Illicit Discharge Detection and Elimination Program

For the

Town of Cape Elizabeth, Maine

For the

General Permit for Storm Water Discharges from Municipal Separate Storm Sewer Systems (2013-2018)

December 2014

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1.0 INTRODUCTION

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

Maine DEP defines an illicit discharge as any discharge to an MS4 that is not:

- composed entirely of storm water,
- an allowable non-storm water discharge, or
- permitted under a Maine DEP permit.

See Section 3.0 for a list of the allowed non-storm water discharges.

The MS4 General Permit requires permittees to address six Minimum Control Measures throughout the Town's Urbanized Area (see Appendix A for a map of the Urbanized Area):

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

This document describes the IDDE Program for the Town of Cape Elizabeth, Maine. The IDDE Program described in this document fulfills the Minimum Control Measure 3 IDDE requirements specified in Part IV.H.3.a of the MS4 General Permit.

1.1 Amendments and updates to the IDDE Program

The MS4 General Permits are designed to provide coverage for five-year periods. The first MS4 General Permit applicable to the Town of Cape Elizabeth became effective in 2003 and expired in 2008. Subsequent General Permits were issued in 2008 and 2013, providing the town with

continuous coverage for their storm water discharges.

This IDDE Program has been developed to meet the requirements of the 2013-2018 General Permit. This Plan will be updated if any of the following occur:

- a new permit is issued which changes the requirements described in this IDDE Program document,
- the Town of Cape Elizabeth identifies that the Program is not effective;
- municipal operations change which need to be reflected in this Program.

The town's Public Works Director is responsible for overall permit compliance. The Public Works Director will either modify this IDDE program, or engage a third party to update the document.

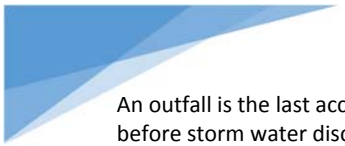
1.2 Typical Illicit Discharges

The Center for Watershed Protection (CWP) developed a comprehensive IDDE Manual in 2004 which classifies illicit discharges into three categories related to frequency of discharge. This categorization allows communities to develop a comprehensive IDDE program that will address all kinds of illicit discharges. The three categories of illicit discharges identified in the CWP manual are described below:

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

2. Intermittent illicit discharges occur occasionally over a period of time (several hours per day, or a few days per year). Intermittent discharges can result from legal connections to the storm drain system, such as a legal sump pump connection that is illegally discharging washing machine water, a single home sanitary connection, or from illegal connections such as floor drains from industrial or commercial operations. Intermittent discharges can also result from activities such as excessive irrigation or wash down water from exterior areas. These types of discharges are more likely to be discovered, and are less difficult to trace and remove than transitory discharges, but can still present significant challenges. These discharges can have large or small impacts on water bodies depending on pollutant content.

3. Continuous illicit discharges are typically the result of a direct connection from a sanitary sewer, overflow from a malfunctioning septic system, or inflow from a nearby subsurface sanitary sewer that is malfunctioning. Continuous illicit discharges are usually easiest to trace and can have the greatest pollutant load.(CWP and Robert Pitt 2004)



An outfall is the last accessible point before storm water discharges to a water body. Some things that are NOT outfalls include: driveway culverts that connect ditch segments, culverts that convey water bodies under roadways, and pipes that discharge to other storm water infrastructure elements.

1.3 Overview of IDDE Program Components

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

1. Development of a watershed based map: The Town is required to develop a map of the storm sewer system infrastructure including: watersheds, catch basins, connecting surface and subsurface piping, outfalls, and ditches. The catch basins and outfalls must have unique identifiers. The following information must be included in the map system for outfalls: the type of outfall (a connected pipe, a culvert, or a ditch), the material, its size, the name and location of the nearest named water body to which it discharges. Section 2.0 of this document describes

the Town's watershed based map.

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

3. Identification of High Priority Areas for Inspections: The Town must identify priority areas that need to be protected from illicit discharges. Priority areas may include areas suspected of having illicit discharges, for example: older areas of the Town, areas of high public complaints or areas of high recreational value or high environmental value such as beaches and drinking water sources that need to be protected from illicit discharges. The Town's high priority areas are described in Section 4.0 of this document, including a discussion of the basis for determining the high priority areas.

