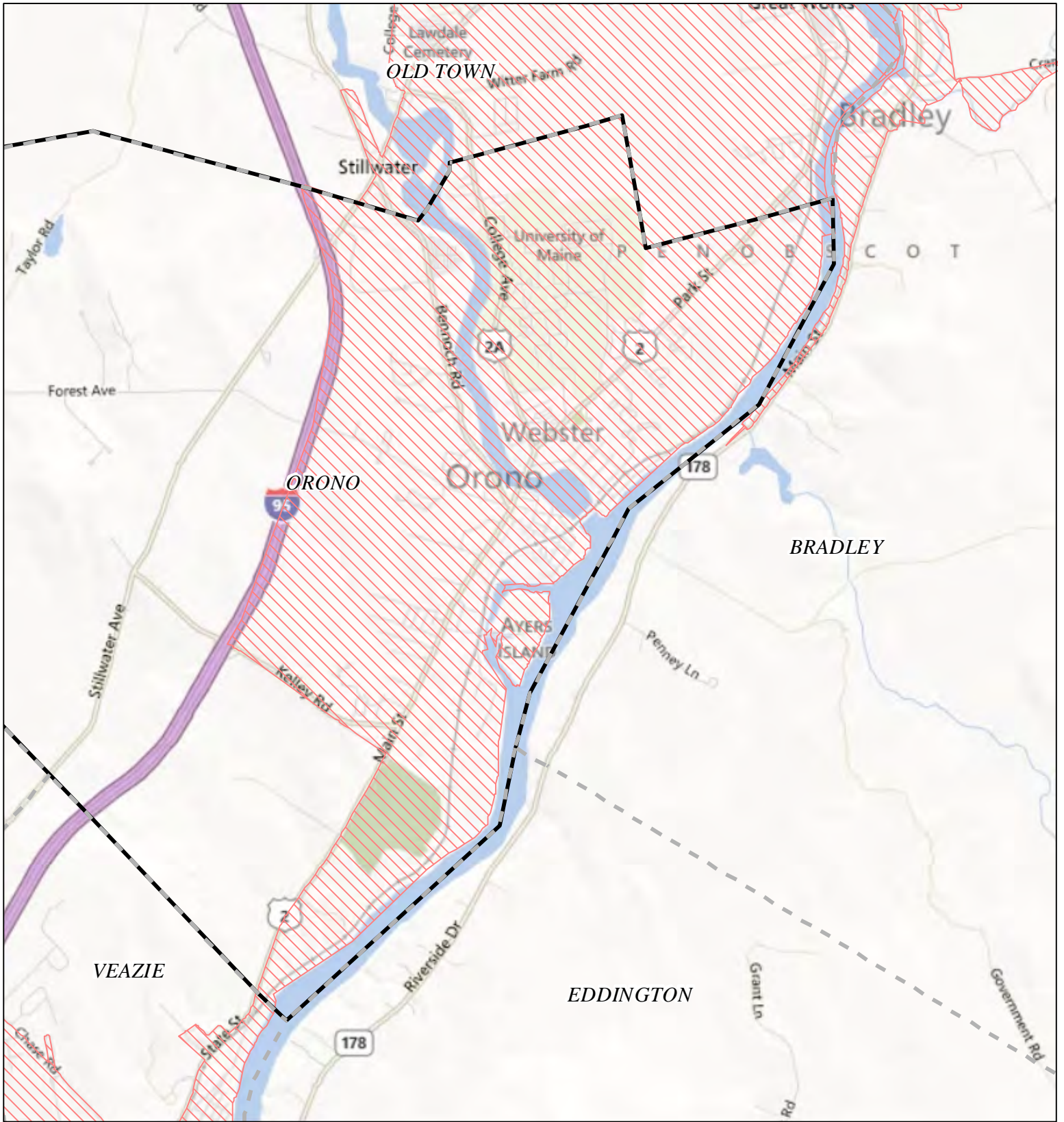
State of Maine, Department of Environmental Protection. 2013, *General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems*.

US Environmental Protection Agency. 2012, *EPA New England Bacterial Source Tracking Protocol - Draft*.




## Appendices

### A Urbanized Area Map



**NPDES Phase II Stormwater Program  
Automatically Designated MS4 Areas**

**Orono ME**

 Regulated Area (2000 + 2010 Urbanized Area)



Town Population: 10380  
Regulated Population: 9390  
(Populations estimated from 2010 Census)



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



## **SEE B UMaine Stormwater Infrastructure Map**

UMaine's Stormwater Infrastructure Map can be found in UMaine's AutoCAD database and can be made available upon request.



## **SEE C Interlocal Contacts and Coordinated Response**

This Appendix contains correspondence with neighboring MS4s from the 2013 MS4 permit cycle. UMaine will reach out again to these communities prior to submitting their NOI for the 2022 MS4 permit cycle to re-establish IDDE cooperation using an updated contact list (see below). All associated correspondence and coordinated IDDE response with neighboring communities will be documented in this Appendix.

The University of Maine's interconnected MS4s and contacts are:

### **Town of Orono:**

- Name: Rob Yerxa
- Title: Public Works Director
- Phone Number: (207) 889-6101
- Email: ryerxa@orono.org

### **The City of Old Town:**

- Name: John Rouleau
- Title: Public Works Director
- Phone Number: (207) 827-3974
- Email: jrouleau@old-town.org

### **MaineDOT:**

- Name: Kerem Gungor
- Phone Number: (207) 592-3489
- Email: Kerem.Gungor@maine.gov



January 25, 2022

John Rouleau, Public Works Director  
City of Old Town  
265 Main Street  
Old Town, ME 04473

Re: Interconnected MS4 Notification and Coordination

Dear John,

The University of Maine (UMaine) is regulated under the Maine Municipal Separate Storm Sewer System (MS4) General Permit for Stated and Federally Owned Facilities for the discharge of stormwater. Under this permit, UMaine is required to coordinate with interconnected MS4 permittees. With the recent reissuance of the new 5-year MS4 General Permit, which takes effect October 1<sup>st</sup>, 2022, UMaine has developed and will implement a new Stormwater Management Plan (SMP). Our Notice of Intent (NOI) to comply with the 2022 MS4 permit, accompanied by our SMP, will be filed with the Maine DEP on or before March 1<sup>st</sup>, 2022 and will also be posted on the University's website.

Because the City of Old Town's MS4 regulated area interconnects with UMaine's regulated area, we wanted to make you aware of our compliance efforts and SMP submission, as well as the continued implementation of our Illicit Discharge Detection and Elimination (IDDE) Plan that has been updated for the new permit.

Included in the IDDE Plan is an easy way for UMaine students and staff to contact me, the Stormwater Coordinator, in the event of an illicit discharge. Should an illicit discharge occur in your municipality that has the potential to discharge to UMaine's MS4, we request that you contact me immediately upon discovery of the discharge. Should an illicit discharge at UMaine that has the potential to affect the City of Old Town's MS4, I will contact you immediately. Please forward this request to any of your municipal staff that might be in a position to coordinate illicit discharge response efforts.

Thank you for your cooperation in this effort to minimize the potential for illicit discharges into our MS4. Feel free to contact me with any questions.

Respectfully,



Jodi Munster

Assistant Director of Administration and Environmental Compliance and Stormwater Coordinator  
Phone: (207) 735-3642  
Email: [jodi.munster@maine.edu](mailto:jodi.munster@maine.edu)

January 25, 2022

Rob Yerxa, Public Works Director  
Town of Orono  
59 Main Street  
Orono, ME 04473

Re: Interconnected MS4 Notification and Coordination

Dear Rob,

The University of Maine (UMaine) is regulated under the Maine Municipal Separate Storm Sewer System (MS4) General Permit for Stated and Federally Owned Facilities for the discharge of stormwater. Under this permit, UMaine is required to coordinate with interconnected MS4 permittees. With the recent reissuance of the new 5-year MS4 General Permit, which takes effect October 1<sup>st</sup>, 2022, UMaine has developed and will implement a new Stormwater Management Plan (SMP). Our Notice of Intent (NOI) to comply with the 2022 MS4 permit, accompanied by our SMP, will be filed with the Maine DEP on or before March 1<sup>st</sup>, 2022 and will also be posted on the University's website.

