

SECTION 2

INTRODUCTION, BACKGROUND AND PURPOSE OF CSO MASTER PLAN

2.1 INTRODUCTION

This Combined Sewer Overflow (CSO) Master Plan was prepared to meet the conditions set forth in Special Condition A, Paragraph 4 of the February 6, 2009 Maine Pollutant Discharge Elimination System (MEPDES) permit and Waste Discharge License (WDL) issued jointly to the City of South Portland (City), the Portland Water District (PWD) and the Town of Cape Elizabeth (Town) for the Ottawa Road CSO. Per the conditions of the permit, the permit holders must submit the CSO Master Plan by December 31, 2011 including an implementation schedule to abate or eliminate the CSO.

2.2 BACKGROUND

When the Ottawa Road Pump Station was built in 1977, a combined sewer overflow was constructed (but not originally licensed) adjacent to the pump station with an outfall to the Atlantic Ocean via Danforth Cove¹. Due to increased CSO activity because of record rainfalls in both 2005 and 2006, the CSO rose on MEDEP's priority list for elimination or abatement. MEDEP briefly considered including abatement or elimination as a condition of the MEPDES permit renewal for the East End Wastewater Treatment Facility in Portland; however this idea was discarded as the facility is unrelated to the Ottawa Road CSO. Additionally they considered issuing an administrative consent order, but PWD had already hired Wright-Pierce (W-P) to conduct an initial study of alternatives to eliminate or abate the CSO. Through this study, it was determined that, given the magnitude of the overflows during significant wet weather events, there is no easy way to eliminate the CSO, such as a capacity upgrade at the pump station or an on-site storage tank. As such, the final recommendation was to license the CSO through

¹ It should be noted that the MEPDES permit refers to the cove as Danford Cove as this was the name referenced in the current edition of the Maine Atlas and Gazetteer© at the time. However; the correct name is Danforth Cove and that name will be used for purposes of this plan.

MEDEP in order to eliminate the issue of non-compliance while a formal plan for mitigation was developed.² The CSO was licensed by MEDEP in 2009.

As the City, PWD and the Town all have a vested interest in the Ottawa Road Pump Station and drainage area (see discussion of infrastructure ownership and operation below); negotiations were required to determine who would be the permit licensee. Ultimately, a joint Maine Pollutant Discharge Elimination System (MEPDES) Permit and a joint Maine Waste Discharge License (WDL) were issued on February 6, 2009 to the City, PWD and the Town for the Ottawa Road CSO.

2.2.1 Description of Existing Collection System and Pumping Station

Situated in the northernmost part of Cape Elizabeth, the Ottawa Road Pump Station serves northern Cape Elizabeth and a small section of the southeast corner of South Portland (refer to Figure 2-1 at the end of this section for a map of the drainage area). Sewer users in this area are characterized as primarily residential; although there are several commercial/municipal users as well. In 1974, the City, PWD and the Town entered into an inter-municipal agreement that laid the groundwork for accepting flows from the northern part of Cape Elizabeth into South Portland's collection system and treatment facility. As part of this agreement, the City was required to separate the combined sewer within their portion of the collection system that drains to Ottawa Road Pump Station. The Town owns 1/13th of the wastewater treatment facility in South Portland and pays for 1/13th of the annual operation and maintenance costs in addition to the user charge based on flow. The Ottawa Road Pump Station as well as downstream interceptors and pump stations are owned, operated and maintained by PWD. Collector sewers that drain to the Ottawa Road Pump Station are owned, operated and maintained by the respective municipality (i.e. South Portland or Cape Elizabeth). Refer to Figure 2-2 at the end of this section for a plan showing the Ottawa Road and Family Field Pump Station drainage areas as well as the associated collector sewers and interceptors and a key of who owns what facilities.

² Refer to Appendix B for a copy of the original technical memorandum issued summarizing the findings of the study as well as a follow-up memorandum addressing questions raised by the City's review of the original memorandum.

The Ottawa Road Pump Station is provided with two centrifugal style pumps with a combined capacity of approximately 310 gallons per minute. The station pumps to the Shore Road interceptor which flows by gravity to the Family Field Pump Station. The Family Field Pump Station pumps to the Trout Brook interceptor via the Mitchell Road collector sewer. A flow metering station is located in South Portland to measure the wastewater flow rate from Cape Elizabeth. The flow is then discharged into the South Portland collection system and is eventually treated at the South Portland Water Pollution Control Facility (WPCF). Refer to Figure 2-3 at the end of this section for a general location plan of the referenced facilities.