4. Procedures to Locate Illicit Discharges: The Town must develop procedures for locating illicit discharges (i.e. visual screening of outfalls for dry weather discharges, dye or smoke testing). Section 5.0 of this document describes the Town's inspection program.

5. Procedures to Investigate and Remove Illicit Discharges: The Town must develop procedures for locating the source of the discharge and procedures for the removal of the source. Section 6.0 of this document describes how the Town investigates and removes illicit discharges.

6. Procedures to Track Illicit Discharges: The Town must develop procedures for documenting actions and evaluating impacts on the storm sewer system subsequent to the removal. Section 7.0 describes how the Town tracks illicit discharges.

Section 8.0 of this document describes the record retention requirements of the MS4 General Permit and Section 9.0 of this document provide references.

2.0 STORMWATER INFRASTRUCTURE MAP

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

The Public Works Department maintains the stormwater GIS layers in ArcGIS Online. The Town's Public Works Director has overall responsibility for data integrity, and maintains the desktop ArcGIS license (Basic) on his computer.

Though the storm water infrastructure information is not currently available to the general public it will be provided whenever requested verbally or in writing.

2.1 Infrastructure Naming Protocols

The town of Cape Elizabeth has historically referenced four watersheds and two sub-watersheds within its Town Boundaries. In this document, to be consistent with the US Geologic Survey Hydrologic Unit Code (HUC) national naming system, these areas are referred to as "Drainage areas" and are technically HUC 14 level drainage areas. The areas are shown on the figure contained in Appendix B.

Each drainage area has a numeric series to distinguish it from the other areas. The Trout Brook Drainage area is designated as 1000 series, the Casco Bay Drainage area is designated as 2000 series, the Atlantic Ocean Drainage area is designated as 3000 series, and the Spurwink River Drainage area is designated as 4000 series. Generally, catch basins in the town are named as CB-XYYY, where the X is either 1, 2, 3 or 4, depending on the location and associated series

number and the Y's are numeric values between 0 and 999. Outfalls are similarly named SWO-XYYY. Drain manholes are named DMH-XYYY.

2.2 Procedures to Update Map of Infrastructure

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

1. Generally, the Public Works Department constructs minor changes to the system based on immediate or planned need without formal design drawings. When the Public Works Department makes changes to the storm drain infrastructure, the online GIS layer is updated to reflect these changes using the Public Works Department IPAD, as an interface to the online files.

2. More significant changes are typically constructed after preparation of formal design drawings, whereupon either the Public Works Department or a private contractor constructs the changes. Where a private contractor constructs the changes, the Town requires a formal as-built plan be prepared and submitted to the Public Works Director in electronic format, so that the infrastructure can be imported into the GIS.

3.0 AUTHORITY TO PROHIBIT ILLICIT DISCHARGES

The Town of Cape Elizabeth authority to prohibit illicit discharges became effective July 13, 2005, with a Storm Water and Non-Storm Water Control Ordinance. The ordinance was modified to be Town-specific from a model ordinance created by the Maine Municipal Association for Towns that are regulated by the MS4 General Permit. Though the MS4 General Permit is only applicable to the Urbanized Area of Town (Appendix A), the Town will be implementing the Storm Water and Non-Storm Water Control Ordinance in all areas of Town.

The Ordinance allows the following non-storm water discharges to the storm drain system:

- landscape irrigation;
- diverted stream flows;
- rising ground waters;
- uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20);
- uncontaminated pumped ground water;
- uncontaminated flows from foundation drains;
- air conditioning and compressor condensate;
- irrigation water;
- flows from uncontaminated springs;
- uncontaminated water from crawl space pumps;
- uncontaminated flows from footing drains;
- lawn watering runoff;
- flows from riparian habitats and wetlands;
- residual street wash water (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material has been removed and detergents are not used);
- hydrant flushing and firefighting activity runoff;
- water line flushing and discharges from potable water sources;
- individual residential car washing.

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

It should be noted that discharges associated with dye testing are also allowed with verbal notice to the Public Works Director. In addition, discharges of hydrant and water line flushing are currently being evaluated by the Town and Portland Water District to assess if the residual chlorine present poses a threat to any water to which the storm drain system discharges. Amendments to the ordinance may be made as these assessments come to conclusion.