Because the Town of Orono's MS4 regulated area interconnects with UMaine's regulated area, we wanted to make you aware of our compliance efforts and SMP submission, as well as the continued implementation of our Illicit Discharge Detection and Elimination (IDDE) Plan that has been updated for the new permit.

Included in the IDDE Plan is an easy way for UMaine students and staff to contact me, the Stormwater Coordinator, in the event of an illicit discharge. Should an illicit discharge occur in your municipality that has the potential to discharge to UMaine's MS4, we request that you contact me immediately upon discovery of the discharge. Should an illicit discharge at UMaine that has the potential to affect the Town of Orono's MS4, I will contact you immediately. Please forward this request to any of your municipal staff that might be in a position to coordinate illicit discharge response efforts.

Thank you for your cooperation in this effort to minimize the potential for illicit discharges into our MS4. Feel free to contact me with any questions.

Respectfully,

  
Jodi Munster

Assistant Director of Administration and Environmental Compliance and Stormwater  
Coordinator

Phone: (207) 735-3642

Email: [jodi.munster@maine.edu](mailto:jodi.munster@maine.edu)

January 25, 2022

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

Re: Interconnected MS4 Notification and Coordination

Dear Kerem,

The University of Maine (UMaine) is regulated under the Maine Municipal Separate Storm Sewer System (MS4) General Permit for Stated and Federally Owned Facilities for the discharge of stormwater. Under this permit, UMaine is required to coordinate with interconnected MS4 permittees. With the recent reissuance of the new 5-year MS4 General Permit, which takes effect October 1<sup>st</sup>, 2022, UMaine has developed and will implement a new Stormwater Management Plan (SMP). Our Notice of Intent (NOI) to comply with the 2022 MS4 permit, accompanied by our SMP, will be filed with the Maine DEP on or before March 1<sup>st</sup>, 2022 and will also be posted on the University's website.

Because the MDOT's MS4 regulated area interconnects with UMaine's regulated area, we wanted to make you aware of our compliance efforts and SMP submission, as well as the continued implementation of our Illicit Discharge Detection and Elimination (IDDE) Plan that has been updated for the new permit.

Included in the IDDE Plan is an easy way for UMaine students and staff to contact me, the Stormwater Coordinator, in the event of an illicit discharge. Should an illicit discharge occur in your municipality that has the potential to discharge to UMaine's MS4, we request that you contact me immediately upon discovery of the discharge. Should an illicit discharge at UMaine that has the potential to affect the MDOT's MS4, I will contact you immediately. Please forward this request to any of your municipal staff that might be in a position to coordinate illicit discharge response efforts.

Thank you for your cooperation in this effort to minimize the potential for illicit discharges into our MS4. Feel free to contact me with any questions.

Respectfully,



Jodi Munster

Assistant Director of Administration and Environmental Compliance and Stormwater  
Coordinator

Phone: (207) 735-3642

Email: [jodi.munster@maine.edu](mailto:jodi.munster@maine.edu)

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<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
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Total Postage and Fees	\$4.33	02/23/2022



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Extra Services & Fees (check box, add fee as appropriate)	\$0.00	
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Certified Mail Fee	\$3.75	0473
\$	\$0.00	24
Extra Services & Fees (check box, add fee as appropriate)	\$0.00	
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$0.58	
Total Postage and Fees	\$4.33	02/23/2022



Sent To Maine DOT  
 Street and Apt. No., or PO Box No. 16 State House Station  
 City, State, ZIP+4® Augusta, ME 04333



## **D Illicit Discharge Detection and Elimination Standard Operating Procedures**

The following pages contain the Standard Operating Procedures (SOPs) followed by the University of Maine for:

- Detecting illicit discharges via Outfall Inspections (**Appendix D.1**);
- Tracing illicit discharge sources (**Appendix D.2**); and
- Removing illicit discharge sources (**Appendix D.3**).



**SEE D.1 Outfall Inspection SOP**

<b>Standard Operation Procedure</b>	
<b>SOP-1 IDDE: Outfall Screening</b>	
<b>Purpose of the SOP:</b>	This SOP provides a basic checklist for managers and field crews conducting illicit discharge inspections of storm drainage system outfalls

Reference: Brown et al., *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Center for Watershed Protection, Ellicott City, 2004.

### Planning Considerations:

- Employees should have reviewed and understand the information presented in Chapter 11 of the reference manual
- Inspections are to occur during dry weather (less than ¼" precipitation in previous 72 hours)
- Conduct inspections with at least two staff per crew if possible
- Conduct inspections during low groundwater and leaf off conditions if possible

### Field Methods:

- Ensure outfall is accessible – contact Facilities Management if overgrown at (207) 581-4400
- Inspect outfall only if safe to do so
- Visually inspect general area for possible sources
- Estimate flow
- Use electronic Outfall Inspection Form to document observations
- If dry weather flow is present, attempt to identify the source of the flow for future comparison
- If dry weather flow is present, conduct field screening (multi-meter parameters and ammonia/chlorine test strips), followed by the collection of samples for lab parameters (*E. coli* and Surfactant testing)
- If an illicit discharge is suspected follow procedures outlined in **SOP-2 IDDE: Tracing Illicit Discharges**
- Do not enter private property without permission

### Equipment List:

1. Mobile data collection device
2. Cell phone
3. Flashlight (spare batteries)
4. Disposable gloves
5. Folding wood ruler
6. Multi-parameter probe
7. Ammonia test strips
8. Chlorine test strips
9. Sample bottles
10. Timer
11. Hand sanitizer
12. Safety vests
13. First aid kit
14. Cooler
15. Permanent marker





<b>Standard Operation Procedure</b>	
<b>SOP-2 IDDE: Tracing Illicit Discharges</b>	
<b>Purpose of the SOP:</b>	To provide a quick reference list of items to keep in mind during investigation activities to efficiently and systematically identify the source of an illicit discharge

Reference: Brown et al., *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Center for Watershed Protection, Ellicott City, 2004.

### Planning Considerations:

- ❑ Employees should have reviewed and understand the information presented in Chapter 13 of the reference manual
- ❑ Review / consider information collected when illicit discharge was initially identified (Outfall Inspection Form)
- ❑ Consider storm drainage basin and land uses
- ❑ Conduct investigation with at least two staff per crew
- ❑ Manholes may only be entered by properly trained and equipped personnel with authorization by a confined space entry supervisor
- ❑ Never put yourself in danger

### Field Methods:

- ❑ Revisit outfall to verify reported discharge is still present
- ❑ Conduct field screening and collect applicable samples, as necessary, depending on previous findings and as per **SOP-1** and the QAPP located in Appendix E
- ❑ Survey the general area / surrounding properties to identify potential sources of the illicit discharge as a first step
- ❑ Investigate illicit discharges using visual inspections of upstream points as a second step
- ❑ Utilize O&M resources as required (traffic control, video truck, additional staff)
- ❑ Document investigation results for future reference
- ❑ Do not enter private property without permission
- ❑ If source cannot be found, add the location to a future inspection program

### Equipment List:

1. Mobile data collection device
2. Cell phone
3. Flashlight (spare batteries)
4. Disposable gloves
5. Hand sanitizer
6. Safety vests
7. Manhole hook
8. Safety cones
9. Sledgehammer
10. Equipment for outfall sampling and monitoring



<b>Standard Operation Procedure</b>	
<b>SOP-3 IDDE: Illicit Discharge Source Removal</b>	
<b>Purpose of the SOP:</b>	This SOP provides basic information for managers and inspection / enforcement staff to assist with illicit discharge source removal utilizing escalating compliance actions

Reference: Brown et al., Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments, Center for Watershed Protection, Ellicott City, 2004.