2.2.2 Summary of Historical Studies, I/I Reduction Projects or System Improvements

The following is a summary of projects and system improvements that have been completed in an effort to reduce the inflow and infiltration into the Ottawa Road Pump Station drainage area.

- 1992: PWD hired T. Y. Lin International to evaluate several options to minimize dry weather overflows and to increase station reliability. Due to the high capital costs and infeasibility of several options, there was no immediate action taken to address the recommendations. Further, it became unnecessary as approximately 200 linear feet of cross-country sewer between Cliff Road and Woodland Road was replaced in the same year and the dry weather overflow issue was eliminated.
- 1993: The City completed a survey of residences in the City in an effort to identify sources of stormwater inflow from roof leaders, sump pumps, etc. Three homes in the Ottawa Road drainage area were identified as having had sump pumps, fourteen had floor drains and three has roof drains that were connected to the sewer.
- 2002: PWD installed the first permanent flow monitoring device and began reporting CSO events.
- 2005: The Town hired OEST Associates, Inc. to complete a study of the Cape Elizabeth collection system in order to provide a rehabilitation plan including prioritization of the

recommended work.³ The following work within the Ottawa Road drainage area was completed in response to recommendations provided in the report:

- 2007: Approximately 270 linear feet of cross-country sewer between Woodland Road and Charles Road was relined.
- A design has been completed to replace approximately 700 linear feet of sewer and manholes in Charles Street. Construction will be completed when funding is available.
- 2010: In response to the findings and recommendations from smoke testing completed as part of this CSO Master Plan, the City replaced a length of pipe in the cross-country line that was crushed and capped a broken cleanout on Leighton Street. Refer to Section 7 for more information on the smoke testing findings and recommendations.
- 2011: In response to findings and recommendations from smoke testing completed as part of this CSO Master Plan, the City repaired several seals on old connections between sewer and catch basins. Refer to Section 7 for more information on the smoke testing findings and recommendations.

2.2.3 MEPDES Permit Requirements

As noted above, the MEPDES permit and Waste Discharge License for the Ottawa Road CSO (MEPDES Permit #ME0102806/WDL #W009027-5T-A-N) was issued on February 6, 2009 for a five year period. The highlights of this permit, as pertaining to this CSO Master Plan, are summarized below:

- Licensed for an unspecified quantity of excess combined sanitary sewer and storm water during wet weather events
- Requires license holders to submit a CSO Master Plan and an implementation schedule to eliminate the discharge (if technically and financially feasible) on or before December 31, 2011

³ Cape Elizabeth Sanitary Sewer System Rehabilitation Plan; prepared by OEST Associates, Inc. for the Town of Cape Elizabeth; January 2005

- Requires license holders to measure and report CSO flow volumes and discharge events annually

2.3 SUMMARY OF EPA/DEP CSO REGULATIONS AND GUIDELINES

Chapter 570 of the MEDEP Combined Sewer Overflow Abatement guidelines outlines the basis by which a discharge from a combined overflow point within a sewerage system can be permitted.⁴ In order for a CSO to be allowable by the Maine DEP Chapter 570 guidelines, the discharge must meet the following conditions:

1. Discharge in excess of design capacity: The discharge consists of wastewater in excess of design capacity of the sewerage system or treatment facilities.
2. Discharge not due to mechanical failure: The discharge is not the result of mechanical failure, improper design or inadequate operation or maintenance.
3. CSO Master Plan: The licensee is actively developing or implementing a CSO Master Plan in accordance with Chapter 570 guidelines, and as approved by the Department, or the licensee has implemented the CSO Master Plan and a discharge occurs that is caused by conditions exceeding those upon which the Plan is based.

The Ottawa Road CSO meets all of the above criteria for allowable overflows. In addition to the above referenced requirements, the permit requires that the licensee implement and follow the Nine Minimum Controls (NMCs) as approved by the EPA which became law in the year 2000.⁵ These minimum controls are set forth to reduce CSO activity and pollutant discharges while long-range plans are being completed. The NMCs will be discussed further in Section 9 of this Plan.