4.0 IDENTIFICATION OF PRIORITY AREAS

To identify areas within the Town that are high priority for illicit discharge inspections, the town considered impaired waters (i.e., waters that are not meeting their designated classification) as highest priority. Waters that are no longer meeting their state water quality classifications are required to have a Total Maximum Daily Load (TMDL) document prepared. A TMDL document identifies the sources of the impairments and a plan of action to correct the impairments. In particular, the TMDL document identifies how much of a pollutant a water body can receive and still meet its water quality classification. Typically the units are identified as pounds per day, which is the basis for the term "Total Maximum Daily Load". A TMDL action plan typically describes how to reduce the excess pollutant loadings to the TMDL level.

The following is a summary of the waters in the town's Urbanized Area that receive discharges from the town's MS4 system and their TMDL and impairment status:

- Trout Brook- TMDL finalized 10/25/2007 for aquatic life impairments (Class C water), Watershed Management Plan completed December 2012, and Implementation of Watershed Management Plan has begun.
- Spurwink River- Statewide Bacteria TMDL finalized August 2009.
- Willow Brook- No impairments identified.
- Pond Cove Brook- No impairments identified.
- Pollack Creek- No impairments identified.
- Dyer Pond- No impairments identified.
- Atlantic Ocean- No impairments identified this section of ocean.

The following documents were reviewed in making these determinations:

- Statewide Bacteria TMDL (August 2009)
- Chapter 502 Direct Watersheds of Lakes Most at Risk from New Development and Urban Impaired Streams
- Impervious Cover TMDL (September 2012)
- Draft 2012 Maine Integrated Water Quality Report and Appendices (a.k.a. Maine 303(d) list)

The Town of Cape Elizabeth has determined Trout Brook is the highest priority for the following reasons:

1. It has aquatic life impairments, and
2. It has a high potential to be restored due to the preparation of a TMDL document and a Watershed Management Plan which is being implemented. The TMDL document identified that illicit discharges may be contributing to impairment.

The Town of Cape Elizabeth has determined the Spurwink River is the second highest priority for the following reasons:

1. It has bacteria impairments affecting shellfishing, and
2. The TMDL document has been finalized, which identified that illicit discharges maybe contributing to the impairment.

5.0 PROCEDURES TO LOCATE POTENTIAL ILLICIT DISCHARGES

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

1. Observations during catch basin cleaning
2. Citizen reports of illicit discharge issues
3. Dry weather outfall inspections
4. Outfall Sampling and Analysis (only if necessary)
5. Ditch inspections
6. Opportunistic Inspections

Any reports of potential illicit discharges will be forwarded to the Public Works Director.

5.1 Catch Basin Cleaning Inspections

Each year, a public works employee inspects all the Town's catch basins to assess which need to be cleaned. During this inspection process, the employee is also inspecting to assess if any oil, litter, sewage, or other evidence of illicit discharges is present. If the employee sees any evidence of illicit discharges, the evidence is documented and sent to the Public Works Director for further action.

5.2 Citizen Reports of Illicit Discharges

Citizen reports of illicit discharge issues received by phone are routed to the Public Works Department to be investigated.

5.3 Dry Weather Outfall Inspections

During previous permit years, dry weather outfall inspections have been conducted in the highest priority areas identified in Section 4.0 (Trout Brook and the Spurwink River Drainage Areas). Dry weather outfall inspections will be expanded to the other drainage areas that were not previously inspected beginning July 1, 2014. The Public Works department began documenting the results of the inspections on the Public Works IPAD in the fall of 2014. The inspection content is similar to that contained on the paper form which was historically used and is provided in Appendix C for reference.

The Town's five-year Stormwater Program Management Plan requires that all outfalls in the urbanized area will be inspected at least once before the 2013-2018 General Permit expires June 30, 2018. By July 1, 2015 the town will have inspected the outfalls in the Atlantic Ocean Drainage area. By July 1, 2016 they will have inspected the outfalls in the Great Pond and the Alewife Brook Drainage areas. By July 1, 2017 they will have inspected the outfalls in the southern portion of the Casco Bay Drainage Area. By July 1, 2018 they will have inspected the outfalls in the northern portion of the Casco Bay Drainage Area. The Town will generally

inspect outfalls as follows:

- Field inspection will be performed during periods of dry weather where no significant precipitation has occurred in the preceding 48 hours;
- Inspections will be performed during periods low flow where field inspections may be performed in a safe and efficient manner;
- Inspections will be performed during periods of no snow cover and prior to the growth of vegetation (or after leaves have fallen) such that outfalls may be easily spotted;
- Photographs will be taken to document the condition of the outfall at the time of inspection if practicable.
- MS4 outfalls will be inspected where the Town has safe and legal access to the structure to be inspected.
- If a potential illicit discharge is identified the Public Works Director will be informed.