**Planning Considerations:**

- ❑ Employees should have reviewed and understand the information presented in Chapter 14 of the reference manual
- ❑ Employees should understand the University’s Illicit Discharge Policy

**Field Methods:**

- ❑ Upon identification of an illicit discharge to the MS4, the Stormwater Coordinator will be notified at (207) 581-2720
- ❑ Upon identification of an illicit discharge to the MS4, the owner of the property where the illicit connection is located will be notified and informed of their obligation to immediately stop the illicit discharge and begin corrective measures
- ❑ UMaine employees will provide technical assistance for eliminating the discharge and ensuring appropriate discharge of waste materials
- ❑ Follow-up inspections will be performed by University staff or consultants to verify that the illicit discharge is eliminated, and any corrective measures are installed in accordance with UMaine design standards



SEE E

# Quality Assurance Project Plan for MS4 Dry Weather Outfall Monitoring

# Quality Assurance Project Plan for MS4 Dry Weather Outfall Monitoring

## 1 Overview

The purpose of this Quality Assurance Project Plan (hereafter referred to the QAPP) is to describe the actions that the MS4 permittee will undertake in order to comply with requirements of the Maine Pollutant Discharge Elimination System (MEPDES) Municipal Separate Storm Sewer System (MS4) General Permit. Data generated by this plan will be included, as required by the General Permit, in the MS4 Annual Report to the Maine DEP.

### 1.1 Acknowledgement

This QAPP is based on a Stormwater Monitoring QAPP developed by Integrated Environmental Engineering, Inc. for municipalities in Maine. Permission to use content from Integrated Environmental's QAPP was granted by Kristie L. Rabasca, P.E.

## 2 Background and Scope

In Maine, there are 8 state or federally owned facilities (permittees) regulated by the 2022 Maine General Permit for the Discharge of Stormwater From State or Federally Owned Municipal Separate Storm Sewer System Facilities (MS4 General Permit). As part of the MS4 General Permit requirements, the facilities must conduct dry weather inspections on 100% of their outfalls during the 5-year term of the MS4 General Permit.

### 2.1 Requirements for Outfall Monitoring

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. An illicit discharge is 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.

Exempt conditions for dry weather outfall sampling and monitoring are described in Part IV(C)(3)(e)(vi) of the 2022 MS4 General Permit.

Monitoring must be conducted whether or not the outfall's dry weather flow exhibits evidence of an

illicit discharge. Where dry weather flow is present at an outfall, the permittee must sample the discharge and analyze for the following parameters:

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

Data from sampling and analysis can be used to determine if there is an illicit discharge present in the flow and can help to identify potential sources of the illicit discharge.

## **2.2 QAPP Purpose**

The purpose of this Quality Assurance Project Plan (QAPP) is to provide sampling personnel information that will assist them in collecting samples and analyzing them using field equipment/test kit(s) and/or laboratories in a manner that ensures sufficient accuracy and precision for identifying or ruling out the presence of illicit discharges in dry weather outfalls. This QAPP provides information on various field equipment/test kit(s) and analytical methods available to permittees that can be used to comply with the MS4 permit requirements for dry weather outfall monitoring.

This QAPP has been developed to accompany a facility's Illicit Discharge Detection and Elimination (IDDE) Plan, which is required by the MS4 General Permit. The QAPP itself does not contain all the IDDE requirements associated with the MS4 permit, so the facility's IDDE Plan should be consulted to determine the specific monitoring requirements and schedules. In addition, if an inspection finds evidence of an illicit discharge, the facility must investigate to identify the source and work with responsible parties to remove the source. The IDDE Plan describes the processes and procedures specific to a facility for such follow-up investigations.

## **3 Sampling Procedures**

### **3.1 Sample Collection**

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 there is no melt water from snow or ice). Because dry weather flow can be intermittent and/or highly variable in short periods of time, personnel should be prepared to collect samples during any outfall inspection.

Samples are collected only from a flowing source, and where the pipe outlet has at least 1 or 2 inches of free-flowing drop before any standing water or pool below it (as in Fig. 1, below). Outfalls may not

offer a clean catch of discharge (as in Fig. 2, below), and when this is the case, an alternative sampling option should be considered, such as sampling upstream structures or using sand bags around the outfall to prevent contamination from backflow. Stagnant water should not be sampled unless the facility deems it necessary.



Fig. 1. This outfall provides a good opportunity for a clean catch of its discharge.



Fig. 2. This outfall is partially submerged and a clean catch of its discharge is not possible.

### 3.2 Sampling equipment

If dry weather flow is present, the outfall is safely accessible, and a clean catch can be made, then monitoring should be conducted. **Table 1** provides a list of equipment that should be gathered and available for outfall monitoring. All samplers should be trained on the proper use and basic maintenance of field equipment prior to employing field methods. This includes training on calibration of analytical equipment used in the field, handling and disposal of field test kit components, and methods to minimize cross-contamination between samples.

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

**Table 1.** Field Equipment for Monitoring

1 Gallon of Distilled or de-ionized water for rinsing, and squirt bottle
1 Roll Paper towels
3-5 clean plastic 250 ml beakers for water sample collection in plastic bag marked “Clean” or disposable whirl-pak bags.
Garbage bags
1 long sampling pole and/or sampling pump and tubing
Equipment to remove and access catch basin covers if needed (hook/magnet, hammer, crowbar, etc.)
Field equipment/test kits (see Table 2) and bottles for any laboratory samples or off-site field test kits. <ul style="list-style-type: none"> <li>• Ensure field test kits have not expired</li> <li>• Typically keep bottles available for 5-10 samples</li> </ul>
Non-latex gloves
Box of 1-gallon plastic bags
Cooler with ice
Camera or phone
Safety Vest
Scissors
Sunscreen and bug spray
Clip board
3-5 Field Data Sheets (See Addendum 1)
Mobile device with application for digital data collection (e.g. Fulcrum)
Chain of Custody (See Addendum 2)
Sharpies and water-proof pens
Packing tape and Duct tape
Sheet of blank labels for bottles
First aid kit



### 3.3 Sample documentation

For each outfall sampled, a device with a mobile inspection data collection application (e.g. Fulcrum app), or a paper form as a backup, is 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 data collection form has a place to document sample observations including odor, color, turbidity, presence of algae, etc. These observations will be documented in addition to the observations made during the normal outfall inspection (which should be conducted in accordance with the MS4's IDDE Plan or SOP).

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

When using a third-party laboratory for any off-site analysis, sample bottles should be obtained before the sampling event. Coordination with the laboratory is also recommended to ensure that sample hold times and preservation requirements are being met. If samples are being collected on a Friday, the laboratory may need prior notice to meet short hold times. Analytical methods, hold times, and other pertinent information is described in Section 4 of this QAPP.

## 4 Analysis methods

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.

A list of commercial certified laboratories is available on the Maine DEP website at: <https://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml>.

Note also that many Wastewater Treatment Plants conduct bacteria analysis for operational purposes. If there is a Wastewater Treatment Plant in the area, it can also be used for the bacteria screening. This QAPP does not specify CWA methods or Maine DEP certification for use of field equipment/test kit(s) or *E. coli* testing.

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

multiple options for a given parameter. Prior to sampling, the sampler and Stormwater Coordinator will determine what analysis method (CWA Method, field equipment, or test kit) will be used.

Test kit components that have expired will not be used and test kits will be replaced if/when they reach the end of their useful lives.

Dissolved oxygen, pH and conductivity meters are calibrated each day prior to use. The calibrations are documented electronically in a spreadsheet. Probes that have useful life limits are replaced following the manufacturers recommended schedule.

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 maintained electronically or in paper form, easily accessible to the field personnel who will be conducting the monitoring.