⁴ Chapter 570: Combined Sewer Overflow Abatement; Maine Department of Environmental Protection

⁵ Combined Sewer Overflows, Guidance for Nine Minimum Controls; EPA 832-B-95-003; May 1995

2.4 PURPOSE OF THE CSO MASTER PLAN

The purpose of this CSO Master Plan is to set forth a recommended approach, budgetary costs and a schedule for abating or eliminating the impacts of the Ottawa Road CSO discharge in the Town of Cape Elizabeth, Maine. The elements of this CSO Master Plan, and their respective Sections within this Plan, are as follows:

1. CSO Assessment and Monitoring
 - a. *Section 3*, Receiving Waters of CSO
 - b. *Section 4*, CSO Flow Monitoring
 - c. *Section 5*, Sewer System Flow Monitoring
 - d. *Section 6*, Sewer System TV and Manhole Inspection
 - e. *Section 7*, Sewer System Smoke Testing
 - f. *Section 8*, Interceptor Modeling

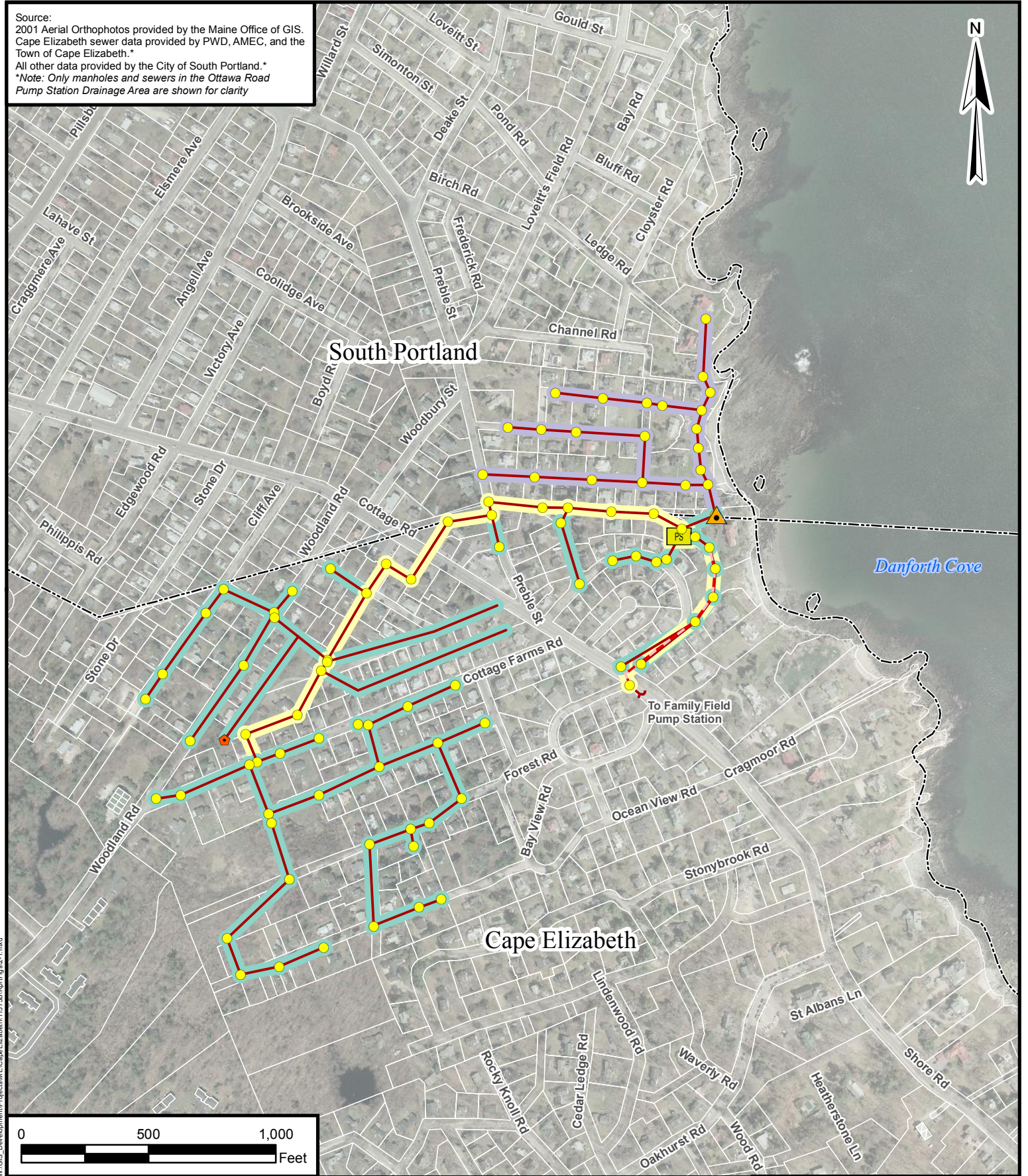
2. Prioritization and Alternative Analysis
 - a. *Section 9*, Screening and Evaluation of Control Alternatives
 - b. *Section 10*, Recommended CSO Abatement/Elimination Plan

3. Implementation Schedule
 - a. *Section 10*, Recommended CSO Abatement/Elimination Plan

4. Proposed Budget
 - a. *Section 10*, Recommended CSO Abatement Elimination Plan

Section 1 - Summary, Conclusions and Recommendations acts as a succinct summary of Sections 2 through 10.