5.4 Outfall Sampling and Analysis

If evidence of illicit discharges is observed during inspection, the Public Works Director may solicit the assistance of the Portland Water District or a third party contractor to collect a sample for field screening depending on the conditions encountered. The following analytical screening tools may be used:

- A pH, temperature and conductivity probe to record basic water quality information
- A CHEMetrics (or equivalent) methylene blue detergent analysis kit
- Ammonia test strips
- Chlorine detection meter
- Colilert or Enterolert test kits for bacteria

Follow-up laboratory analysis at an off-site laboratory may be conducted if necessary to confirm screening results.

5.5 Ditch Inspections

The Town's Stormwater Program Management Plan specifies the following schedule for inspecting ditches for the presence of illicit discharges:

Permit Cycle for 2008-2013: Conduct inspections in highest priority area (Trout Brook) Permit Cycle for 2013-2018: Expand inspections into second highest priority area (Spurwink River).

Inspections were completed by the Public Works Department on all ditches in the fall of 2014. The ditch inspections were completed using the IPAD and online map system. The data collected was consistent with the form contained in Appendix D.

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

- Field inspection will be performed during periods of dry weather where no significant precipitation has occurred in the preceding 48 hours;
- Inspections will be performed during periods low flow where field inspections may be performed in a safe and efficient manner;
- Inspections will be performed during periods of no snow cover and prior to the growth of ditch vegetation such that potential outfalls may be easily spotted;
- Each ditch segment in the highest priority watershed will be inspected at least once in a permit cycle and more frequently as required by field conditions;
- Evidence of maintenance needs or potential illicit discharges will be documented in the IDDE Tracking Sheet.

6.0 PROCEDURES TO INVESTIGATE AND REMOVE ILLICIT DISCHARGES

Investigations of illicit discharge issues are conducted by the Public Works Department. The Town relies on visual observations of the location where the illicit discharge was reported as a first step in identifying the source of the illicit discharge. If the evidence of the illicit discharge is still present in the initial structure or location where it was reported, the Town uses their

knowledge of the infrastructure routing to systematically inspect other structures upstream of the initial location until either the evidence of the illicit discharge is no longer present, or until they locate a potential source of the illicit discharge.

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

In the event visual observations of the structures cannot identify the source of an illicit discharge, the Public Works Director may employ televising, systematic dye testing, or smoke testing to identify the source. The Public Works Director could conduct dye testing, but would need to hire a third party contractor for smoke testing or televising. Sampling and analysis may also be conducted as described in subsection 3.5.

Once the potential source of the illicit discharge is identified, the Public Works Director would identify and 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 Public Works Director may invoke the authority granted him under the Non-Storm water Discharge Ordinance (See section 3.0 of this IDDE Program) to issue a Notice of Violation. If the illicit discharge is caused by the Town, the Public Works Director would contact the department most responsible and work with them to remove or discontinue the illicit discharge as soon as practicable.

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

7.0 PROCEDURES TO TRACK ILLICIT DISCHARGES

The Town will track the progress of investigating and removing illicit discharges using the IDDE Tracking Sheet in Appendix E. Each year, the town is required to complete an annual report summarizing the activities completed under the MS4 Program. The Public Works Director will print or retain an electronic copy of the IDDE Tracking Sheet for the year as back-up documentation of investigative and removal work completed.

8.0 RECORDS RETENTION

The Public Works Director will retain paper or electronic files of inspections and investigations including laboratory reports, for a minimum of three years after expiration of the MS4 General Permit Term. For the 2013 – 2018 General Permit, reports may be discarded June 30, 2021.