Table 2 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)
Bacteria – Fecal Coliform	SM 9222 D (MF CFU/100ml) Or SM 9221 C, E (Multitube MPN/100ml)	Ice	To lab within 6 hours Analyze within 2 hours of receipt	120 ml or 250 ml plastic sterile bottle with lid from lab	Use for discharges to salt or freshwater (with ammonia and either optical enhancers or surfactants)
Bacteria – Human Bacteroides	Labs: EMSL (NJ), Microbial Insights (TN) or Source Molecular (FL)	Ice	To lab within 24 hours Analyze within 48 hours	1000 ml plastic bottle with sodium thiosulfate from lab (with insulated shipping box)	Use for discharges to salt or freshwater (with ammonia and either optical enhancers or surfactants).  Not a CWA method, so Maine Laboratory certification not required.

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

Ammonia (select one method)	CWA Method, Field Equipment, or Test Kit	Preservation	Holding time	Bottle needed	Notes on Use
Ammonia	Ammonia Test Strips	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	
Ammonia	Laboratory Method EPA 350.1/350.2	Sulfuric Acid (pH <2) + Ice	28 days	250 ml plastic bottle from lab	
Ammonia	Hach DR300 Pocket Colorimeter Ammonia Nitrogen or LaMotte 3680-01 DC1200 Colorimeter test kit	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Reagent contains Mercury, Generates a Toxic Hazardous Waste (D009) instructional video (10 minutes): <a href="https://www.youtube.com/watch?v=hFiEEEAmWFo">https://www.youtube.com/watch?v=hFiEEEAmWFo</a>
Total Residual Chlorine (select one method)	CWA Method, Field Equipment, or Test Kit	Preservation	Holding time	Bottle needed	Notes on Use
Chlorine	Field kit – Hach Colorimeter II low range	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Instructional video available at: <a href="https://www.youtube.com/watch?v=WTTUD0Hq1Vw">https://www.youtube.com/watch?v=WTTUD0Hq1Vw</a>
Chlorine	Industrial test Systems Ultra-Low Total Chlorine Test Strips and other mid range chlorine test strips	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	As of 6/2020, USEPA had not used Ultra low chlorine test strips (0.2 to 0.5 mg/L). Informal review shows these should be used simultaneously with a mid range (0.5 to 10 mg/l) test strips to double check range.
Temperature and Conductivity (use both)	CWA Method, Field Equipment, or Test Kit	Preservation	Holding time	Bottle needed	Notes on Use
Temperature	Temperature/ Conductivity probe	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Use to distinguish between groundwater and surface water.
Conductivity	Temperature/ Conductivity probe	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Use to distinguish between salt water and fresh water.

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

Optical Enhancers or Surfactants (select one)	CWA Method, Field Equipment, or Test Kit	Preservation	Holding time	Bottle needed	Notes on Use
Surfactants	SM5540C	Ice	To lab within 24 hours  Analyze within 48 hours	500 ml plastic bottle from lab	Works on most soaps (laundry detergent, personal care products, dish soap)
Surfactants	CheMetrics K-9400 field test kit (see Maine DEP guidance on handling and disposal in <b>Addendum 2</b> )	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Works on most soaps (laundry detergent, personal care products, dish soap). Contains alcohol and chloroform. Generates a Flammable (D001) and Toxic (D022) Hazardous Waste. Do not use test kit in the field unless licensed to transport hazardous wastes. Instructional Video available at: <a href="https://www.youtube.com/watch?v=6vwiZgWqa04">https://www.youtube.com/watch?v=6vwiZgWqa04</a>
Optical brighteners	VWR handheld UV lamp: UV-A: 360-365 nm, model number 89131-488	None	Analyze within 7 days	Unbleached cotton pad wetted with sample placed in sealed baggie	Works only on water with high to moderate laundry detergent. Provides only presence/absence.
Optical brighteners	Maine Healthy Beaches Fluorometer (\$15,000 unit)	None	Keep in a dark container, provide to MHB in 1-2 days, analyze within 7 days	Whirl bag or 100 ml plastic bottle.	Provides semi-quantitative numeric fluorescence of sample. Need to provide sample to MHB in bottle or whirl bag (in a box or cooler). One week hold time. Provide advanced notice to coordinate delivery to office. Organic matter or tannins, or color will interfere.

Table 2 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
Dissolved Oxygen	Hach DO Test kit Model OX-2P  DO Probe	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.
pH	EPA method 4500-H+B  pH Probe	None	Immediate (w/in 15 minutes) in Field	Field jar or beaker	Waters of the state have pH standards. This measurement can show whether outfall contributions are affecting the pH of receiving waters.
Total Phosphorus	EPA 365.3	Sulfuric Acid (pH <2) + Ice (4°C)	28 days	250 ml glass bottle from lab.	Provides data regarding nutrient contributions to receiving waters which can originate from paved surfaces, fertilizers, and eroding soils.
Personal Care Products	EPA 1694	Sulfuric Acid (pH <2) + Ice (4°C)	7 days to extraction  40 days after extraction	1000 ml amber jar	EPA Lab Chelmsford can run if capacity. Contact Todd Borci. Otherwise need to use a commercial laboratory.  EPA recommends analyzing only for following subset: Caffeine, 1,7-DMX (metabolite of caffeine), 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)

Table 2 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 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	300 mL BOD bottle	Provides general water quality information.
Total Petroleum Hydrocarbons  DRO and GRO	SW 8015C	Ice	7 days to extraction  40 days after extraction	500 ml amber glass jar and  3 40 ml VOA containers from lab with sulfuric acid	DRO is Diesel Range Organics (C10 to C28)  GRO is Gasoline Range Organics (C5 to C10)
Nitrate + Nitrite	SM 4500 or EPA 300	Sulfuric Acid (pH <2) + Ice (4°C)	28 days	125 ml plastic bottle from lab	Provides data regarding nutrient contributions to receiving waters which can originate from paved surfaces, fertilizers, eroding soils or wastewaters.
Total Kjeldahl Nitrogen	SM 4500 or EPA 300	Sulfuric Acid (pH <2) + Ice (4°C)	28 days	1000 ml amber glass bottle from lab	Provides data regarding nutrient contributions to receiving waters which can originate from paved surfaces, fertilizers, eroding soils or wastewaters.

## 5 Quality Control

### 5.1 Reporting Limits

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

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

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

### 5.2 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 rinsed with distilled water in between samples, and the rinsate disposed of away from the collection site. The USEPA Volunteer Monitor's Guide to Quality Assurance Project Plans has additional information on how to complete these tasks.

## 6 Field Data Sheets and Chain of Custody

As described in Section 3.3, a mobile inspection application will be used to digitally document sample collection. The application will document the type of field equipment or test kit(s) used and results of any field analysis. A list of parameters documented are provided in **Addendum 1** to this QAPP.

Whenever samples will be sent to a laboratory or transported for off-site 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 2** to this QAPP.



## **7 Data Reports**

Information and monitoring data collected on the mobile inspection application 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, date and time of analysis, the reporting limit, the person who conducted the analysis, and the analytical method used.

## **8 Data Review and Follow up**

Once all results have been received, they will be reviewed by the Stormwater 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 Coordinator, they may opt to have another facility staff person review the data, or a Stormwater Coordinator from another facility 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)

Parameter	Threshold Level for Additional Investigation	Notes/Discussion
Fecal Coliform	61 cfu/100 ml (2 times 31 cfu/100 ml for MF) to 100 cfu/100ml	The low end of this threshold is two times the 90 <sup>th</sup> percentile standards that DMR applies for approved (open) shellfish harvesting areas and is very conservative (90% of the samples collected from the area must be above these concentrations for the harvesting area to remain open and completely unrestricted for shellfish harvesting. See Addendum 2 for additional info from DMR)
Human Bacteroides	Any concentration may be indicative of human sewage.	Any concentration of human source of sewage should be investigated.
Ammonia	≥ 0.50 mg/L	This is the effective reporting limit of the Ammonia test strips and was taken from USEPA Draft 2012 Bacteria Source Tracking Protocol.
Chlorine	≥ 0.05 mg/L	Limit of test kit and was taken from USEPA Draft 2012 Bacteria Source Tracking Protocol.
Surfactants	≥ 0.25 mg/L	Taken from USEPA Draft 2012 Bacteria Source Tracking Protocol.
Optical Brighteners	≥ 100 ug/L ) (≥ 0.10 mg/L)	This is used by Maine Healthy Beaches as an actionable threshold. If using a handheld fluorometer, conduct further investigation if presence of optical brighteners is detected.