Source:
 2001 Aerial Orthophotos provided by the Maine Office of GIS.
 Cape Elizabeth sewer data provided by PWD, AMEC, and the
 Town of Cape Elizabeth.*
 All other data provided by the City of South Portland.*
 *Note: Only manholes and sewers in the Ottawa Road
 Pump Station Drainage Area are shown for clarity

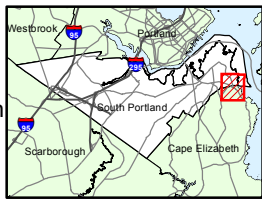


Legend

- Cleanout
- Manhole
- Pump Station
- Force Main
- Gravity Main
- Ottawa Rd. CSO

Ownership

- Town of Cape Elizabeth
- Portland Water District
- City of South Portland

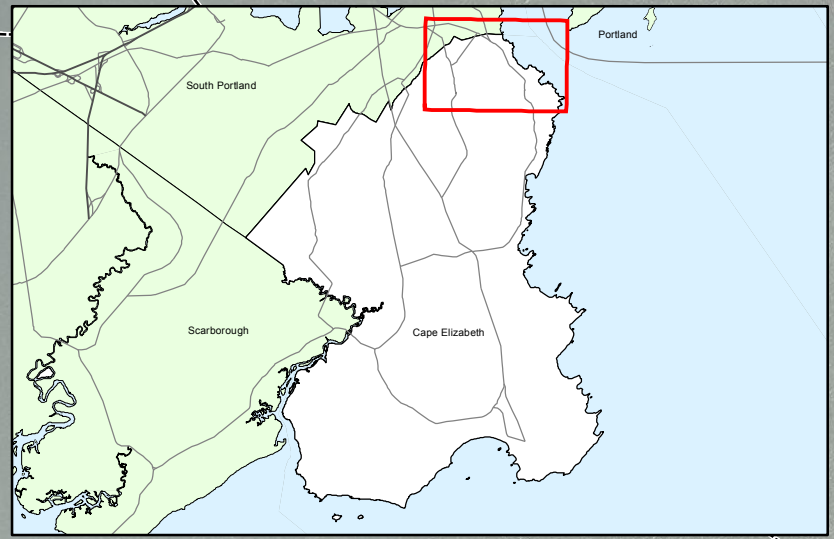


Ottawa Road CSO
Master Plan
 Portland Water District
 City of South Portland
 Town of Cape Elizabeth
Ottawa Road Pump Station
Drainage Area

PROJ NO: 11573B DATE: Nov 2011 **FIGURE:**
 2-1

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Source:
 2001 aerial orthophotos, town boundaries and road data obtained from ME GIS.
 Cape Elizabeth sewer data compiled from PWD, the City of South Portland, ME, and AMEC.*
 *Note: Only manholes and sewers in the Ottawa Road and Family Field Pump Station
 Drainage Areas are shown for clarity.