9.0 REFERENCES

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

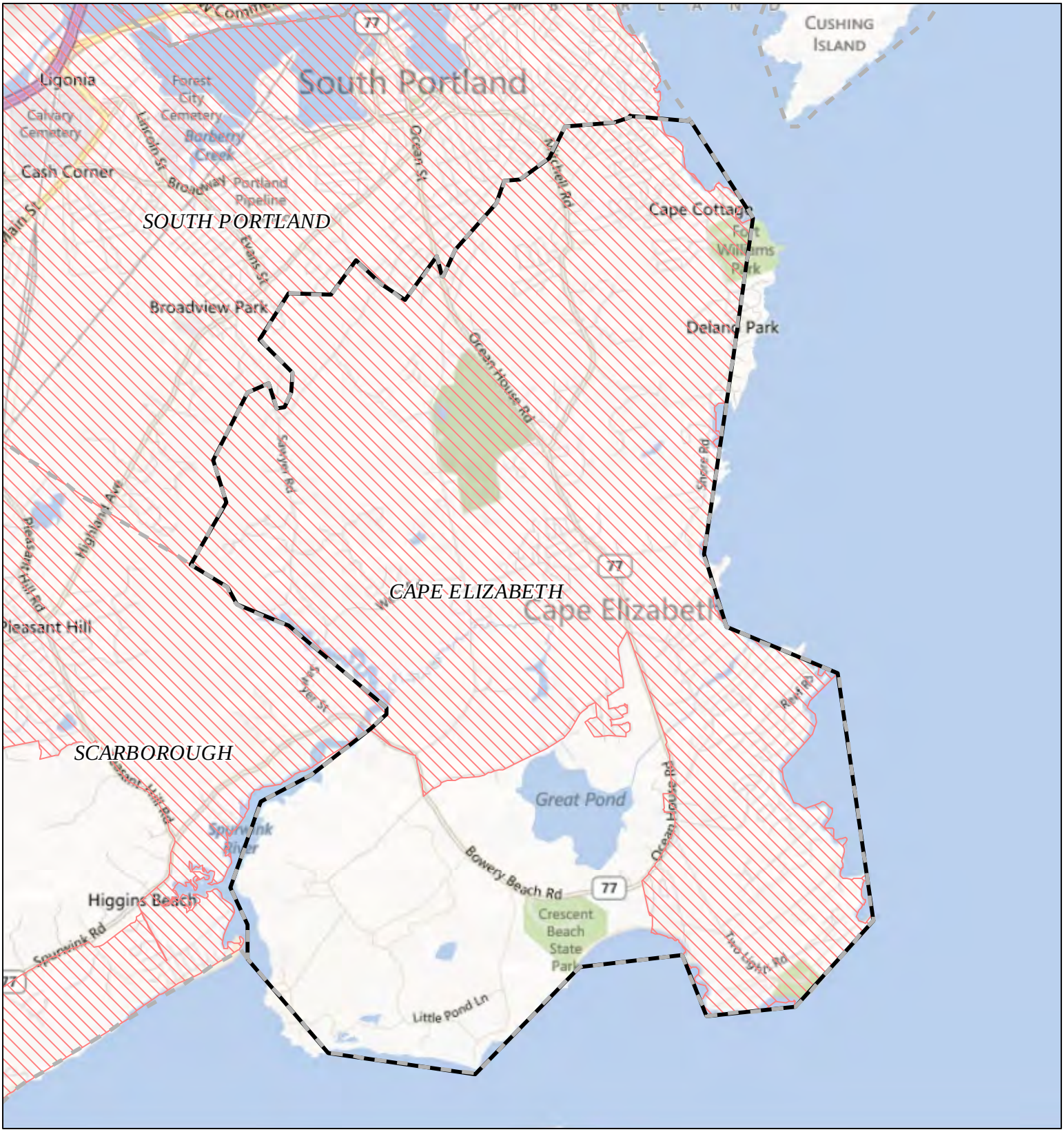
Aquarion Engineering Services and Casco Bay Estuary Partnership 2004. *Guidelines and Standard Operating Procedures for Stormwater Phase II Communities in Maine.* Available: http://www.thinkbluemaine.org/docs/index.htm

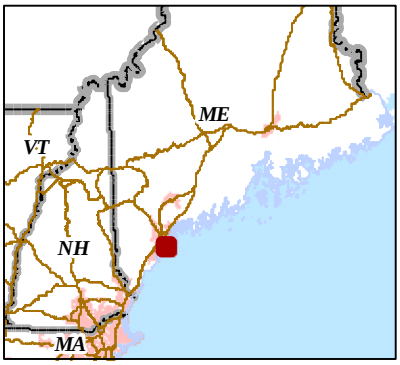
CWP and Robert Pitt 2011 Illicit Discharge Detection and Tracking Guide Available: http://www.cwp.org/2013-04-05-16-15-03/idde