MS4s should use the thresholds listed above to make determinations whether an outfall requires additional investigation for illicit discharges. Outfalls that exceed at least one of the above thresholds should be investigated further using techniques described in the MS4s IDDE Plan.

As described in Section 2 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.

## Addenda

1. Example Data Collection Form and labels
2. Example Chains of Custody

## References:

Integrated Environmental Engineering. February 2021, *ISWG and SMSWG Stormwater Monitoring Program QAPP*, Revision 1.

U.S. EPA. September 1996, *The Volunteer Monitor's Guide to Quality Assurance Project Plans*, Document Number: 841-B-96-003.

Addendum 1

Example Field Data Collection and labels



## MS4 Outfall Inspection Form

Outfall ID:

Date:

Location (Lat./Long.):

Inspector:

Time:

Time/ Quantity of Last Precipitation (must be < .25" in preceding 72hrs):

Current Air Temperature/Weather Conditions:

Able to Inspect?

- Yes       No (Unable to locate)       No (Unable to access, fencing, etc.)  
 No (Safety)       No (Other – Describe)

Outfall Type:

- RCP       PVC       Iron       CMP       HDPE       Ditch  
 Other (Describe)

Outfall Diameter (If applicable):

Receiving Water:

Flowing (Yes/No):

Flow Quantity:

- Trickle       Minor Flow       Quarter Pipe       ≥ Half Pipe  
 N/A

Sampling Conducted:

- Yes       No (Describe why not)       N/A – No Flow



**Documented Field Parameters:**

Barometric Pressure \_\_\_\_\_ mm/Hg      Water Temperature \_\_\_\_\_ °C

pH \_\_\_\_\_      Chlorine \_\_\_\_\_ mg/L      Ammonia \_\_\_\_\_ mg/L

Conductivity \_\_\_\_\_ μS/cm      Dissolved Oxygen \_\_\_\_\_ mg/L

**Analytic Samples Collected:**

E. Coli       Surfactants       Other (Describe)

**Illicit Discharge Indicators Present:**

Foam       Discolored Discharge (Describe)       Excess Algae/Vegetation  
 Trash/Floatables       Sanitary Sewer Solids       Unusual Odor (Describe)  
 Oil Sheen/Staining       None       Other (Describe)

**General Condition of Outfall:**

Good       Fair       Poor

**Identified Defects:**

Erosion       Excess Sediment Accumulation       Excess Vegetation  
 Trash/Debris Accumulation       Other (Describe)       None

**Maintenance Follow-Up:**

Yes (Describe)       No



SEE

**Maintenance Follow-Up Priority:**

High

Medium

Low

N/A

**Photo Collected:**

Yes

No (Describe)

**Comments:**



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

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Addendum 2

Example Chains of Custody

# Laboratory Sample Chain of Custody

Client:		Contact:	Phone #:	Email																
Address:		City:	State:	Zip Code:																
Purchase Order #:		Proj. Name/No.:				Quote #:														
Bill (if different than above):				Address:																
Sampler (Print/Sign):				Copies To:																
<b>LAB USE ONLY</b>		Work Order #:			Analysis and Container Type Preservatives															
Remarks:  Shipping Info: FEDEX UPS CLIENT Airbill No: Temp C Temp Blank Intact Not Intact					Filt.	Filt.	Filt.	Filt.	Filt.	Filt.	Filt.	Filt.	Filt.	Filt.						
					Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N				
*	Sample Description	Date/Time Collected	Matrix water/soil /other	No. of Containers																
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:						



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FAX: (856) 786-0262

<b>Company :</b>		<b>EMSL-Bill to:</b> <input type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different please note in Comments**					
<b>Street:</b>		<i>Third Party Billing requires written authorization from third party</i>					
<b>City:</b>	<b>State/Province:</b>	<b>Zip/Postal Code:</b>	<b>Country:</b>				
<b>Report To (Name):</b>		<b>Fax #:</b>					
<b>Telephone #:</b>		<b>E-mail Address:</b>					
<b>Project Name/ Number:</b>							
<b>Please Provide Results:</b> <input type="checkbox"/> Fax <input type="checkbox"/> E-mail		<b>PO#</b>	<b>State Samples Taken:</b>				
<b>Turnaround Time (TAT) Options* - Please Check</b>							
<input type="checkbox"/> 3 Hour	<input type="checkbox"/> 6 Hour	<input type="checkbox"/> 24 Hour	<input type="checkbox"/> 48 Hour	<input type="checkbox"/> 72 Hour	<input type="checkbox"/> 96 Hour	<input type="checkbox"/> 1 Week	<input type="checkbox"/> 2 Week
<small>*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements.</small>							
<b>Fungi</b>		<b>Bacteria</b>		<b>Insects</b>			
<input type="checkbox"/> ERMI Panel (M180) <i>Dust Only</i>		<input type="checkbox"/> Human <i>Bacteroides</i> (M199)		<input type="checkbox"/> Bed Bug ( <i>Cimex lectularius</i> ) (M146)			
<input type="checkbox"/> EPA 36 Panel (M233) <i>Air, Swab</i>		<input type="checkbox"/> Total <i>Bacteroides</i> (M095)		<input type="checkbox"/> Tick - <i>Anaplasma phagocytophilum</i> Anaplasmosis (M261)			
<input type="checkbox"/> Water Damage 20 Panel (M181)		<input type="checkbox"/> <i>E. coli</i> O157:H7 (M140)		<input type="checkbox"/> Tick - <i>Babesia microti</i> Babesiosis (M260)			
<input type="checkbox"/> Wood Rot Fungi 10 Panel (M232)		<input type="checkbox"/> <i>E. coli</i> (M200)		<input type="checkbox"/> Tick - <i>Borrelia burgdorferi</i> Lyme disease (M196)			
<input type="checkbox"/> <i>Aspergillus</i> 15 Panel (M186)		<input type="checkbox"/> Total <i>Enterococcus</i> (M096)		<b>Other</b>			
<input type="checkbox"/> <i>Aspergillus</i> 6 Panel (M188)		<input type="checkbox"/> <i>Helicobacter pylori</i> (M207)		<input type="checkbox"/> <i>Acanthamoeba</i> spp. (M147)			
<input type="checkbox"/> <i>Penicillium</i> 13 Panel (M189)		<input type="checkbox"/> <i>Legionella pneumophila</i> (M103)		<input type="checkbox"/> <i>Cryptosporidium</i> spp. (M237)			
<input type="checkbox"/> Customized Fungi Panel (M100)		<input type="checkbox"/> <i>Legionella</i> 4 species-EPA (M162)		<input type="checkbox"/> <i>Giardia</i> spp. (M149)			
<input type="checkbox"/> <i>Penicillium</i> Mycotoxin 9 Panel (M190)		<input type="checkbox"/> <i>Legionella</i> Broad Screen (M163)		<input type="checkbox"/> Enterovirus RT-PCR (M142)			
<b>Birds, Animal Droppings</b>		<input type="checkbox"/> MRSA (M203)		<input type="checkbox"/> Food Authentication (F130)			
<input type="checkbox"/> <i>Chlamydomphila psittaci</i> (M234)		<input type="checkbox"/> <i>Mycobacterium avium</i> (M144)		<input type="checkbox"/> GMO Analysis (F131)			
<input type="checkbox"/> <i>Cryptococcus neoformans</i> (M143)		<input type="checkbox"/> <i>Mycobacterium tuberculosis</i> (M159)		<input type="checkbox"/> DNA Barcode Analysis (M195)			
<input type="checkbox"/> <i>Histoplasma capsulatum</i> (M208)		<input type="checkbox"/> <i>Pseudomonas aeruginosa</i>		<input type="checkbox"/> DNA Sequencing Fungi/Bacteria Isolates (M192)			
<input type="checkbox"/> Raccoon Roundworm (M236)		<input type="checkbox"/> <i>Salmonella</i> spp. (M141)		<input type="checkbox"/> Special Request:			
<input type="checkbox"/> Rodent (Mouse, Rat) Dropping (M271)		<input type="checkbox"/> <i>Shigella</i> spp. (F122)					
<b>Sample #</b>	<b>Sample Location</b>	<b>Sample Type</b>	<b>Test Code</b>	<b>Volume/Area</b>	<b>Date/Time Collected</b>		
<b>Client Sample # (s):</b> -				<b>Total # of Samples:</b>			
<b>Relinquished (Client):</b>				<b>Date:</b>	<b>Time:</b>		
<b>Received (Lab):</b>				<b>Date:</b>	<b>Time:</b>		
<b>Comments:</b>							



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PHONE: (800) 220-3675  
FAX: (856) 786-0262

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

**\*\*Comments/Special Instructions**





## **F Potential Illicit Discharge Response Procedures**

In the case of a potential illicit discharge reported to UMaine FM staff, follow the procedures outlined below:

### **1. Process**

- (a) Use the electronic complaint reporting form to collect the appropriate information from the caller. Then, transfer the information to the Stormwater Coordinator.
- (b) Promptly investigate all reported potential illicit discharges.
- (c) If an illicit discharge of unknown source is confirmed, follow the procedure in SOP-2 IDDE: Tracing Illicit Discharges (which can be found in **Appendix D.2** of this Plan).
- (d) If an illicit discharge known source is confirmed, follow the procedure in SOP-3 IDDE - Illicit Discharge Source Removal (which can be found in **Appendix D.3** of this Plan).

### **2. Clean- up**

- (a) Clean or cause to be cleaned the catch basin, storm drain, outfall, or other storm sewer conveyance or initiate the appropriate spill response as needed.

### **3. Documentation**

- (a) File all completed electronic forms (ie. Call log, catch basins cleaning, storm drain cleaning) in the IDDE folder located in UMaine's electronic database.
- (b) Document any further action taken.

### **4. Review**

- Review incidents reported by the public or facility staff on an annual basis to look for patterns of illicit discharges and to evaluate the call-in inspection program.



**SEE G Hydrant Flushing SOP**





# Hydrant Flushing Standard Operating Procedure

For

The University of Maine

Facilities Safety and Regulatory Compliance

5765 Service Building, Orono, ME 044669-5765

(207) 581-3049



*Prepared By*

Stillwater Environmental Engineering, Inc.

July 29, 2016

**Philip L. Ruck P.E., President**

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1.2	Erosion and Sedimentation Control During Flushing Activities . . . . .	1
1.3	Procedure . . . . .	1
1.4	Documentation . . . . .	2





# 1 Standard Operating Procedure (SOP)

## 1.1 Background Information

The purpose of the Hydrant Flushing SOP for The University of Maine (UMaine) is to reduce or eliminate the release of potential pollutants (chlorine, sediment, and soil erosion) from waterline and hydrant flushing activities. Flushing typically occurs in August of each year for all water lines in the system.

## 1.2 Erosion and Sedimentation Control During Flushing Activities

The high velocities of water experienced during flushing have a great potential to erode, suspend, and transport, sediments to surface waters as well as the the University's MS4 system. If the hydrant flushing water is not being discharged directly to a paved or other impervious surface the following steps may be used to prevent or minimize erosion:

- Utilize a diffuser;
- Use hay bales, sand bags, catch basins socks, or filter socks to reduce the velocity, where necessary; and
- Closely monitor the flow area for erosion and adjust controls, as necessary.

During flushing, the discharged water should be under continued observation in order to minimize the potential for environmental impacts.

## 1.3 Procedure

The following procedure is implemented to minimize the potential for chlorinated water to enter UMaine's MS4 system or nearby surface waters.

1. Attach dechlorination device to hydrant (e.g. hydrant mounted flush box, truck mounted flush Box, or bazooka tube).
2. Add dechlorination product to device (sodium sulfite, ascorbic acid, calcium thiosulfate, etc.).
3. Start flush - Each section of water line has a different requirement for length of flushing time and is dependent on engineering calculations. All available water line data is maintained in an AutoCAD file at Facilities Management.
4. Test for TRC (Total Residual Chlorine) prior to and after the dechlorination device.
5. If discharging to the University's MS4 system or nearby surface waters, hydrant flows must be tested for TRC at the discharge point and must be less than .019 ppm.
6. If necessary, install BMPs on downstream catch basins in order to extend the time and distance the chlorinated water travels prior to entering the MS4 system. This will aid in decreasing the TRC levels.
7. Contractors - new lines are super chlorinated and flushed by the contractor. New bids will have to include dechlorination specifications per the above guidelines.



## **1.4 Documentation**

The following information will be documented each time any hydrants are flushed:

- Estimated volume of water discharged;
- Discharge duration;
- TRC before and after dechlorination;
- TRC at point of discharge to surface water or the University's MS4 system (catch basins, stormdrains, and ditches), if possible;
- Measures to control erosion and sedimentation; and
- Observations of any impacts resulting from the discharge.

All hydrant flushing data will be collected using a mobile data collection application.



# SEE H Illicit Discharge Prioritization Criteria and Worksheet



Table 2: Priority Area Screening Factors

<b>Screening Factor</b>	<b>Retained or Eliminated</b>	<b>Rationale for Elimination</b>
Receiving Water Status (Impaired areas, TMDLs with WLA, Poor dry weather receiving water quality)	Eliminated	The facility does not discharge to any impaired waterbodies.
Impervious Cover	Retained	
Density of Stormwater Infrastructure	Retained	
Size of Subwatershed	Retained	
# Acres in Urbanized Area	Eliminated	Not Applicable
Average Development Age	Eliminated	Not Applicable
History of discharge complaints & knowledge of suspect discharges	Eliminated	Not Applicable
Density of Aging Septic Systems	Eliminated	Not Applicable
Sewer Conversion Status (CSO)	Eliminated	Not Applicable
Sewer Conversion (previously septic)	Eliminated	Not Applicable



Table 2: Cont.

<b>Screening Factor</b>	<b>Retained or Eliminated</b>	<b>Rationale for Elimination</b>
Historic Industrial Operations	Eliminated	Not Applicable
Sewer Crossings/Common trench construction	Retained	
Type of Development	Eliminated	Not Applicable
Industrial Activities	Retained	
Steam Underdrains	Retained	
Building Perimeter Drains	Retained	
Petroleum Storage	Retained	
Age of Storm Drain Infrastructure	Retained	
Stormwater BMPs	Retained	

Drainage Area/ Subwatershed	Screening Factors -Categories of Information Reviewed																				Score	
	Density of Stormwater Infrastructure (ft/acre)		Size of Subwatershed (acres)		Industrial Activities		Sewer Crossing/ Common Trench Construction		Impervious Cover (acres)		Underdrains Steam		Building Drains Perimeter		Petroleum Storage		Age of Storm Drain Infrastructure		Stormwater BMPs		Raw Score	Average IDP Score
	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score		
Drainage Area 1	68	2	157.4 Acres	2	Many industrial operations	3	41 Crossings	2	51.49	3	1,772 ft	2	14,589 ft	3	Many petroleum storage areas	3	0-25 years old	0	Belgrade Spur, Nutting Hall, and ASCC Detention Ponds	1	21	2.10
Drainage Area 2	45	1	6.3 Acres	1	No industrial operations	0	0 Crossings	0	0.56	1	0 ft	0	0 ft	0	No petroleum storage areas	0	51-75 years old	2	Nothing	3	8	0.80
Drainage Area 3	164	2	64.1 Acres	1	No industrial operations	0	37 Crossings	2	24.03	2	3,228 ft	2	10,794 ft	3	Many petroleum storage areas	3	51-75 years old	2	Nothing	3	20	2.00
Drainage Area 4	152	2	40.0 Acres	1	No industrial operations	0	11 Crossings	1	12.8	2	3,893 ft	2	4,179 ft	2	Very few petroleum storage areas	1	Greater than 75 years old	3	Nothing	3	17	1.70
Drainage Area 5	394	3	18.9 Acres	1	No industrial operations	0	27 Crossings	2	8.57	1	3,864 ft	2	3,812 ft	2	Many petroleum storage areas	3	Greater than 75 years old	3	Nothing	3	20	2.00
Drainage Area 6	291	3	117.9 Acres	2	No industrial operations	0	80 Crossings	3	54.81	3	10,659 ft	3	40,317 ft	3	Very few petroleum storage areas	1	Greater than 75 years old	3	Corbett, MLK Plaza, & Dunn Rain Garden, Cloke Plaza Bioswale, Tennis Complex Detention Ponds, Recreation Center Detention Pond	0	21	2.10
Drainage Area 7	235	3	33.8 Acres	1	No industrial operations	0	21 Crossings	1	14.27	2	0 ft	1	2,773 ft	2	Not many petroleum storage areas	2	51-75 years old	2	Nothing	3	17	1.70
Drainage Area 8	52	2	159.4 Acres	2	No industrial operations	0	16 Crossings	1	12.82	2	6,217 ft	3	4,016 ft	2	No petroleum storage areas	0	51-75 years old	2	Nothing	3	17	1.70
Drainage Area 9	6	1	586.4 Acres	3	No industrial operations	0	14 Crossings	1	9.96	1	0 ft	0	5227 ft	2	Many petroleum storage areas	3	51-75 years old	2	Nothing	3	16	1.60



Drainage Area/ Subwatershed	Screening Factors -Categories of Information Reviewed																				Score	
	Density of Stormwater Infrastructure (ft/acre)		Size of Subwatershed (acres)		Industrial Activities		Sewer Crossing/ Common Trench Construction		Impervious Cover		Underdrains Stream		Building Drains Perimeter		Petroleum Storage		Age of Storm Drain Infrastructure		Stormwater BMPs		Raw Score	Average IDP Score
	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score	Notes	Score		
Drainage Area 10	0	0		0	No industrial operations	0	0 Crossings	0	0	0	0 ft	0	0 ft	0	No petroleum storage areas	0	0-25 years old	0	Nothing	3	3	0.30
Drainage Area 11	0	0		0	No industrial operations	0	0 Crossings	0	0	0	0 ft	0	0 ft	0	No petroleum storage areas	0	0-25 years old	0	Nothing	3	3	0.30
Drainage Area 12	0	0		0	No industrial operations	0	0 Crossings	0	0	0	0 ft	0	0 ft	0	No petroleum storage areas	0	0-25 years old	0	Nothing	3	3	0.30
Drainage Area 13	3	1	349.5 Acres	3	No industrial operations	0	0 Crossings	0	8.85	1	0 ft	0	791 ft	1	Very few petroleum storage areas	1	0-25 years old	0	Planetarium Detention & Littlefield Retention Pond	1	8	0.80
Category Defintions																						
High (Score = 3)	>200		Large		Many industrial operations		If a high number of crossings are present (50 or more), or many sewer lines in close proximity to storm drain lines.		50+ Acres		Greater than 5,000 ft		Greater than 10,000 ft		Many petroleum storage areas		Greater than 75 years old		No BMPs			
Medium (Score = 2)	~50-200		Medium		Not many amount of industrial operations		If not many crossings are present (26 -50), or there are not a lot of sewer lines in close proximity to storm drain lines.		10-50 Acres		Between 1,000 to 5,000 ft		Between 1,000 and 10,000 ft		Not many petroleum storage areas		51-75 years old		1 BMP			
Low (Score = 1)	<50		Small		Very few industrial operations		If less than 25 crossings are present.		>10 Acres		Less than 1,000 ft		Less than 1,000 ft		Very few petroleum storage areas		26-50 years old		2-3 BMPs			
N/A (Score = 0)	0		N/A		No industrial operations		If 0 crossings are present.		0 Acres		Less than 1,000 ft		Less than 1,000 ft		No petroleum storage areas		0-25 years old		Greater than 3 BMPs			



Applies to all materials entering the storm drain system generated on any University urbanized area unless explicitly exempted by a coinciding University permit.

Issued: 2/23/22

## **POLICY**

---

This policy provides guidelines to ensure the health, safety, and general welfare of the students, staff and visitors of the University of Maine, through the regulation of non-stormwater discharges to the storm drain system per Federal and State law.

This policy establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the Maine Department of Environmental Protection (MDEP) General Permit for the Discharge of Stormwater From State or Federally Owned Municipal Separate Storm Sewer Systems. This policy will be publicly available on the University of Maine website URL: <https://umaine.edu/ofm/regulatory/stormwater-management-program/>.

The objectives of this policy are:

1. To regulate the contribution of pollutants to the MS4 by stormwater discharges by any user; and
2. To prohibit illicit connections and discharges to the MS4.

## **POLICY GUIDELINES**

---

### **Section A: Prohibition of Illicit Discharges**

1. No University employee, student, visitor or contractor shall throw, drain, or otherwise discharge, or allow others under its control to throw, drain, or otherwise discharge into the University of Maine's stormwater drainage system any pollutants or waters containing any pollutants, other than stormwater. Facilities Management is responsible for performing or hiring a contractor to perform outfall inspections and surveys, including observation, documentation, and sampling (if deemed necessary).

Any illegal discharge into the University of Maine's storm drain system is prohibited except the following allowable non-stormwater discharges:

- Landscape and lawn watering runoff;
- Dechlorinated swimming pool runoff;
- Diverted stream flows and flows from riparian habitats and wetlands;
- Rising ground waters;
- Uncontaminated ground water infiltration;
- Uncontaminated flows from footing and foundation drains;
- Air condition and compressor condensate;
- Flows from uncontaminated springs;
- Uncontaminated water from crawl space pumps;
- 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);
- Discharges specified in writing by the enforcement authority as being necessary to protect public health and safety;
- Hydrant flushing and firefighting activity runoff\*; and
- Water line flushing and discharges from potable water sources\*.

\*Discharges of hydrant and water line flushing are required to be dechlorinated if they are to be discharged to a portion of the MS4 system which discharges to a small stream. In accordance with the MDEP 11/18/2016 Issue Profile for Drinking Water System Discharges to Regulated Small MS4s, the UMaine Plumbing Department either aerates or dechlorinates during flushing to meet Total Residual Chlorine (TRC) acute water quality criteria. For fresh water this value is 19 ug/L TRC (adjusted to 50 ug/L, per the MDEP as the reporting limit for available reliable and consistent test methods).

### **Section B: Requirements to Prevent, Control, and Reduce Stormwater Pollutants by the Use of Best Management Practices**

1. The University has adopted requirements identifying Best Management Practices (BMPs) for any activity, operation, or facility that may cause or contribute to pollution or contamination of stormwater, the storm drain system, or waters of the State. All responsible entities shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the storm drain system or waterbodies through the use of structural and non-structural BMPs. Further, any entity which is, or may be, the source of an illicit discharge, may be required to implement, at said entity's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the MS4.

### **Section C: Notification of Spills**

1. Notwithstanding other requirements of law, as soon as any entity responsible for a facility or operation, or responsible for emergency response for a facility or operation, has information of any known or potential release of materials, which are resulting or may result in illegal discharges or pollutants discharging into stormwater, the storm drain system, or waters of the United States, said entity shall take all necessary steps to ensure the discovery, containment, mitigation, and proper reporting of such release.
2. In the event of a release of non-hazardous materials; said entity shall notify Facilities Management Work Control upon discovery via the incident report weblink (<https://umaine.edu/ofm/stormwater-incident-report/>). If hazardous material of any amount enters a storm sewer; said entity shall immediately notify Facilities Management Work Control at (207) 581-4400. Failure to provide notification of a release is a violation of this Policy.

### **Section D: Compliance**

1. All construction activity must adhere to the terms and conditions of the most current Maine Construction General Permit(MCGP).
2. The University of Maine may suspend or cease activities and operations that are not in full compliance with this Policy.
3. Whenever the University of Maine finds that a violation of this Policy has occurred, The University of Maine may order compliance by written or verbal notice to the responsible entity. Such notice may require, but is not limited to, the following actions:
  - a. Performance of monitoring, analyses, and reporting;
  - b. Elimination of prohibited discharges or connections;
  - c. Discontinuance of any violating discharges, practices, or operations;
  - d. Abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
  - e. Payment of any fee, penalty, or fine assessed against the University to cover remediation cost;
  - f. Implementation of new stormwater BMPs;
  - g. Disciplinary action up to and including dismissal, where appropriate; and
  - h. Payment of any fee, penalty, or fine assessed by the University.

4. Such notification will set forth the nature of the violation(s) and establish a time limit for correction of these violation(s).
5. Said notice may further advise that, if applicable, should the violator fail to take the required action within the established deadline, The University of Maine will then initiate work orders for the appropriate corrective actions at the responsible entity's expense.
6. The remedies listed in this Policy are not exclusive of any other remedies available under any applicable federal, state, or local law.

### **Section E: Enforcement**

1. Enforcement on University Construction, or Maintenance Projects (Contractor/ Vendor):

Enforcement for contractors and vendors shall be pursuant to the respective service or construction contract.

2. Enforcement for Students:

Enforcement for students shall follow the University of Maine Student Conduct Code, as outlined in the Student Handbook.

3. Enforcement for Employees (Faculty and Staff):

Enforcement and disciplinary actions for employees shall be through the respective employee department and Human Resources.

4. Enforcement for Visitors (third party individuals):

Enforcement issues pertaining to Visitors will be referred to the University of Maine Police Department.



**SEE C Construction Inspection Form**



University of Maine Construction Site Inspection Form		
Permit Number:		Site Contractor:
Site Name:	Date/Time:	Inspected By:
Address/Watershed:		
Last Rain Date/Quantity:		Area Disturbed:
Reason for Inspection: <input type="checkbox"/> Initial <input type="checkbox"/> Routine <input type="checkbox"/> Final <input type="checkbox"/> Rain Event <input type="checkbox"/> Complaint		
Project Description:		
	YES/NO/NA	COMMENTS
<b>1. Is an Erosion and Sediment Control Plan available and being followed?</b>		
<b>2. Is a weekly inspection log available and up to date (if required)?</b>		
<b>3. Are all erosion control practices installed properly, maintained, and functioning?</b>		
Areas at finished grade are properly stabilized		
Concentrated flow inlet/outlet protection installed		
Disturbed dormant areas stabilized		
Entrance/exits properly stabilized		
Slopes and stockpiles properly stabilized/protected		
Other		



	YES/NO/NA	COMMENTS
<b>4. Are all sedimentation control practices installed properly, maintained, and functioning?</b>		
Construction entrance		
Dust control practices		
Sedimentation basins/traps/diversions		
Perimeter controls		
Check dams		
Other		
<b>5. Are ESC measures, construction activities, and housekeeping adequately maintained?</b>		
Sedimentation/erosion in ditches		
Tracked sediment or dust at exits		
Hazardous material storage and spill control practices adequate		
Waste management (concrete/paint washout, solid waste, sanitary waste, hazardous waste, etc.) adequate		
Other		





	YES/NO/NA	COMMENTS
<b>6. Violation, Corrective Actions, Recommendations</b>		
Sediment/pollutants discharged from site		
Natural resource impacts		
Corrective action required		
Site compliant with all permits		
Notice of violation or stop work order issued		
Comments/Corrective Actions (complete corrective actions before the next rain event and within 7 days)		

Attach any photos taken at the time of inspection to this document.





**SEE D Catch Basin Inspection Form**



## MS4 Catch Basin Inspection Form

Catch basin ID:

Date:

Location (Lat./Long.):

Inspector:

Time:

### Able To Inspect?

- Yes       No (Unable to locate)       No (Unable to access, fencing, etc.)  
 No (Safety)       No (Other – Describe)

### Condition

- Good       Fair       Poor

### Defects

- Loose Bricks       Cracked Grout       Frame Cracked       Erosion  
 Pavement Cracked       Severe Structural Cracks       Other (Describe)  
 None

Sump Depth (Feet):

Silt Depth (Feet):

≥50% of Sump Depth? (Yes/No):

### Flow Description:

- None       Trickle       Moderate       Significant       Intermittent  
 Flooded       Other (Describe)

### Water Condition

- Clear       Murky       Litter       Odor (Describe)  
 Vegetation (Describe)       Oil Sheen  
 Pet Waste       Foam       Sanitary Sewer Solids  
 Other (Describe)



SEE

**Follow-Up:**

Yes (Describe)

No

**Follow-Up Priority:**

High

Medium

Low

N/A

**Photo Collected:**

Yes

No (Describe)

**Comments:**



## SEE E 2022 MS4 General Permit

An electronic version of the 2022 MS4 General Permit can be found at the below link. This permit is also available in UMaine's electronic data management system.

### **General Permit for the Discharge of Stormwater from Small State and Federally Owned Municipal Separate Storm Sewer Systems**





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

PLEASE TYPE OR PRINT IN **BLACK INK ONLY**

PERMITTEE INFORMATION					
MS4 Entity	University of Maine			Permittee ID #	MER042001
Name and title of chief elected official or principal executive officer	Stewart Harvey, Executive Director of Facilities and Capital Management Services				
Mailing Address	5765 Service Building, Room 121 University of Maine				
Town/City	Orono	State	Maine	Zip Code	04469-5765
Daytime Phone	(207) 581-2668	Email	stewarth@maine.edu		
PRIMARY CONTACT PERSON FOR OVERALL STORMWATER MANAGEMENT PROGRAM (if different than PEO/CEO)					
Name and Title	Jodi Munster, Assistant Director of Administration and Environmental Compliance				
Mailing Address	Offices of Facilities Management 5765 Service Building				
Town/City	Orono	State	Maine	Zip Code	04469-5765
Daytime Phone	(207) 581-2720	Email	jodi.munster@maine.edu		
STORMWATER MANAGEMENT PLAN (SWMP)					
Urbanized Area (sq. mi.)	1.0 square miles				
I have attached our updated SWMP with ordinances, SOPs, forms. <input checked="" type="checkbox"/>					
Name of streams, wetlands, or waterbodies to which the regulated small MS4 discharges ( <i>attach additional sheets as necessary</i> ):					
Stillwater River, Unnamed Stream					
List of impaired waterbodies that receive stormwater from the regulated small MS4 ( <i>attach additional sheets as necessary</i> ):					
Penobscot River (State-wide bacteria TMDL)					
CERTIFICATION					
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.					
Signature of Permittee				Date	2/23/2022

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

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

OFFICE USE ONLY							
Date Recieved		Staff		Date Accepted		Date Not Accepted	





**Legal Notices**

**NOTICE OF INTENT (NOI)**

The University of Maine will file a Notice of Intent (NOI) to comply with the Maine General Permit for the Discharge of Stormwater from Small State and Federally Owned Municipal Separate Storm Sewer Systems issued 12/8/2021 (MER042000) and an associated Stormwater Management Plan (SMP) with the Maine Department of Environmental Protection. The NOI and SMP will be filed on or about March 1, 2022. A copy may be seen on the municipal website: URL: <https://umaine.edu/ofm/regulatory/stormwater-management-program/>.

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

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

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