Legend

- Cleanout
- Ottawa Rd. CSO
- Manhole
- Pump Station
- Force Main
- Gravity Main

Ownership

- Town of Cape Elizabeth
- Portland Water District
- City of South Portland

**Ottawa Road CSO
 Master Plan**

Portland Water District
 City of South Portland
 Town of Cape Elizabeth

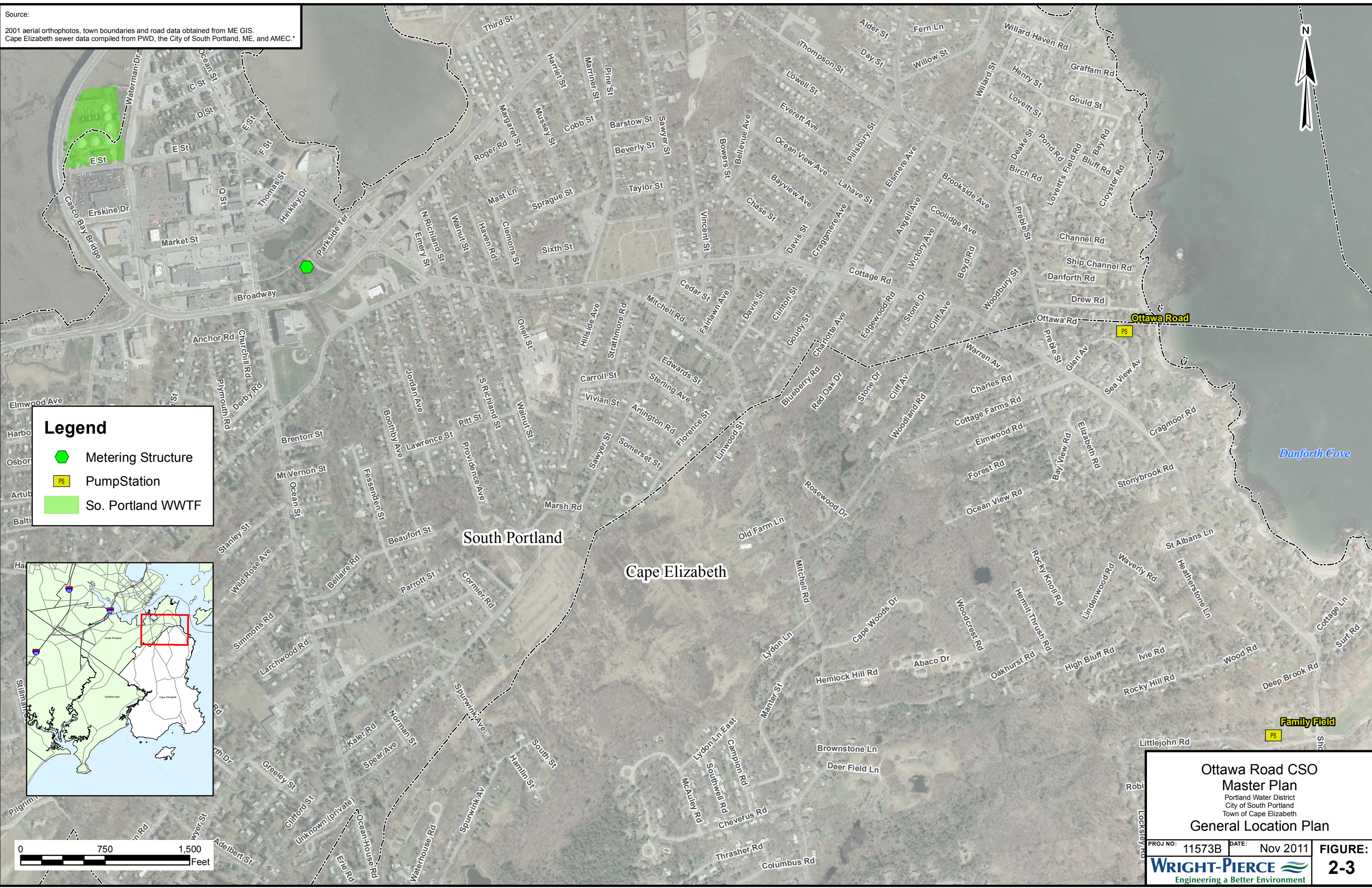
**Facility and Infrastructure
 Ownership Plan**

PROJ NO: 11573B DATE: Nov 2011 **FIGURE: 2-2**




WRIGHT-PIERCE
 Engineering a Better Environment

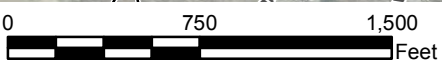
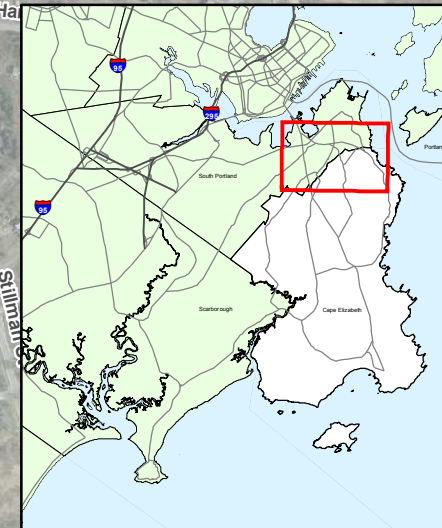
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Source:
 2001 aerial orthophotos, town boundaries and road data obtained from ME GIS.
 Cape Elizabeth sewer data compiled from PWD, the City of South Portland, ME, and AMEC.*



Legend

-  Metering Structure
-  Pump Station
-  So. Portland WWTF



**Ottawa Road CSO
 Master Plan**
 Portland Water District
 City of South Portland
 Town of Cape Elizabeth

General Location Plan

PROJ NO: 11573B	DATE: Nov 2011
WRIGHT-PIERCE Engineering a Better Environment	

**FIGURE:
2-3**

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