USEPA New England Bacterial Source Tracking Protocol 2012. Provided by USEPA to Integrated Environmental Engineering. Available upon request to Krabasca@integratedenv.com

APPENDIX A

URBANIZED AREA MAP





NPDES Phase II Stormwater Program
Automatically Designated MS4 Areas

Cape Elizabeth ME

Regulated Area (2000 + 2010 Urbanized Area)

0 1 2 3 Kilometers

0 1 2 3 Miles

Town Population: 8816

Regulated Population: 8425

(Populations estimated from 2010 Census)

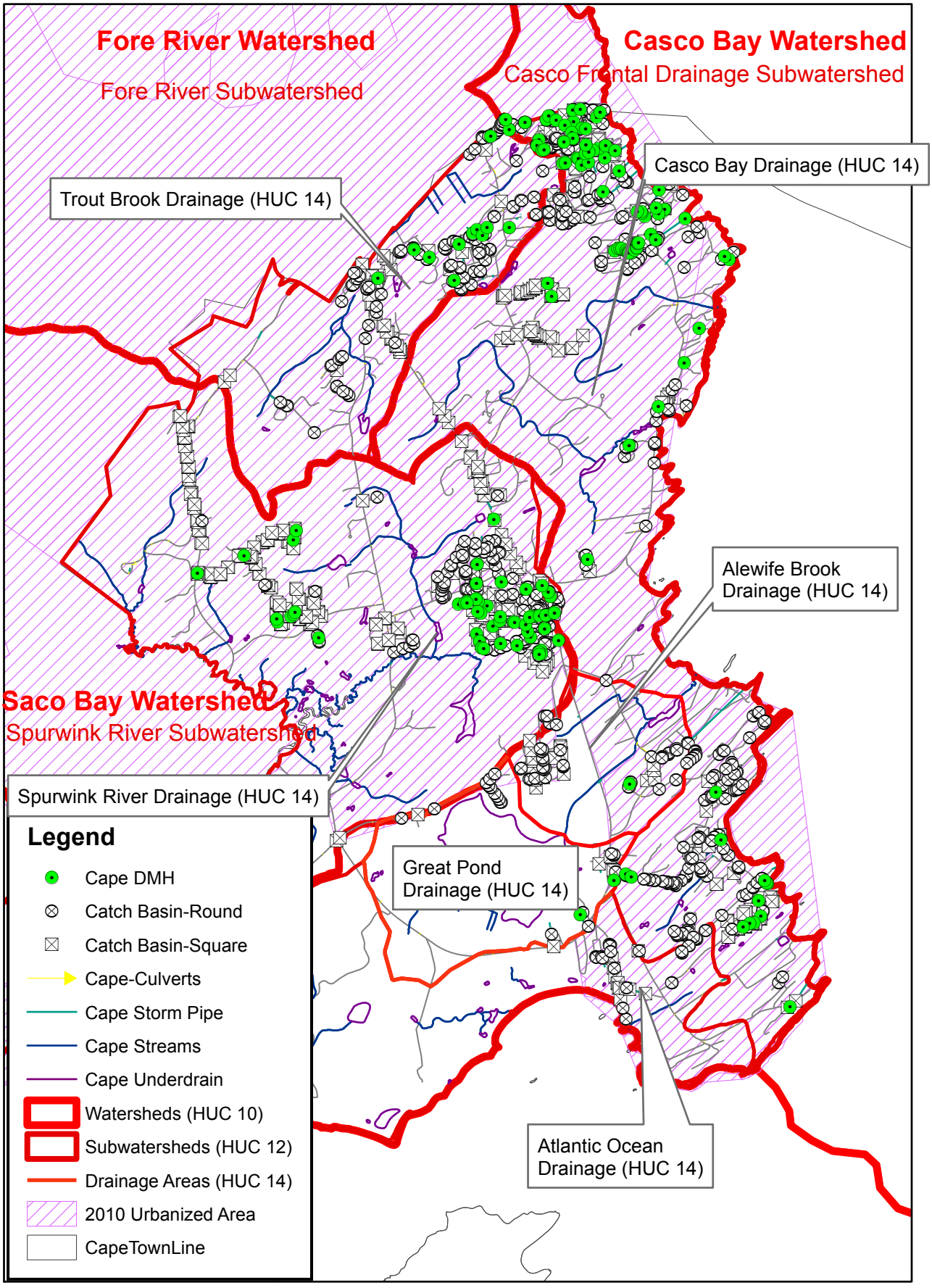
Urbanized Areas, Town Boundaries:
US Census (2000, 2010)
Base map © 2010 Microsoft Corporation
and its data suppliers

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

APPENDIX B

CAPE ELIZABETH WATERSHED MAP

Cape Elizabeth Maine Watersheds



Document Path: C:\Users\Kristie\Dropbox\GIS\CapeElizabeth\2014Infrastructurerev2.mxd

APPENDIX C

INFORMATION COLLECTED DURING DRY WEATHER OUTFALL INSPECTIONS

Town of Cape Elizabeth Outfall Inspection Form

Date: _____ **Weather Conditions:** _____

Precipitation in the past 3 days? ☐ Yes ☐ No

Photo ID Taken? (attach if yes): ☐ Yes ☐ No

Outfall ID: _____ **Diameter (inches) :** _____

Outfall Location: _____

Receiving Stream/Water Body/Watershed: _____

Material

☐ Plastic (PVC/ADS) ☐ Vitrified Clay (VC)
☐ Metal (CMP) ☐ Transite (AC)
☐ Concrete (RCP) ☐ Other _____

Sediment Condition

☐ Clear ☐ 3/4 Full
☐ 1/4 Full ☐ Plugged
☐ 1/2 Full ☐ Other _____

Discharge (check all that apply)

☐ No Discharge ☐ Raw/Decomposed Sewage

Minimal Discharge

☐ Clear ☐ Floating Green Scum
☐ Foam/Soap ☐ Litter
☐ Oil Sheen ☐ Vegetation
☐ Odor (musky, fishy, sewage, septic?) _____
☐ Other _____
☐ Color

CLEAR BROWN GRAY WHITE

YELLOW RED GREEN BLACK

Outfall Condition

☐ Excellent ☐ Pipe Corrosion
☐ Good ☐ Other defects observed
☐ Fair _____
☐ Poor _____

Comments: _____

Inspector: _____

APPENDIX D

INFORMATION COLLECTED DURING DITCH INSPECTIONS

Ditch Inspection Form

General Information

Site / Road Name		
Date	Inspector	Supervisor Initials
Weather	☐ Clear ☐ Cloudy	
Approximate Temperature		
Precipitation in the past 3 days	☐ Yes ☐ No	Amount of Precipitation (approx) _____

Yard Waste Observed?	☐ Yes ☐ No
Trash/Litter Present?	☐ Yes ☐ No
Debris/Pollution?	☐ Foam ☐ Excess Nutrients ☐ Oil/Film ☐ Sewage/Solids ☐ None/NA
Odor?	☐ None/ Natural ☐ Musty ☐ Sewage/ septic
Standing water	☐ Yes ☐ No ☐ Potential for breeding mosquitos (standing for more than 72 hours)
Constant Baseflow	☐ None ☐ Trickle ☐ Steady
Water Clarity	☐ Clear ☐ Cloudy ☐ Opaque ☐ N/A
Sediment Accumulation	☐ Depth less than 2-inches ☐ Depth exceeds 2-inches ☐ Plugged
Structural Condition	☐ Stable ☐ Unstable ☐ Woody Vegetation Present ☐ Riprap Displaced
Vegetation Coverage	☐ Vegetation coverage is greater than 90% ☐ More than 10% sparse or bare soil ☐ N/A
Vegetation Type	☐ Normal Vegetation ☐ Invasive, poisonous, or noxious weeds
Erosion / Scouring	☐ Yes ☐ No ☐ Not Inspected

Additional Information:

General Comments/Actions Taken
Follow-up required: ☐ Yes ☐ No

APPENDIX E

IDDE TRACKING SHEET

Town of Cape Elizabeth
Stormwater Phase II
IDDE Tracking Sheet

Date of Incident/ Date Reported:	**Report Initiated by:** Complaint, catchbasin cleaning, dry weather outfall inspection, etc.	**Location of Potential Illicit Discharge**: If known - lat/long, stream address or outfall #, closest street address, nearby landmark, etc.	**Description of Potential Illicit Discharge:** For example - dumping, wash water, suds, oil/solvents/chemicals, sewage, etc.	**Actions to be taken**: Who, What, Where, When, and How… (what should be done)	**Date and Description of Resolution**: Outcome of actions taken and any necessary follow-up (what was done)	**Location of Documentation showing Resolution**: