



Wetland Permit Application Peirce Island Wastewater Treatment Facility Portsmouth, NH

Prepared For:
City of Portsmouth
Department of Public Works
680 Peverly Hill Road
Portsmouth, NH 03801

Submitted On:
June 30, 2015

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Introduction

The City of Portsmouth proposes to upgrade the existing Peirce Island Wastewater Treatment Facility (WWTF) to provide secondary treatment and nitrogen removal. Because the facility sits on an island within the tidal Piscataqua River, work within 100' of the highest observable tide line is subject to wetlands jurisdiction. This application addresses proposed temporary and permanent impacts to previously developed and undeveloped tidal buffers associated with construction activities for the wastewater treatment facility upgrade. The proposed construction is anticipated to take approximately three to four years.

The City is submitting two applications for the project to NHDES. This application details impacts to upland tidal buffers and temporary impacts to a freshwater wetland that are proposed to occur. A second application will address impacts to tidal waters and impacts below the Mean High Water line, in public waters, that are proposed to occur.



WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau
Land Resources Management

Check the status of your application: <http://des.nh.gov/onestop>



RSA/Rule: Env-Wq 100-900

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

1. REVIEW TIME:
Indicate your Review Time below. Refer to Guidance Document A for instructions.

Standard Review (Minimum, Minor or Major Impact)
 Expedited Review (Minimum Impact only)

2. PROJECT LOCATION:
Separate applications must be filed with each municipality that jurisdictional impacts will occur in.

ADDRESS: **Peirce Island** TOWN/CITY: **Portsmouth**

TAX MAP: **208** BLOCK: LOT: **1** UNIT:

USGS TOPO MAP WATERBODY NAME: **Piscataqua River** NA STREAM WATERSHED SIZE: **990 s miles** NA

LOCATION COORDINATES (If known): **70°44'23"W 43°4'24"N** Latitude/Longitude
 UTM State Plane

3. PROJECT DESCRIPTION:
Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. DO NOT reply "See Attached" in the space provided below.

The City of Portsmouth proposes to upgrade its existing wastewater treatment facility at Peirce Island in order to come into compliance with an EPA consent decree. The project will involve impacts to previously developed and undeveloped tidal buffer and to freshwater wetlands.

4. SHORELINE FRONTAGE

NA This lot has no shoreline frontage. **SHORELINE FRONTAGE: ~7,100 feet**

Shoreline frontage is calculated by determining the average of the distances of the actual natural navigable shoreline frontage and a straight line drawn between the property lines, both of which are measured at the normal high water line.

5. RELATED PERMITS, ENFORCEMENT, EMERGENCY AUTHORIZATION, SHORELAND, ALTERATION OF TERRAIN, ETC...

Alteration of Terrain, NPDES Construction General Permit

6. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:
See the Instructions & Required Attachments document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID: NHB 15 - 1528.

b. Designated River the project is in ¼ miles of: _____; and
 date a copy of the application was sent to Local River Advisory Committee: Month: ___ Day: ___ Year: ___

NA

7. APPLICANT INFORMATION (Desired permit holder)LAST NAME, FIRST NAME, M.I.: **Terry Desmarais**TRUST / COMPANY NAME: **City of Portsmouth**MAILING ADDRESS: **680 Peverly Hill Road**TOWN/CITY: **Portsmouth**STATE: **NH**ZIP CODE: **03801**EMAIL or FAX: **tldesmarais@cityofportsmouth.com**PHONE: **603 766-1421**ELECTRONIC COMMUNICATION: By initialing here: TD, I hereby authorize DES to communicate all matters relative to this application electronically**8. PROPERTY OWNER INFORMATION (If different than applicant)**

LAST NAME, FIRST NAME, M.I.:

TRUST / COMPANY NAME:

MAILING ADDRESS:

TOWN/CITY:

STATE:

ZIP CODE:

EMAIL or FAX:

PHONE:

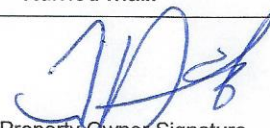
ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize DES to communicate all matters relative to this application electronically

9. AUTHORIZED AGENT INFORMATIONLAST NAME, FIRST NAME, M.I.: **Pearson, Jon R.**COMPANY NAME: **AECOM**MAILING ADDRESS: **701 Edgewater Dr.**TOWN/CITY: **Wakefield**STATE: **MA**ZIP CODE: **01880**EMAIL or FAX: **Jon.Pearson@aecom.com**PHONE: **781 224-6270**ELECTRONIC COMMUNICATION: By initialing here irp, I hereby authorize DES to communicate all matters relative to this application electronically**10. PROPERTY OWNER SIGNATURE:**

See the Instructions & Required Attachments document for clarification of the below statements

By signing the application, I am certifying that:

1. I authorize the applicant and/or agent indicated on this form to act in my behalf in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.
2. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document.
3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.
4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.
5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.
6. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.47.
7. I have submitted a Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) to the NH State Historic Preservation Officer (SHPO) at the NH Division of Historical Resources to be reviewed for the presence of historical/ archeological resources.
8. I authorize DES and the municipal conservation commission to inspect the site of the proposed project.
9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.
10. I understand that the willful submission of falsified or misrepresented information to the New Hampshire Department of Environmental Services is a criminal act, which may result in legal action.
11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
12. The mailing addresses I have provided are up to date and appropriate for receipt of DES correspondence. DES will not forward returned mail.

 <input type="checkbox"/> Property Owner Signature	Terry Desmarais Print name legibly	6/30/2015 Date
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shoreland@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

MUNICIPAL SIGNATURES

11. CONSERVATION COMMISSION SIGNATURE

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.

	Print name legibly	Date
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DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission's signature is obtained in the space above.
2. Expedited review requires the Conservation Commission signature be obtained **prior** to the submittal of the original application to the Town/City Clerk for signature.
3. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, the application is not eligible for expedited review and the application will reviewed in the standard review time frame.

12. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 2014), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

	Print name legibly	Town/City	Date
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DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3,I

1. For applications where "Expedited Review" is checked on page 1, if the Conservation Commission signature is not present, NHDES will accept the permit application, but it will NOT receive the expedited review time.
2. IMMEDIATELY sign the original application form and four copies in the signature space provided above;
3. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
4. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board; and
5. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

1. Submit the original permit application form bearing the signature of the Town/ City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery.

13. IMPACT AREA:

For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact

Permanent: impacts that will remain after the project is complete.

Temporary: impacts not intended to remain (and will be restored to pre-construction conditions) after the project is complete.

JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.	TEMPORARY Sq. Ft. / Lin. Ft.
Forested wetland	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Scrub-shrub wetland	<input type="checkbox"/> ATF	1,030 SF <input type="checkbox"/> ATF
Emergent wetland	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Wet meadow	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Intermittent stream	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Perennial Stream / River	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Lake / Pond	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Bank - Intermittent stream	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Bank - Perennial stream / River	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Bank - Lake / Pond	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Tidal water	/ <input type="checkbox"/> ATF	/ <input type="checkbox"/> ATF
Salt marsh	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Sand dune	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Prime wetland	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Prime wetland buffer	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Undeveloped Tidal Buffer Zone (TBZ)	7,505 SF <input type="checkbox"/> ATF	13,210 SF <input type="checkbox"/> ATF
Previously-developed upland in TBZ	27,010 SF <input type="checkbox"/> ATF	87,220 SF <input type="checkbox"/> ATF
Docking - Lake / Pond	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Docking - River	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
Docking - Tidal Water	<input type="checkbox"/> ATF	<input type="checkbox"/> ATF
TOTAL	34,515 SF /	101,460 SF /

14. APPLICATION FEE: See the Instructions & Required Attachments document for further instruction

Minimum Impact Fee: Flat fee of \$ 200

Minor or Major Impact Fee: Calculate using the below table below

Permanent and Temporary (non-docking) 21,745 sq. ft. X \$0.20 = \$ 4,349 + \$200

Temporary (seasonal) docking structure: _____ sq. ft. X \$1.00 = \$

Permanent docking structure: _____ sq. ft. X \$2.00 = \$

Projects proposing shoreline structures (including docks) add \$200 = \$

Total = \$ 4,549

The Application Fee is the above calculated Total or \$200, whichever is greater = \$ 4,549

shoreland@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

Attachment A - Minor and Major 20 Questions

Env-Wt 302.04 (a) For any major or minor project, the applicant shall demonstrate by plan and example that the following factors have been considered in the project's design in assessing the impact of the proposed project to areas and environments under the department's jurisdiction: Respond with statements demonstrating:

1. The need for the proposed impact.

The City of Portsmouth owns and operates a wastewater treatment facility (WWTF) on Peirce Island (Exhibit A - Locus). The plant, built in the 1960's, must comply with a National Pollutant Discharge Elimination System (NPDES) permit. The permit, issued by the US Environmental Protection Agency (EPA) with concurrence of the NH Department of Environmental Services (NHDES), contains effluent limits for the treated wastewater before it can be discharged to the Piscataqua River.

The City is currently under a legal order (Consent Decree) from the EPA to upgrade the Peirce Island WWTF to secondary treatment. The City was recently notified by EPA that the Peirce Island secondary treatment permit would be made more stringent by requiring nitrogen removal to 8 milligrams per liter (mg/L). In order to bring the WWTF into compliance, the City plans to upgrade existing equipment, systems, and facilities. Major WWTF additions include a new headworks, a new gravity thickener, replacement of the existing Administration Building with a new Solids Building, a new two-stage Biological Aerated Filter (BAF) system, and replacement of the existing Solids Processing Building with a new Operations/Lab Building.

(2) The alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site;

Impacts to wetlands, surface waters, and tidal buffer zones have been minimized to the extent possible. The footprint of the facility will remain inside the existing security fence. Impacts to undisturbed tidal buffer are necessary to accommodate the expanded facility, and have been minimized to the extent possible. A total of 7,505 square feet of undisturbed tidal buffer will be permanently affected by the proposed project. Alternative treatment processes were considered and the proposed project has the smallest footprint.

Other alternatives such as the no-build were not considered because of the requirement for the City to come into compliance with EPA requirements.

(3) The type and classification of the wetlands involved;

Peirce Island lies within the Piscataqua River at the mouth of Portsmouth Harbor and is surrounded by intertidal saltmarsh (E2EM1) and intertidal rocky shore (E2RS1/2). There are small areas of freshwater scrub-shrub wetland on the island (PSS1), and a small area of emergent marsh (PEM) that receives stormwater from the facility. There will be temporary impacts to the freshwater wetland during construction. There is also a jurisdictional tidal

buffer zone (TBZ), portions of which are developed, and other portions of which are undeveloped. There are temporary and permanent impacts to both developed and undeveloped tidal buffer proposed. Developed tidal buffer includes paved areas and structures within the facility; the paved parking area for the public pool; the gravel parking lot used as a snow dump; and the dog park.

(4) The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters;

Impacts are mostly restricted to the tidal buffer zone (134,945 square feet). Of this, 20,715 square feet are impacts to undeveloped tidal buffer, and 114,230 square feet are impacts to previously developed tidal buffer. In addition to space immediately adjacent to the facility, three areas within the previously developed tidal buffer, but remote from the facility, are proposed to be used for construction staging areas. As most of the plant lies within the tidal buffer zone, all of the previously developed tidal buffer zone within the plant will be impacted. Vegetation and cover types within the tidal buffer zone are documented in the attached Peirce Island Tree Inventory, prepared by Normandeau Associates. A total of 1,030 square feet of freshwater wetland will be temporarily impacted for construction access.

(5) The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area;

Undisturbed tidal buffer zone is relatively rare in New Hampshire because of the limited coastline in the state. The City has developed a comprehensive planting plan to mitigate proposed impacts to the undisturbed tidal buffer that is proposed to be affected by construction.

(6) The surface area of the wetlands that will be impacted;

A total of 135,975 square feet of tidal buffer and freshwater wetlands are proposed to be impacted by the proposed project, as detailed below in Table 1. Details of the impacts are depicted on the attached plan set, "Peirce Island Wastewater Treatment Facility Upgrade, May 2015".

Table 1: Peirce Island WWTF Proposed Impacts

Resource	Temp sf	Perm sf	Total sf
PDTBZ	87,220	27,010	114,230
UDTBZ	13,210	7,505	20,715
Wetland	1,030		1,030
Total	101,460	34,515	135,975

(7) The impact on plants, fish and wildlife including, but not limited to:

- a. Rare, special concern species;
- b. State and federally listed threatened and endangered species;

- c. Species at the extremities of their ranges;
- d. Migratory fish and wildlife;
- e. Exemplary natural communities identified by the DRED-NHB; and
- f. Vernal pools.

A datacheck request submitted to the New Hampshire Natural Heritage Bureau in October, 2013 indicated that there were recorded occurrences of marsh elder (*Iva frutescens*) in the vicinity of the proposed project. A survey for the plant was conducted in June, 2014. (See Exhibit B - "Marsh Elder (*Iva frutescens*) Survey Report". The survey found that there were four populations of *Iva frutescens* on the Island, but none in the vicinity of the proposed project.

Because the initial response was over a year old, a second datacheck request was submitted on May 4, 2015. The response to the second request indicated that there were no new occurrences of rare plants, animals, or species at the extremities of their ranges. (Exhibit C1 - NHB Datacheck Results Letter, NHB15-1528).

The New Hampshire Natural Heritage Bureau has determined that the project as proposed will not impact any of the existing populations of *I. frutescens*. (Exhibit C2 – NHB Memorandum 6-11-2015.)

(8) The impact of the proposed project on public commerce, navigation and recreation;

No impacts to public navigation or commerce are anticipated. The project as proposed will have temporary impacts to public recreation as the dog park and portions of the recreational trails on Peirce Island will be temporarily closed during construction. The site is constrained by space limitations, and a portion of the dog park will be used for construction staging. The public pool will remain open during the summer season, but island will be closed to vehicles, pedestrian and cyclists beyond the pool parking lot in summer, and before the pool (northwest of the pool) in winter. Public access to these areas will be fully restored once construction of the WWTF Upgrade is completed.

(9) The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake, the applicant shall be required to indicate the type of material to be used and the effect of the construction of the wall on the view of other users of the lake.

Efforts have been made to address aesthetic concerns related to the wastewater treatment plant improvements. The proposed landscaping plan will provide additional visual screening for the public from the outside of the fence. The improvements to wastewater treatment will help to minimize odors emanating from the plant. New buildings are proposed to be constructed of brick and concrete to match existing buildings at the plant, and portions of the south facing wall of the new BAF building will have a trellis system to support the growth of vines, to better blend in with vegetative screening along the southern

shoreline. In addition, the facility has been lowered into the ground, at additional cost, to lessen its visual impact.

(10) The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel, the applicant shall be required to document the extent to which the dock would block or interfere with the passage through this area;

No work is planned to interfere with public passage on the water. The south end of Peirce Island will be closed temporarily to the public during construction of the project, and fully restored once the project is complete.

(11) The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties;

Peirce Island has one other land owner, the Pease Development Authority, which owns Lot 1A. (Exhibit D1 - Tax Map). The project will have a long-term beneficial effect on Lot 1-A and to all other landowners along Piscataqua River because of the improved water quality that will result from the improved level of wastewater and stormwater treatment.

(12) The benefit of a project to the health, safety, and wellbeing of the general public;

The project as proposed will result in an overall benefit to the Piscataqua River by improving the quality of the wastewater effluent that is discharged from the plant.

(13) The impact of a proposed project on quantity or quality of surface and ground water. For example, where an applicant proposes to fill wetlands the applicant shall be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site;

Proposed impacts are mostly to jurisdictional tidal buffer zone. A stormwater management plan has been developed for the project, and an Alteration of Terrain permit application will be submitted that will address water quality during and after construction.

Water quality in the Piscataqua River will be protected by appropriate erosion and sediment controls. In addition, certain construction uses will be restricted from occurring within 50 feet of the highest observable tide line. These uses are: vehicle fueling; fuel storage; hazardous material storage; vehicle washdown; and concrete washdown. Uses that are proposed to be allowed within all portions of the proposed staging areas are: temporary erosion and sediment control practices; construction trailers; temporary trailers for plant staff (offices, lab, showers); parking of personal and construction vehicles; stockpile of excavated materials; stockpile of demolished materials; stockpile of stone or dirt materials; stockpile of equipment, pipe, conduit, rebar, & other construction materials awaiting

installation; storage boxes for construction trades; dumpsters; stone crushing machine; daily construction traffic; portable toilets; temporary welding/fabrication of equipment; and soil screening.

The wetland proposed to be temporarily impacted, and the grassed dog park proposed to be used for construction staging, will be protected by filter fabric and covered with crushed reclaimed pavement and/or gravel. Following construction, pavement and gravel will be removed, filter fabric will be removed, and the areas will be restored and reseeded.

(14) The potential of a proposed project to cause or increase flooding, erosion, or sedimentation;

The project will result in additional impervious area of 23,231 square feet. The project requires an Alteration of Terrain permit, which will address stormwater treatment of the additional impervious area. All appropriate measures will be employed during construction to avoid and minimize impacts to jurisdictional resources.

(15) The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards;

Not applicable to this portion of the project which involves impacts to freshwater wetlands and upland tidal buffers.

(16) The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted;

If other owners of shoreline properties along the Piscataqua River were allowed alterations to their tidal buffer zone such as are proposed, there would be small alterations to upland tidal buffer throughout the region. There are approximately 433,000 square feet of undeveloped tidal buffer on Peirce Island, of which 7,505 square feet, or 2%, is proposed to be permanently impacted.

(17) The impact of the proposed project on the values and functions of the total wetland or wetland complex;

The proposed project will result in an overall benefit to the Piscataqua River by improving the quality of wastewater effluent that is discharged from the plant. The proposed project will also benefit the Piscataqua River by improving the quality of stormwater discharge from the site. The undeveloped tidal buffer proposed to be impacted is vegetated but is not currently unaffected, as it currently supports invasive species including Oriental bittersweet, honeysuckle, and garlic mustard. It is anticipated that the functions currently provided by the undeveloped tidal buffer (stormwater treatment, aesthetic screening of the

plant from public view, songbird and small mammal habitat) are addressed in the proposed landscape plan and Alteration of Terrain permit application.

(18) The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication;

There are no sites eligible for or included in the National Register of Natural Landmarks in the vicinity of the project.

(19) The impact upon the value of areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.

The Piscataqua River is not named as a National River, nor is it named as a designated river by the State of New Hampshire.

(20) The degree to which a project redirects water from one watershed to another.

Water will not be redirected from watershed to another for this project.

Compliance with Shoreland Standards (RSA 483-B:9)

The Portsmouth Wastewater treatment facility is a redevelopment project in accordance with RSA 485-A:17. RSA 483-B:5-b has been recently changed to read: “IV. IV. Impacts in the protected shoreland that receive a permit in accordance with RSA 482-A and commercial or industrial redevelopment in accordance with RSA 485-A:17 shall not require a permit under this section. ” Accordingly, no Shoreland permit application has been submitted. It is the City’s understanding that the project must still demonstrate conformance to the extent possible with the minimum standards of RSA 483-B:9, below.

483-B:9 V. Minimum Standards

(a) Waterfront Buffer

A shoreland tree inventory in conformance with the methodology prescribed in RSA 483-B:9 V.(a)(D) was undertaken for the proposed project (Exhibit E - Shoreland Tree Inventory Report, Peirce Island Wastewater Treatment Facility¹). For the survey, 11 grids were established within the proposed footprint of the project. (Later, as a result of additional efforts to minimize the foot print of the proposed project within the waterfront buffer, some grids were no longer subject to any vegetation removal.) Table 2 compares the existing and proposed conditions. Some of the grids do not currently reach the 50-point minimum required under the shoreland standard, and some of the grids will not attain the 50-point minimum following construction. However, the proposed planting plan will compensate for the trees and shrubs proposed to be removed, to the extent possible. Because the caliper of the trees and shrubs proposed to be planted vary between 0.625” – 2.5” (with heights ranging from 5’ – 12’ tall) they will not immediately attain the 50-point minimum required under the minimum protection standards. With time, the affected waterfront buffer will meet or exceed the minimum shoreland standards. In addition, there are large portions of the waterfront buffer that will not be affected by the proposed project.

¹ The “Shoreland Tree Inventory Report, Peirce Island Wastewater Treatment Facility” was completed at an earlier design stage, and the site plans in the report do not reflect current design plans.

Table 2: Waterfront Buffer Existing and Proposed Conditions

Tree Grid	Preconstruction Points	Remaining Tree Points	Remaining Groundcover Points	Total Post-Construction Points	Tree Planting Points	Total Post-Landscaping
1	58	1	5	6	6	12
2	39	9	27	36	0	36
3	80	2	7	9	8	17
4	50	0	3	3	10	13
5	46	0	4	4	7	11
6	72	12	38	50	0	50
7	60	60	(unaffected)			60
8	26	26	(no trees cut)			26
9	25	25	(unaffected)			25
10	65	65	(unaffected)			65
11	10	0	9	9		9

(b) Natural Woodland Buffer

The Minimum Shoreland Standards require that at least 25% of the Natural Woodland Buffer be maintained in an unaltered state or improved with additional vegetation. As only a portion of the Natural Woodland Buffer will be affected by the proposed project, the 25% vegetation minimum is met. In addition, the proposed landscaping plan will provide additional vegetative cover within the Natural Woodland Buffer that will meet or exceed the minimum standards. Photographs depicting the natural woodland buffer are included with this application (Exhibit F – Photographs).

(c) Septic Systems

Not applicable to this project.

(d) Erosion and Siltation

The proposed project will require an alteration of terrain permit which will include an erosion and sediment control plan detailing methods for containing sediment during construction. The proposed project is also subject to the EPA NPDES Construction General Permit regarding erosion and siltation control.

(e) Minimum Lots and Residential Development.

Not applicable to this project.

(f) Minimum Lots and Non-Residential Development.

Not applicable to this project

(g) Impervious Surfaces

The Shoreland Standards require that if the impervious area within the protected shoreland on the lot proposed to be affected exceeds 20% that a stormwater management system be

implemented. The overall proposed impervious area within the protected shoreland is less than 20% of the total protected shoreland area. Nevertheless, a stormwater management system has been designed, and will be submitted under separate cover to NHDES

Alteration of Terrain Bureau.

Table 3: Existing Impervious Area - Peirce Island Map 208 Lot 1

Location	Total Area (SF)	Existing Impervious (SF)	Existing % Impervious
HOTL to 50'	341,066	16,745	4.9%
50' to 150'	545,047	131,375	24.1%
150' to 250'	297,288	50,590	17.0%
Total Protected Shoreland	1,183,401	198,710	16.8%

Table 4: Proposed Impervious Area - Peirce Island Map 208 Lot 1

Location	Total Area (SF)	Proposed Impervious (SF)	Proposed % Impervious
HOTL to 50'	341,066	25,055	7.3%
50' to 150'	545,047	133,015	24.4%
150' to 250'	297,288	63,645	21.4%
Total Protected Shoreland	1,183,401	221,715	18.7%

(h) Common Owners and Residential or Non-Residential Development

Not applicable to this project

Mitigation

As a major impact project under 303.02, the project requires mitigation for permanent impacts to undeveloped tidal buffers. A total of 7,505 square feet of undeveloped tidal buffer will be permanently impacted by the proposed project. Functions performed by the existing undisturbed tidal buffer include vegetative screening and aesthetic enhancement, habitat for songbirds and small mammals, and stormwater treatment for areas that receive runoff from impervious area.

Landscaping Plan

A total of 13,210 square feet of undeveloped tidal buffer will be temporarily impacted during construction. Most of the temporary tidal buffer impacts are related to construction access and staging directly around the facility. Immediately following construction, these areas will be restored to their previous grades, loamed, and reseeded with a stabilization seed mix. The City proposes to implement a landscaping plan incorporating native tree, shrub, and groundcover species around the southern periphery of the treatment plant in areas proposed to be temporarily impacted both within and outside of the jurisdictional tidal buffer zone. Additional plantings are proposed at the north end of the facility near the proposed gravel drive. Within the confines of Peirce Island, the landscaping plan will provide improved vegetative screening, wildlife habitat, and improved erosion and sediment treatment. Most areas within Peirce Island identified as undeveloped tidal buffer are currently park-like grassed areas with dispersed shade trees. The landscaping plan will provide denser vegetation and an overall increase in the number of trees and shrubs in the undeveloped tidal buffer.

The project also proposes a stormwater management plan for the wastewater treatment facility that will incorporate a rain garden and a level spreader improving treatment of stormwater and encouraging infiltration.

Invasive Species Management Plan

Peirce Island is host to a number of non-native tree, shrub, and herbaceous species. In conjunction with the proposed landscaping plan, and to improve the diversity and wildlife habitat at Peirce Island, the City will prepare an Invasive Species Management Plan to control invasive species within the limits of work for the project. Elements of the plan will be:

- Identification of existing invasive species populations within the limit of work.
- Construction methods to avoid spread of existing invasive species populations.
- Recommendations for sourcing of loam material.
- Invasive species control strategies for areas temporarily affected by proposed construction.
- Long term monitoring plan for ongoing invasive species control.

The Invasive Species Management Plan will be developed during the permitting process as the design of the WWTF Upgrade is completed. A Mitigation Agreement is submitted with this application (Exhibit K - Mitigation Agreement) committing the City to provide the plan by September 1, 2015. It is anticipated that the plan will be developed in cooperation with the Portsmouth Conservation Commission, The NH Department of Agriculture Invasive Species Coordinator, and NHDES.



**US Army Corps
of Engineers**®
New England District

**New Hampshire Programmatic General Permit (PGP)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)**

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to “work” include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See PGP, GC 5, regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*	x	
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	x	
2.2 Are there proposed impacts to SAS, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.nhnaturalheritage.org , specifically the book Natural Community Systems of New Hampshire .		x
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	NA	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)	x	
2.5 The overall project site is more than 40 acres.		x
2.6 What is the size of the existing impervious surface area?	201,753 sf	
2.7 What is the size of the proposed impervious surface area?	224,984 sf	
2.8 What is the % of the impervious area (new and existing) to the overall project site?	16.1% / 17.9%	
3. Wildlife	Yes	No
3.1 Has the NHB determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require a NHB determination.)	x	
3.2 Would work occur in any area identified as either “Highest Ranked Habitat in N.H.” or “Highest Ranked Habitat in Ecological Region”? (These areas are colored magenta and green, respectively, on NH Fish and Game’s map, “2010 Highest Ranked Wildlife Habitat by Ecological Condition.”) Map information can be found at: <ul style="list-style-type: none"> • PDF: www.wildlife.state.nh.us/Wildlife/Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html. 	x	

3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		x
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		x
3.5 Are stream crossings designed in accordance with the PGP, GC 21?		
4. <u>Flooding/Floodplain Values</u>	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?	x	
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?	NA	
5. <u>Historic/Archaeological Resources</u>		
For a minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) shall be sent to the NH Division of Historical Resources as required on Page 5 of the PGP**	x	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.

** If project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law..

Appendix B - Corps Secondary Impacts Checklist Supplemental Narrative

1. Impaired Waters

1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water?

See

http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*

Yes. The Piscataqua River is impaired by the following (Exhibit G – Impaired Waters):

- Enterococcus (TMDL Approved)
- Estuarine Bioassessments (TMDL Priority Low)
- Polychlorinated biphenyls (TMDL Priority Low)
- Dioxin (TMDL Priority Low)
- Mercury (TMDL Priority Low)

The project as proposed is not anticipated to have any effect on the listed impairments.

2. Wetlands

2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?

Yes. The project is directly adjacent to the Piscataqua River, a tidal river.

2.2 Are there proposed impacts to SAS, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.nhnaturalheritage.org, specifically the book *Natural Community Systems of New Hampshire*.

No Special Aquatic Sites (SAS), shellfish beds, special wetlands or vernal pools will be affected.

2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)

Yes. Portions of the NH-regulated Upland Tidal Buffer will be affected by the proposed construction. A comprehensive planting plan has been developed to help compensate for any loss of functional value that may be incurred by the proposed impacts to the riparian buffer.

3. Wildlife

3.1 Has the NHB determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require a NHB determination.)

Yes. A datacheck request submitted to the New Hampshire Natural Heritage Bureau in October, 2013 indicated that there were recorded occurrences of marsh elder (*Iva frutescens*) in the vicinity of the proposed project. A survey for the plant was conducted in June, 2014. (See Exhibit B - "Marsh Elder (*Iva frutescens*) Survey Report". The survey found that there were four populations of *Iva frutescens* on the Island, but none in the vicinity of the proposed project.

Because the initial response was over a year old, a second datacheck request was submitted on May 4, 2015. The response to the second request indicated that there were no new occurrences of rare plants, animals, or species at the extremities of their ranges. (Exhibit C1 - NHB Datacheck Results Letter, NHB15-1528).

The New Hampshire Natural Heritage Bureau has determined that the project as proposed will not impact any of the existing populations of *I. frutescens*. (Exhibit C2 – NHB Memorandum 6-11-2015.)

3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.")

Yes. All of Peirce Island lies within area identified by NHF&G as "Tier 1" on the 2010 Wildlife Action Plan. (Exhibit H - Wildlife Action Plan Priority Areas)

4. Flooding/Floodplain Values

4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?

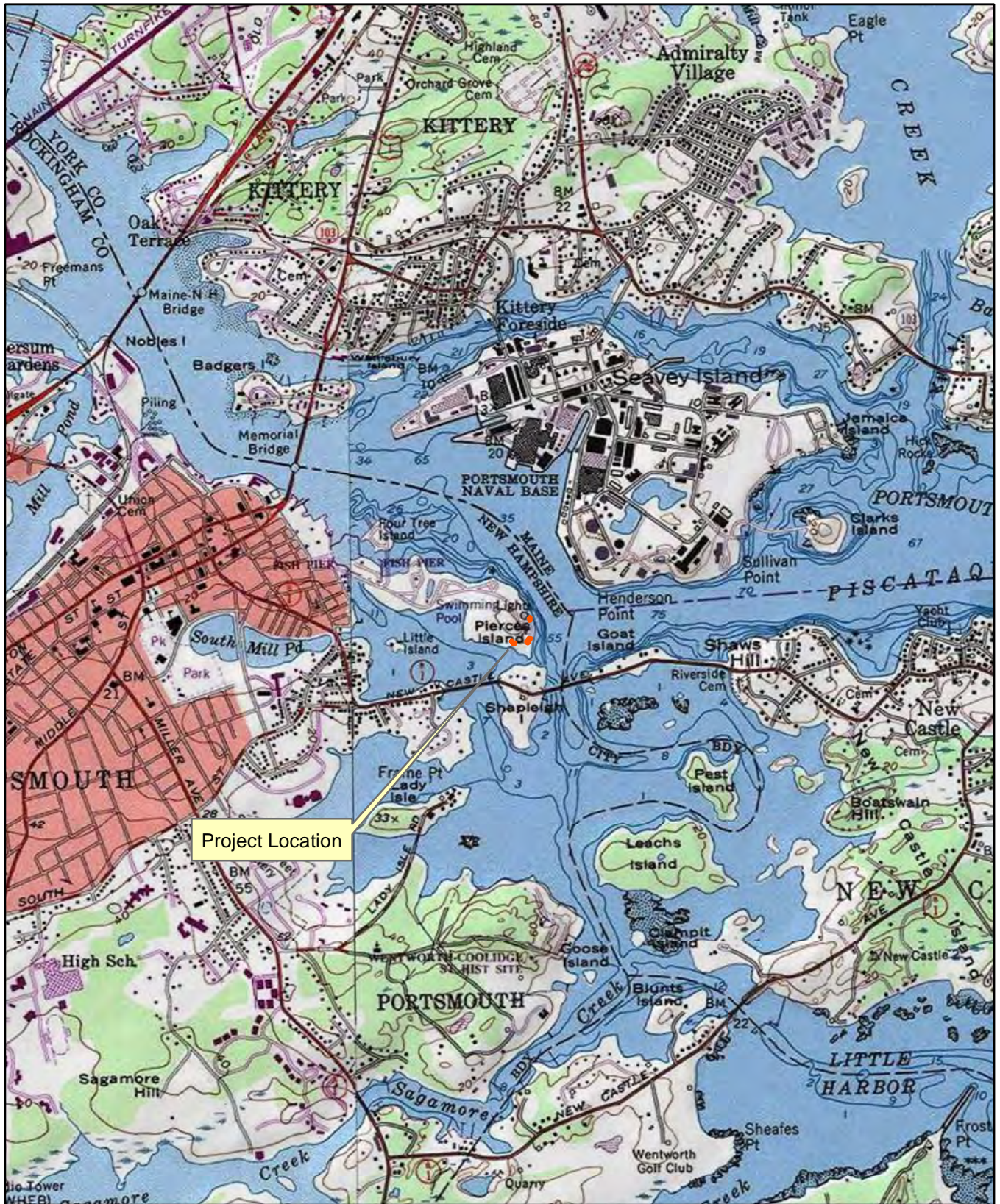
Yes. The proposed project involves work in some areas identified as 100-year floodplain on the 2005 FEMA map (Exhibit I – FEMA Floodplain) However, no loss of floodplain storage will occur as a result of the proposed project.

5. Historic/Archaeological Resources

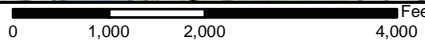
For a minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) shall be sent to the NH Division of Historical Resources as required on Page 5 of the PGP**

Yes. A Phase 1 Intensive Archaeological Survey was undertaken for the proposed project. The survey found that there are archaeologically sensitive areas near the project site. The

areas have been identified and will be protected during construction from any impacts. Due to the sensitive nature of archaeological records, the report is not reproduced in this application. Correspondence documenting the concurrence of the Division of Historical resources is attached here. (Exhibit J – NHDHR clearance letter 5-27-2014).



Project Location



CITY OF PORTSMOUTH
 PORTSMOUTH, NEW HAMPSHIRE
 PEIRCE ISLAND WASTEWATER TREATMENT FACILITY
 EXHIBIT A - REVETMENT LOCATIONS

Date : 5/19/2015
 Drawn By: volase
 Project No: 8675309

SCALE: 1:24,000



JUNE 2015

Draft Marsh Elder (*Iva frutescens*) Survey Report Peirce Island Wastewater Treatment Facility City of Portsmouth, NH

Submitted By
Normandeau Associates, Inc.
30 International Drive, Suite 6
Portsmouth, NH 03801
603.319.5300
www.normandeau.com

July 10, 2014



INTRODUCTION

On June 2, 2014 a botanist with Normandeau Associates, Inc. (Normandeau), under contract to Altus Engineering and AECOM, completed surveys for marsh elder (*Iva frutescens*), listed as rare by the State of New Hampshire, on the eastern end of Peirce Island in Portsmouth, New Hampshire. The New Hampshire Natural Heritage Bureau (NHB) identified marsh elder at several locations on and in the vicinity of Peirce Island (Appendix A). The surveys were focused on the vicinity of the Peirce Island Waste Water Treatment Facility (WWTF) and included areas of proposed disturbance as well as the general WWTF grounds. This report outlines the methods and results of that survey, including a brief overview of the biological characteristics of marsh elder.

MARSH ELDER BIOLOGY

Marsh elder is an exclusively coastal shrub found along saline beaches, commonly at the limit of high tide from Nova Scotia south to Texas. Leaves are narrow to elliptic, thickened slightly, and oppositely branched with leaf scars that completely encircle the twig. Greenish-white flowers are borne in clusters at the ends of the branches and bloom from September to October in this region. Mature plants can reach 8 to 11 feet in height. (Haines 2011, USDA 2002, Petrides 1972).

Marsh elder is not tolerant of prolonged saltwater intrusion, although it does not typically compete well with robust upland plant species. However; marsh elder does tolerate a small amount of saline influence, which allows it to occupy the narrow band between the upland vegetation above the high salt marsh and the lands that are subject to greater tidal influence below. It has been found that the most robust growth occurs at locations that are flooded 6-7% of the time during the growing season. Greater flooding regimes result in increased mortality, with zero shrub growth recorded for areas subject to flooding for greater than 30% of the growing season (Thursby and Abdelrhman 2004). Marsh elder is an important component to the shoreline as the last line of defense for protection from shoreline erosion.

SURVEY METHODS

The life history of marsh elder demonstrates that the species is typically confined to a narrow band between the intertidal shore and areas unaffected by the normal tidal range. Therefore, field surveys were directed at areas in the vicinity of the observable height of tide, as determined by the uppermost wrack line or water stained shoreline visible at the time of survey. This is coincident with the Highest Observable Tideline (HOTL) previously identified

by Normandeau (see *Wetland and Shoreland Report* dated October 16, 2015). Potential marsh elder individuals were keyed to species using the most recent edition of *Flora Novae Angliae* (Haines 2011). When an individual or group of marsh elder was identified, data collected included information on the general health and vigor of the population, stem count and density, and characteristics of the surrounding environment. These data were used to complete NHB data sheets for submittal to the agency for inclusion into their records. Populations were located using a Trimble Geo 6000 Global Positioning System (GPS) unit capable of sub-meter accuracy. The width of the population parallel to the shore was estimated at each point taken within the population.

SURVEY RESULTS

Over 500 individuals of the target species, marsh elder, were located during the June 2, 2014 survey effort. All marsh elder were observed to be stunted, and contain approximately 50-60% dead stems, mostly confined to the upper portions of the plant. One population containing four subpopulations was identified along the southern shore of Peirce Island, along the edge of a small cove west of the WWTF. The population formed a narrow band immediately above the highest observed wrack line along the shore. Subpopulation 1 is the longest continuous band of marsh elder observed, extending from a rock outcrop on the west end of the cove, to the edge of a small freshwater wetland area (Wetland "A" as previously delineated by Normandeau). The other three subpopulations are much smaller and extend along the eastern side of the cove until adjacent upland vegetation density increased and marsh elder was no longer observed (Appendix B). All individuals were observed to be in feeble to very feeble vigor, and averaged 3-feet in height (Appendix C). A data form documenting the population was completed for submittal to NHB (Appendix D). Table 1 contains a summary of the information recorded on the subpopulations.

Table 1: Summary of marsh elder (*Iva frutescens*) survey.

Subpopulation	Number of Individuals	Vigor	Subpopulation Size (sq. ft.)
1	400+	Very Feeble	4277
2	125	Feeble	612
3	31	Very Feeble	322
4	14	Very Feeble	217

Associated upland species included staghorn sumac (*Rhus hirta*), autumn olive (*Eleagnus umbellata*), Asian bittersweet (*Celastrus orbiculatus*), and speckled alder (*Alnus incana* ssp. *rugosa*). The saline areas downslope of the marsh elder contained over 50% unvegetated substrate, as well as a mixture of cordgrass (*Spartina* sp.).

DISCUSSION

Based on current construction plans, most of the construction area is located away from the identified marsh elder (Appendix E). There is a staging area at the location of the dirt parking lot/snow storage area adjacent to Subpopulation 1. Presently there is a row of bollards along the perimeter of the lot which would be an appropriate guideline for limits. Care should be taken to establish the limit for construction trailer placement and the staging of construction materials. Provided the parking area is the limit of laydown for construction, project construction activities should not result in compromising this population of marsh elder.

REFERENCES

- Haines, A. (2011) *Flora Novae Angliae: A manual for the Identification of Native and Naturalized Higher Vascular Plants of New England*. New England Wildflower Society and Yale University Press, New Haven and London, 973pp.
- Petrides, G.A. (1972) *A field Guide to Trees and Shrubs: Northeastern and North-central United States and Southeastern and South-central Canada* (2nd ed.). Houghton Mifflin Co., Boston/New York 428 pp.
- Thursby, G.B., and M.A. Abdelrhman. (2004) Growth of Marsh Elder *Iva frutescens* in Relation to Duration of Tidal Flooding. *Estuaries*, Vol. 27, No. 2, pp 217-224.
- United States Department of Agriculture. (2002) Plant Fact Sheet: Marsh Elder *Iva frutescens*. Accessed June 11, 2014 at https://www.plants.usda.gov/factsheet/pdf/fs_ivfr.pdf.

APPENDIX A
NHB Review Letter

Memo



NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Jeffrey Clifford, Altus Engineering
133 Court Street
Portsmouth, NH 03801

From: Melissa Coppola, NH Natural Heritage Bureau

Date: 10/30/2013 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau

NHB File ID: NHB13-3237

Town: Portsmouth

Location: 208/1

Description: project entails work associated with the design and construction of improvements to the City of Portsmouth's Pierce Island Wastewater Treatment Facility

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments: Please send site photos of the area closest to the shoreline that will be impacted by this project. Send requested info to: mcoppola@dred.state.nh.us.

Plant species

Marsh Elder (*Iva frutescens*)

State¹ Federal Notes

T --

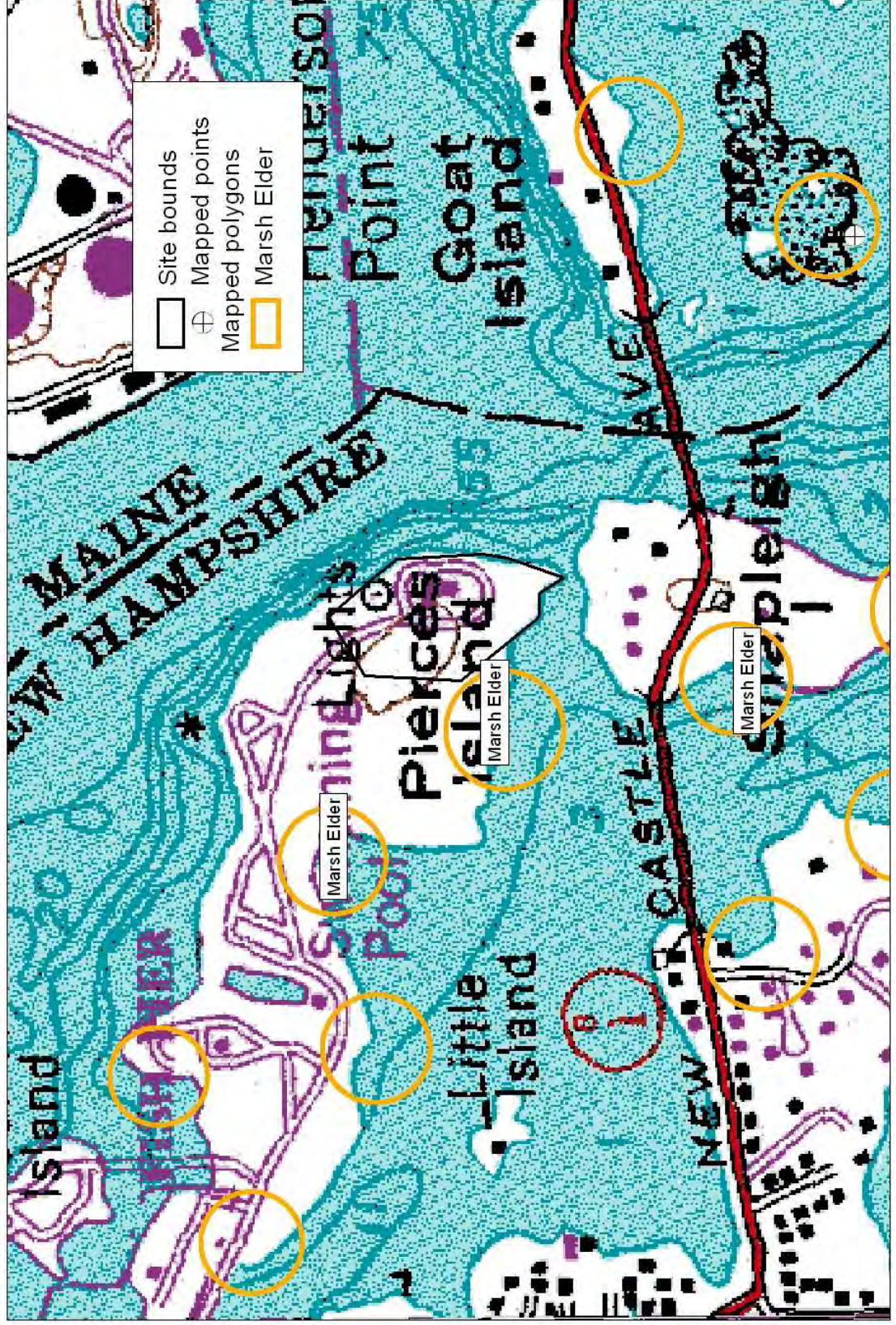
Threats are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that eliminate plants, and increased input of nutrients and pollutants in storm runoff.

¹Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Known locations of rare species and exemplary natural communities

Note: Mapped locations are not always exact. Occurrences that are not in the vicinity of the project are not shown.



*Historical record

New Hampshire Natural Heritage Bureau - Plant Record

Marsh Elder (*Iva frutescens*)

Legal Status

Federal: Not listed
State: Listed Threatened

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Excellent quality, condition and landscape context ('A' on a scale of A-D).
Comments on Rank: This rank may be for the state rather than relative to others in the region.

Detailed Description: 1996: Constant observation since 1953 reported, including all stages of phenology and age structure. 1982: Good clump observed.

General Area: 1996: On shores of several islands and peninsulas in the more or less enclosed bay system. Associated plant species: *Solidago sempervirens* (seaside goldenrod), *Juncus gerardii* (salt marsh rush), *Spartina patens* (salt-meadow cord-grass), *Triglochin maritimum* (arrow-grass), *Elymus virginicus* (Virginia wild rye), *Atriplex patula* (narrow-leaved orach), and *Artemisia vulgaris* (common mugwort). Substrate: gravel and marsh peat and muck. 1982: On shore at Pleasant Point.

General Comments:

Management

Comments:

Location

Survey Site Name: Little Harbor, back channel

Managed By: Little Harbor Trust

County: Rockingham

USGS quad(s): Kittery (4307016)

Town(s): Portsmouth

Lat, Long: 430409N, 0704409W

Size: 57.8 acres

Elevation: 10 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: In the vicinity of Rte. 1B which encircles the Little Harbor back channel from Portsmouth to New Castle and Rye. Many of the sites are visible only by boat.

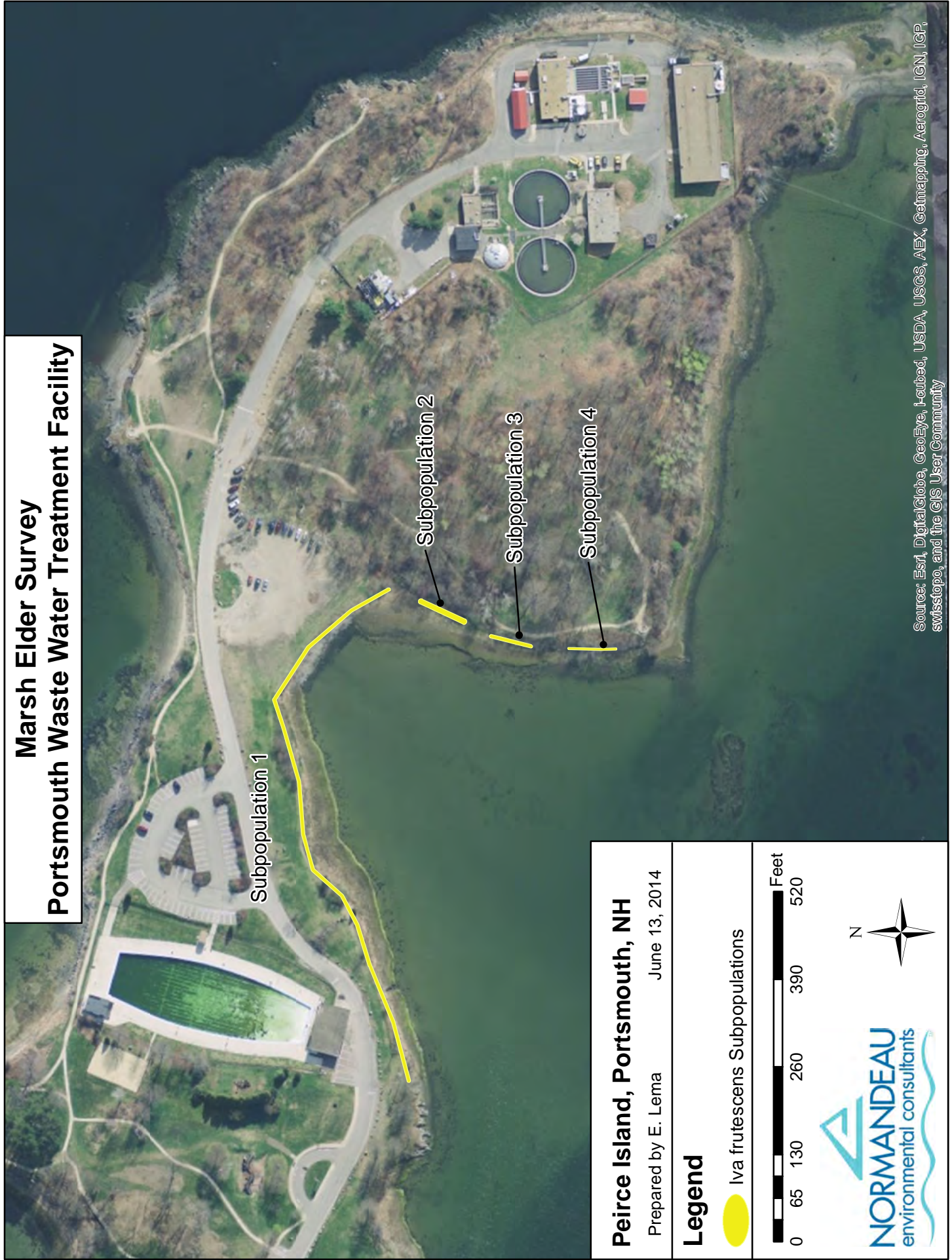
Dates documented

First reported: 1953

Last reported: 1996-04-01

APPENDIX B
Marsh Elder Location Map

Marsh Elder Survey Portsmouth Waste Water Treatment Facility



Subpopulation 1

Subpopulation 2

Subpopulation 3


Subpopulation 4

Peirce Island, Portsmouth, NH

Prepared by E. Lema

June 13, 2014

Legend

 Iva frutescens Subpopulations



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

APPENDIX C
Documenting Photographs



Photo 1: Subpopulation 1, western end. The marsh elder is the very narrow, low-growing shrub between the herbaceous saltmarsh species and the dense upland vegetation.



Photo 2: Subpopulation 1, along road. The marsh elder (narrow, gray band of vegetation) is very short in this location and is subject to roadside disturbance.



Photo 3: Subpopulation 2. This is the widest band of marsh elder in this population, likely due to the wide, gentle gradient of the shore.



Photo 4: Subpopulation 4. This subpopulation is the least numerous, with individuals overtaken by the adjacent upland vegetation (upper left).



Photo 5: Individual marsh elder showing growth characteristic of this population. New twigs are generally low on the plant, with dieback occurring on the upper branches.



Photo 6: Another series of individuals showing feeble growth.

APPENDIX D
NHB Data Form

Special Plant Survey Form

Obs Pt _____

Survey Site: Portsmouth Waste Water Treatment Fac. Date: 6/2/2014 Sourcecode: _____
 Surveyors: E. Lema Town: Portsmouth Quad name: _____
 Phone / e-mail: elema@normandeau.com, 207-518-6769

GPS coordinates: -70.744147 43.074326 Datum (e.g., NAD 83): NAD83 GPS Unit / model: Trimble Geo6000

Directions: (Map must be attached) along shore of south-facing cove at the main parking area for visitors to the grounds surrounding the Portsmouth Waste Water Treatment Facility.

Species **marsh elder (*Iva frutescens*)**

EONum: _____

IMPORTANT: What diagnostic features were observed that would separate it from similar species?

Specimen taken? **No** Photograph taken? **Yes** Photograph attached? **Yes**
 For specimens: Collector, collection #, repository: _____

Office Use Only ID reviewed by: _____ Date: _____ Based on: Description Photograph Specimen
 Conclusion: Verified Possible - needs follow-up Mis-identified

Phenology (%)	Population Size			Age Structure (%)	Vigor (%)
100 In leaf	Ramets	Genets**			
In bud		actual #		seedlings	Very feeble
In flower		estim. #		immature	Feeble
Immature fruit		1-10		vegetative sprouts	Normal
Mature fruit		11-50		1 st year	Vigorous
Seed dispersing		51-100		mature (established)	Exceptionally vigorous
	500	101-1000	500	senescent	vigorous
Vegetative reproduction*		> 1,000		age unknown	

*Describe vegetative reproduction: New growth originating from lower 1/3 of plant. _____
 Genets: How defined? Average size?: **Genets defined by individual clumps with stems arising from the same point – same as ramets.

% of plants with	Evidence of disease	Description
?		Unknown if disease or disturbance, see below
100	Injury / herbivory	All plants exhibit dieback, likely from disturbance and large saltwater intrusion.

Population Polygon (PP): If you drew a line around **all** the plants you found, how large an area would be within it?
Total Cover (TC): What is the total area covered by all the plants (as if they were growing next to one another)?

	PP	TC		
< 1 sq. meter	_____	_____	What % of the Population Polygon is covered by this species?	60 (= 100 * TC / PP)
1-5 sq. m.	_____	_____	Within the population polygon, how are the stems distributed?	Clumped (If "other", describe below)
5-10 sq. m.	_____	_____		
10-100 sq. m.	_____	_____		
100-1000 sq. m. (.1 ha)	500	300	How much time was spent searching in this area?	1 people searched for 180 min,
> 0.1 ha	_____	_____	How thoroughly was the Population Polygon searched?	Very well
actual area (if known)	_____	_____	Is there suitable habitat nearby that was not searched?	Yes

Comments on population size / distribution / etc.: **Confined to a characteristic narrow band along high tide line. All individuals exhibit marked dieback and low vigor. Potential saltwater intrusion from storm disturbance and sea level rise may be contributing to decline.**

Aspect	Slope	Light	Topo position	Moisture regime	Comments
N _____ NE	0-3%	80 Open	_____ Crest	_____ Inundated (hydric)	
X E _____ NW	X 3-8%	20 Partial	_____ Upper slope	_____ Saturated (wet-mesic)	
X S _____ SE	8-15%	_____ Filtered	_____ Mid-slope	X Moist (mesic)	
X W _____ SW	15-35%	_____ Shade	X Lower slope	_____ Dry-mesic	
_____ Flat	35%-vert.		_____ Bottom	_____ Dry (xeric)	
_____ Degrees	_____ degrees				

Elevation range: 0 to 1 meters Soil name (SCS) / Substrate: _____
 Bedrock type: _____

Associated natural community:	Satlmarsh (downslope) upland shrub community (upslope)	Releve completed?	No
Associated plant species (immediate vicinity):	saltmeadow cordgrass (<i>Spartina patens</i>), staghorn sumac (<i>Rhus hirta</i>), spearscale orache (<i>Atriplex patula</i>), Asian bittersweet (<i>Celastrus orbiculatus</i>)speckled alder (<i>Alnus incana</i> ssp. <i>rugosa</i>), goldenrod (<i>Solidago</i> sp.), turf species		
Dominant / characteristic species:	staghorn sumac (<i>Rhus hirta</i>), Asian bittersweet (<i>Celastrus orbiculatus</i>), saltmeadow cordgrass (<i>Spartina patens</i>)		
Invasive species:	Asian bittersweet (<i>Celastrus orbiculatus</i>)		
Sketch (habitat and/or overhead view). Include scale, north arrow, and where the plants are.			
See attached map generated from sub-meter accurate GPS data.			
Owner aware of the plant?	Unknown	Owner comments:	
Owner protecting the plant?	Unknown		
Evidence of disturbance:	Disturbance from adjacent mown roadside and maintained, unpaved parking/snow storage lot. Also disturbance from storm events likely.		
Management needs:	Gently grading the current upland cut bank may provide the marsh elder ecological space to move as the level of seawater gradually rises. Currently the species is unable to move upslope.		
The SIZE of the population: Summarize first page, provide additional details (e.g. on the distribution of the plants, how confident you are that most of the habitat was searched, thus most plants were located). Four subpopulations in close proximity to each other line the south-facing cove west of the treatment facility. The population forms a narrow band occupying the space between the upper tidal limit and the upland vegetation. Greater than 500 individuals were located.			
The current CONDITION of the population and its immediate habitat. Include reproductive activity and health of the plants, and dispersal, establishment, and maintenance of the population. Also evidence of disturbance in the immediate vicinity including known presence of invasive species. The population is large, but in poor condition. All of the individuals exhibit a large amount of dead stems, and the overall height of the population is greatly below the potential 8-11 feet that is cited in resource materials. Some flotsam was observed above the range of the population, indicating that there may be more frequent tidal inundation than is ideal for the species. The individuals are resprouting from the lower 1/3 of the stems, with the uppermost portions of nearly all stems dead. The upland side of the habitat is heavily invaded by Asian bittersweet (<i>Celastrus orbiculatus</i>), and many of the larger shrub species are overhanging the marsh elder.			
The condition of the LANDSCAPE in the area SURROUNDING the population (e.g. is the area an undisturbed, functioning natural ecosystem: current and past land use? fragmentation?). The landscape is maintained in a park-like setting and is frequented by many people including numerous dog owners. Development in the vicinity is limited to the paved access road to the WWTF and an unpaved lot immediately north of the population.			
Letter ranks summarizing the comments made above: A = Excellent, B = Good, C = Fair, D = Poor			
Size Rank:	B	Condition Rank:	D
Landscape Context Rank:	C	Overall Rank (A-D):	C
Your experience with this species (ranks are relative to):	<input checked="" type="checkbox"/> Local	<input type="checkbox"/> Statewide	<input type="checkbox"/> Regional <input type="checkbox"/> Global

APPENDIX E
Current Construction Plan



LEGEND

- PROPOSED CONTRACTOR AREA WITH PERIMETER FENCE
- PROPOSED RESTRICTED USE AREA
- PROPOSED TEMPORARY CONSTRUCTION WORK AREA
- - - - PROPOSED SAFETY FENCING
- n- PROPOSED PEDESTRIAN GATE IN SAFETY FENCING
- X- PROPOSED TRAFFIC FLAGGER

PLAN

SCALE: 1"=200'



OCT. 29, 2013

PEIRCE ISLAND WWTF - PORTSMOUTH, NH
WWTF FACILITY UPGRADE

PROPOSED CONSTRUCTION STAGING AREA



701 Edgewater Drive
Wakefield, MA 01880
Ph. (781) 246-5200

Memo



NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Vicki Chase, Normandeau Associates
25 Nashua Road
Bedford, NH 03301-5022

From: Amy Lamb, NH Natural Heritage Bureau
Date: 5/8/2015 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB15-1528

Town: Portsmouth Location: Tax Maps: Map 208 Lot 1
Description: The project entails work associated with the design and construction of the City of Portsmouth's Peirce Island Wastewater treatment facility.

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results:

Comments: Please provide more details regarding the extent of work in the areas where Marsh Elder is located. Please send site photos to amy.lamb@dred.nh.gov.

Plant species

Marsh Elder (*Iva frutescens*)

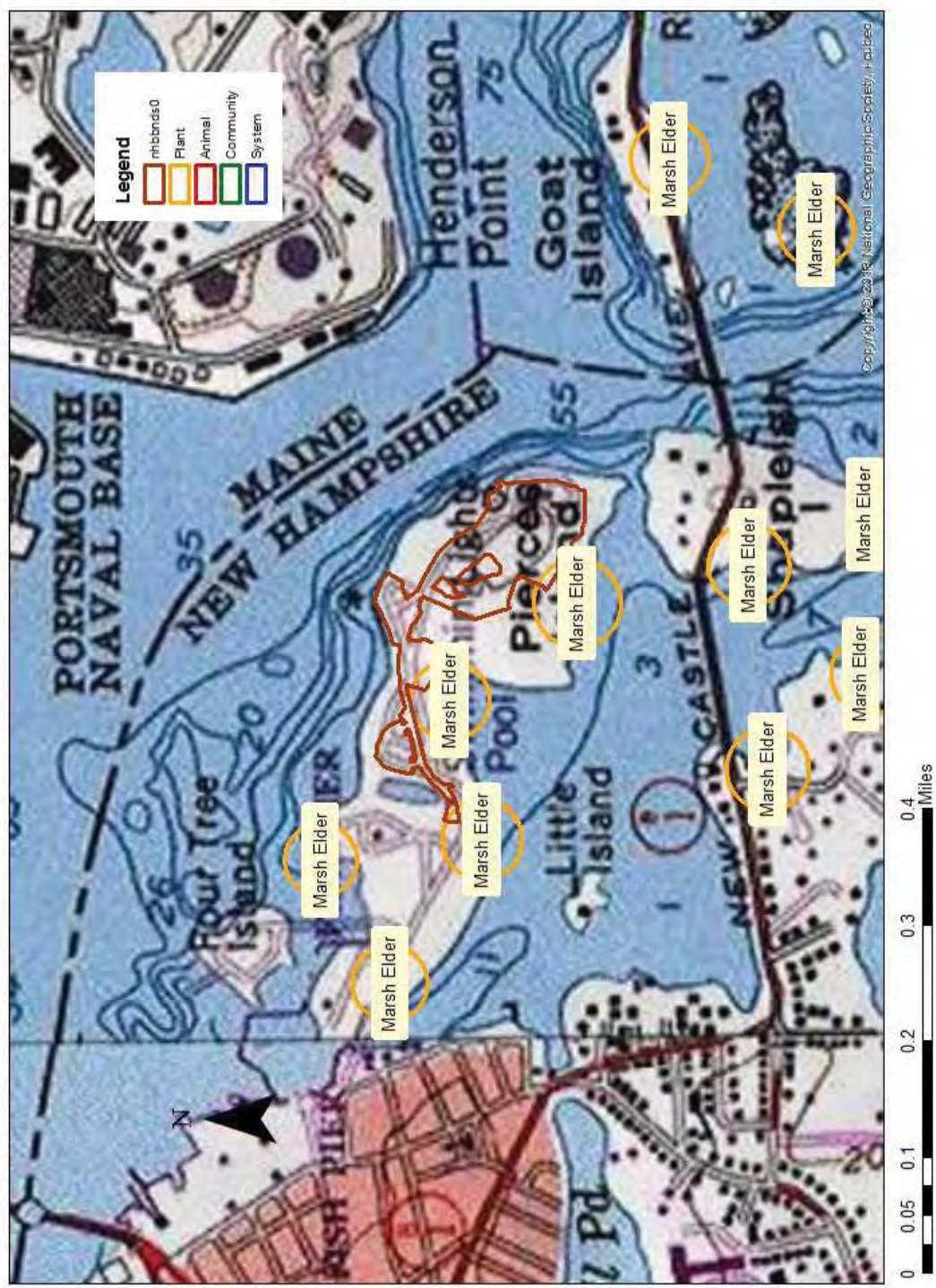
State¹ Federal Notes

T	--	Threats are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat; activities that eliminate plants, and increased input of nutrients and pollutants in storm runoff.
---	----	---

¹Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

NHB15-1528



**NEW HAMPSHIRE NATURAL HERITAGE BUREAU**

DRED - DIVISION OF FORESTS & LANDS
172 PEMBROKE ROAD, CONCORD, NH 03301
(603) 271-2214

To: Vicki Chase, Normandeau Associates, Inc., Environmental Analyst
From: Amy Lamb, Natural Heritage Bureau, Ecological Information Specialist
Date: June 11, 2015
Subject: NHB15-1528

This memo is a follow-up to NHB13-3237 and NHB15-1528, submitted for the review of the proposed improvements to the Peirce Island Wastewater Treatment Facility in Portsmouth, NH. The initial review (NHB13-3237) had indicated the presence of a state-threatened plant species, Marsh Elder (*Iva frutescens*), along the shoreline of Peirce Island in the vicinity of the project. The Natural Heritage Bureau (NHB) requested a survey for Marsh Elder in the project area.

The survey was conducted on June 2, 2014 by a botanist with Normandeau Associates, Inc., under contract to Altus Engineering and AECOM. The survey focused on the areas adjacent to the wastewater treatment plant, in areas of proposed disturbance and along the highest observable tideline, where the plant prefers to inhabit. The surveyor observed and recorded four subpopulations of Marsh Elder, located around an inlet on the south side of Peirce Island.

Based on the provided documents (site plans, survey report) and subsequent email communication, NHB does not expect that this project will impact the Marsh Elder. This determination is contingent upon the following:

- No construction activity or equipment staging will occur outside of erosion control limits, approximately 40 feet from the Marsh Elder populations.
- Construction safety fencing will be installed along either side of Peirce Island Road during construction.
- During the construction season (Dec 1- Apr 30), erosion control fencing will be installed around the seasonal construction trailer/staging area, located adjacent to the eastern end of Subpopulation 1.
- Before construction fencing is removed at the end of the construction season and/or upon termination of the project, care should be taken to remove any sediments that have collected along the fence, so that they do not run off with stormwater and impact the Marsh Elder.

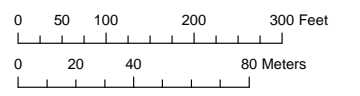
If these statements are no longer true of project, the dismissal of concerns would not apply. Should you have any further questions, or if the project should change, contact me at 603-271-2215 ext. 323 or at Amy.Lamb@dred.nh.gov

Exhibit D1

Partial Legend

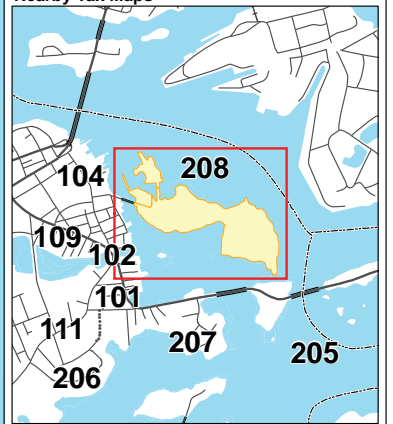
See the cover sheet for the complete legend.

- 7-5A** Lot or lot-unit number
- 2.56 ac Parcel area in acres (ac) or square feet (sf)
- 25 Address number
- 233-137 Parcel number from a neighboring map
- 68 Parcel line dimension
- SIMS AVE Street name
- Parcel/Parcel boundary
- Parcel/ROW boundary
- Water boundary
- Structure (1994 data)
- Parcel covered by this map
- Parcel from a neighboring map (see other map for current status)

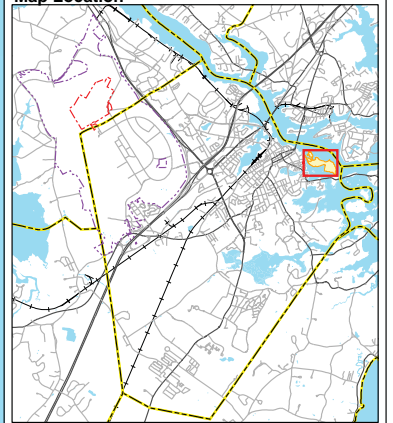


This map is for assessment purposes only. It is not intended for legal description or conveyance. Parcels are mapped as of April 1. Building footprints are 2006 data and may not represent current structures. Streets appearing on this map may be paper (unbuilt) streets. Lot numbers take precedence over address numbers. Address numbers shown on this map may not represent posted or legal addresses.

Nearby Tax Maps



Map Location



Portsmouth, New Hampshire
2014

Tax Map 208

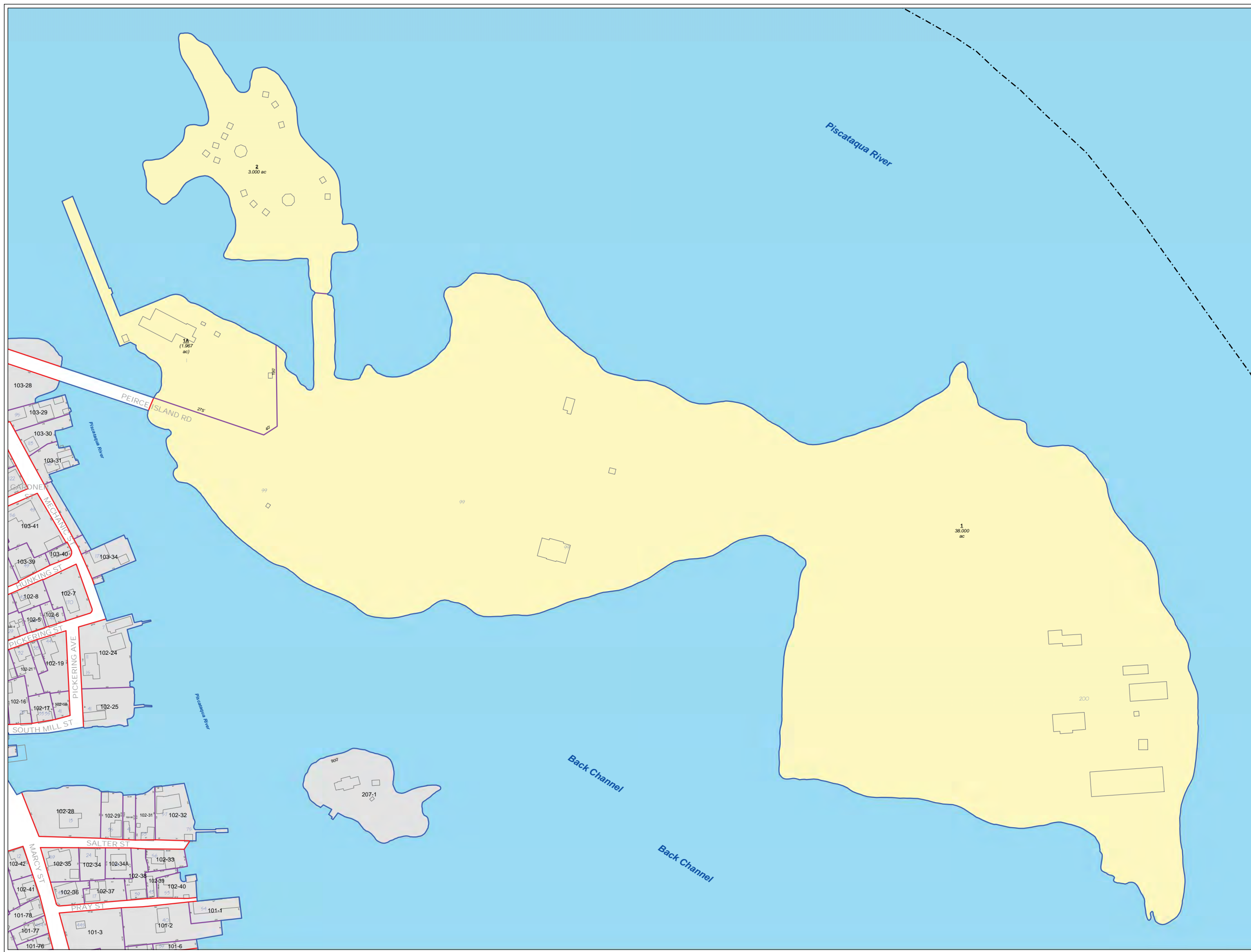


Exhibit D2

U.S. Postal Service™ *Erik Morsene*
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com

OFFICIAL USE

7012 3050 0001 5173
E2TS 0545 1000 050E 2T01

Postage	\$ 1.48
Certified Fee	3.30
Return Receipt Fee (Endorsement Required)	3.50 2.70
Restricted Delivery Fee (Endorsement Required)	2.00 0.00
Total Postage & Fees	\$ 6.48



Sent To *Peace Development Authority*
Street, Apt. No.,
or PO Box No. *55 International Drive*
City, State, ZIP+4
Portsmouth NH 03801

PS Form 3800, August 2006

See Reverse for Instructions



AECOM
701 Edgewater Drive
Wakefield, MA 01880
www.aecom.com

781 246 5200 tel
781 245 6293 fax

J-60301525

July 9, 2015
Pease Development Authority
55 International Drive
Portsmouth, NH 03801

Re: Wetlands Permit Applications
Peirce Island Wastewater Treatment Plant Improvements
City of Portsmouth Department of Public Works
680 Peverly Hill Road
Portsmouth, NH 03801

Dear Sir or Madam:

This letter is to inform you that two separate Wetlands Permit Applications will be filed with the NH Department of Environmental Services (DES) Wetland Bureau for two Wetlands and Non-Site Specific Permits for work in wetlands jurisdiction associated with the above referenced project. The proposed project will upgrade the existing Peirce Island Wastewater Treatment Facility to provide secondary treatment and nitrogen removal. Under state law RSA 482-A:3 I (d)(1), we are required to notify you about the application, which proposes work abutting your property.

Once they are filed, the permit applications, including plans that show the proposed project, will be available for viewing at the City Clerk's Office located at 1 Junkins Avenue or at the NHDES offices by scheduling a file review by calling (603) 271-8876, or online at <http://www4.egov.nh.gov/DES/FileReview/>.

Very truly yours,

Jon R. Pearson, P.E.
Vice President
AECOM

cc: T. Desmarais, City Engineer

Received by:

Signature

Geno Marconi
Printed Name

7/14/15
Date

Shoreland Tree Inventory Report Peirce Island Wastewater Treatment Facility City of Portsmouth, NH

Submitted By
Normandeau Associates, Inc.
30 International Drive, Suite 6
Portsmouth, NH 03801
603.319.5300
www.normandeau.com

July 10, 2014



INTRODUCTION

Normandeau Associates, Inc. (Normandeau), completed a tree inventory on the eastern end of Peirce Island in Portsmouth, New Hampshire. The tree inventory assessment was performed in the vicinity of the Peirce Island Wastewater Treatment Facility (WWTF) to document existing vegetative conditions within the protected shoreland zone for the purpose of supporting the needs of the City of Portsmouth's proposed upgrades to the WWTF. The reference line, in this case the HOTL, was established on July 3, 2013 and surveyed by Doucet Survey, Inc. (Appendix A). This report outlines the results of the tree inventory, methods used, and the basic regulatory requirements associated with the removal of vegetation from the site.

Vegetation is an important component in preserving and protecting water quality. Well vegetated shorelands that are comprised of native trees, shrubs, and ground cover provide significant benefits in terms of stormwater runoff. The Shoreland Water Quality Protection Act (SWQPA), RSA 483-B, serves to protect the water quality of New Hampshire's surface waters by managing the disturbance of shoreland areas. The protected shoreland includes lands located within 250 feet from the reference line of protected waterbodies. The reference line for coastal waters is the highest observable tide line (HOTL), which means a line defining the furthest landward limit of tidal flow. The HOTL was previously delineated by Normandeau.

The SWQPA attempts to maintain a shoreland buffer of natural vegetation to reduce the transportation of excess nutrients, sediments, and other pollutants into waterbodies. The SWQPA protects a 150-foot wide vegetated buffer adjacent to public waters such as lakes, ponds, rivers, and tidal waters. The vegetated buffer area is divided into two zones: the waterfront zone and the natural woodland buffer zone. The waterfront zone encompasses the first 50 feet beginning at the reference line, and the natural woodland buffer zone includes the area between 50 feet and 150 feet from the reference line.

Trees and saplings can be removed from the protected shoreland, though different vegetation removal limitations apply within the two zones described above. Removal of trees and saplings within the waterfront zone must be performed in accordance with a grid and point system. Removal of trees and saplings within the natural woodland buffer zone must comply with the unaltered state requirement. There are no limitations on tree removal in areas extending beyond 150 feet from the reference line.

METHODS

Normandeau biologists performed the tree inventory on May 29 and 30, 2014. All trees and saplings were included in the inventory, as well as large shrub species as measured at a height of 4.5 feet above the ground (on the uphill side). Vegetation was marked using green survey flagging and was located using a Trimble® GPS Pathfinder® ProXRT. Each specimen was identified to the species level (with the exception of apple trees [*Malus* spp.]), and a diameter at

breast height (DBH) measurement was recorded. When a cluster of trees or saplings were growing from one individual plant, a diameter was recorded for each stem within the grouping. In addition to performing the inventory of individual trees and saplings, a general description of understory vegetation within the survey area was also documented.

After conducting the field inventory, trees and saplings within the waterfront zone (first 50 feet beginning at the reference line) were assigned a score based on DBH. Tree and sapling scores were calculated using the following guidelines:

- Diameter of 3 inches or less = 1 point
- Diameter greater than 3 inches and including 6 inches = 5 points
- Diameter greater than 6 inches and including 12 inches = 10 points
- Diameter greater than 12 inches = 15 points

For specimens with multiple stems, a diameter was recorded for each individual stem as described above. To calculate the score for plants with multiple stems, the score for each stem was determined, and then a sum of all scores for the plant resulted in a total score for that specimen. For example, a plant with three stems measuring diameters of 3 inches (1 point), 5 inches (5 points), and 6 inches (5 points) was assigned a total score of 11 points. Data collected were supplemented by preliminary tree inventory measurements collected by surveyors from Doucet Survey, Inc. When appropriate, these measurements are included with those from Normandeau.



Normandeau staff GPS locating a multi-stemmed alder.

To complete the tree inventory assessment, the waterfront buffer zone was divided into 50-foot by 50-foot grid segments. The purpose of the grid segments was to determine the tree and sapling score within each grid. Under the SWQPA, a minimum tree and sapling score of 50 points must be maintained within each grid segment.

A general characterization of the understory within the waterfront buffer as well as the natural woodland buffer was recorded during the survey. This included an account of dominant species as well as the presence of any invasive species that were not recorded during the tree inventory.

RESULTS

The overall vegetative site conditions at the WWTF consisted of a relatively open herbaceous understory amidst a canopy of predominantly deciduous trees. The species observed within the 50-foot waterfront zone are displayed in Table 1 below. The most dominant species within the waterfront zone were staghorn sumac (*Rhus hirta*) and black cherry (*Prunus serotina*). A total of 47 stems of staghorn sumac were measured within the waterfront zone with an average diameter of 5.1 inches. A total of 9 stems of black cherry were documented within the waterfront zone with an average diameter of 10.6 inches. Representative photographs of the site were taken to document the existing conditions and are provided in Appendix B.

Table 1. Trees and saplings inventoried within the waterfront zone.

Scientific Name	Common Name
<i>Acer platanoides</i> *	Norway maple
<i>Acer rubrum</i>	Red maple
<i>Alnus incana ssp. rugosa</i>	Speckled alder
<i>Betula papyrifera</i>	Paper birch
<i>Betula populifolia</i>	Gray birch
<i>Eleagnus umbellata</i> *	Autumn olive
<i>Juniperus virginiana</i>	Eastern red cedar
<i>Malus sp.</i>	Apple
<i>Populus tremuloides</i>	Quaking aspen
<i>Prunus serotina</i>	Black cherry
<i>Prunus pensylvanica</i>	Pin cherry
<i>Quercus bicolor</i>	Swamp white oak
<i>Quercus rubra</i>	Northern red oak
<i>Rhamnus cathartica</i> *	Common buckthorn
<i>Rhus hirta</i>	Staghorn sumac
<i>Sorbus americana</i>	American mountain ash

*These species are considered invasive and therefore not included in the point calculations.

As detailed in the methods section of this report, the waterfront zone was divided into 50-foot by 50-foot grid segments, with a total of 11 grids located in the review area. The scores within these grid segments ranged from a low of 10 points in Grid 11 to a high of 80 points in Grid 3. Three invasive species were documented during the inventory: Norway maple (*Acer platanoides*), autumn olive (*Eleagnus umbellata*), and common buckthorn (*Rhamnus cathartica*). Though these species were noted, invasive species are not included in scoring process or the attached figure. All grids and their corresponding scores are depicted in the Tree Inventory Map provided in Appendix C.

Understory vegetation was estimated throughout the survey area, including both the waterfront buffer and the natural woodland buffer. The portion of the project area within the waterfront

buffer along the southern end of the project area had a very dense understory comprised largely of invasive species such as Asian bittersweet (*Celastrus orbiculatus*), barberry (*Berberis* sp.), and non-native honeysuckle (*Lonicera* sp.). Excluding the stand of staghorn sumac at the southern tip of the island, understory vegetation in this portion of waterfront buffer exceeded 90% cover. The sumac stand along the southern border has an understory with approximately 70% cover, comprised of many small staghorn sumac and herbaceous species such as Canada goldenrod (*Solidago canadensis* var. *canadensis*), American pokeweed (*Phytolacca americana*), garden yellow-rocket (*Barbarea vulgaris*), and bird vetch (*Vicia cracca*). The waterfront buffer in the proposed staging area on the north side of the project area is maintained as a public space and includes common turf species as well as poison-ivy (*Toxicodendron radicans*) and common blackberry (*Rubus allegheniensis*).

The natural woodland buffer consists of dense, unmaintained understory near the treatment facility, and maintained turf/cleared understory as distance from the facility increased. Unmaintained areas included a very dense Asian bittersweet component with various non-native herbs such as garlic-mustard (*Alliaria petiolata*), common burdock (*Arctium minus*), honeysuckle, turf species, and native spotted touch-me-not (*Impatiens capensis*). Total cover in this area is approximately 70%. Maintained areas include those adjacent to the numerous trails throughout the facility grounds, and contained approximately 30% cover (excluding mown turf species), primarily consisting of common burdock, dame's-rocket (*Hesperis matronalis*), and goldenrods (*Solidago* sp.).

DISCUSSION

The SWQPA permits the removal of trees and saplings within the protected shoreland zone provided specific performance standards are met. Within the waterfront zone, each grid segment must have a minimum score of 50 points. The inventory assessment demonstrated that several grid segments (2, 4, 5, 8, 9, and 11) had a score of less than or equal to 50 points, which indicates that trees and saplings cannot be removed from those areas without supplemental plantings. If it becomes necessary to remove trees below the point threshold, mitigation through supplemental plantings should be considered. The remaining five grids exhibited scores of over 50 points, thus tree or sapling removal without supplemental plantings would be permitted within these areas provided that the total score does not drop below 50 points per grid threshold. Within the waterfront buffer zone, branches may be trimmed, pruned, and thinned to the extent necessary to protect structures, maintain clearances, and provide views. However, the removal of branches for viewshed purposes is limited to the bottom half of trees and saplings. Native ground cover vegetation, generally less than 3 feet in height, is also protected within the waterfront zone. Dead, diseased, or unsafe trees within the waterfront zone may be removed provided that damage to surrounding trees and natural ground cover is minimized and erosion and sedimentation is controlled.

Within the natural woodland buffer zone (between 50 feet and 150 feet of the reference line), the SWQPA states that 25 percent of this area must remain in an unaltered state. As defined, an “unaltered state” means that native vegetation is permitted to grow without cutting, limbing, trimming, pruning, mowing, or other similar activities except as necessary for renewal or to maintain or improve plant health. Dead, diseased, or unsafe trees, limbs, saplings, or shrubs that pose an imminent hazard to structure or are capable of causing human injury may be removed from the natural woodland buffer zone, even in areas that are to remain in an unaltered state.

Understory throughout the woodland buffer and the waterfront buffer is dominated by non-native vegetation, including primarily Asian bittersweet. Therefore, vegetation removal is not restricted to the 50 point score in the waterfront buffer or groundcover maintenance of 25 percent in the natural woodland buffer where invasive species are present.

APPENDIX A
Site Plan



LEGEND

- PROPOSED CONTRACTOR AREA WITH PERIMETER FENCE
- PROPOSED RESTRICTED USE AREA
- - - - - PROPOSED TEMPORARY CONSTRUCTION WORK AREA
- - - - - PROPOSED SAFETY FENCING
- PROPOSED PEDESTRIAN GATE IN SAFETY FENCING
- ✘ PROPOSED TRAFFIC FLAGGER

PLAN

SCALE: 1"=200'



<p>OCT. 29, 2013</p>	<p>PEIRCE ISLAND WWTF - PORTSMOUTH, NH WWTF FACILITY UPGRADE</p> <p>PROPOSED CONSTRUCTION STAGING AREA</p>	<p>AECOM</p> <p>701 Edgewater Drive Wakefield, MA 01880 Ph. (781) 246-5200</p>
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APPENDIX B
Representative Photographs



**Canopy trees and unmaintained herbaceous understory.
Photo taken 5/30/2014 by E. Lema.**



**Interior portion of the site with an open and maintained grass understory.
Photo taken 5/30/2014 by E. Lema.**



**Stand of staghorn sumac (*Rhus hirta*) at the southern extent of the site.
Photo taken 5/29/2014 by E. Lema.**



**Example of a specimen with multiple stems.
Photo taken 5/29/2014 by E. Lema.**

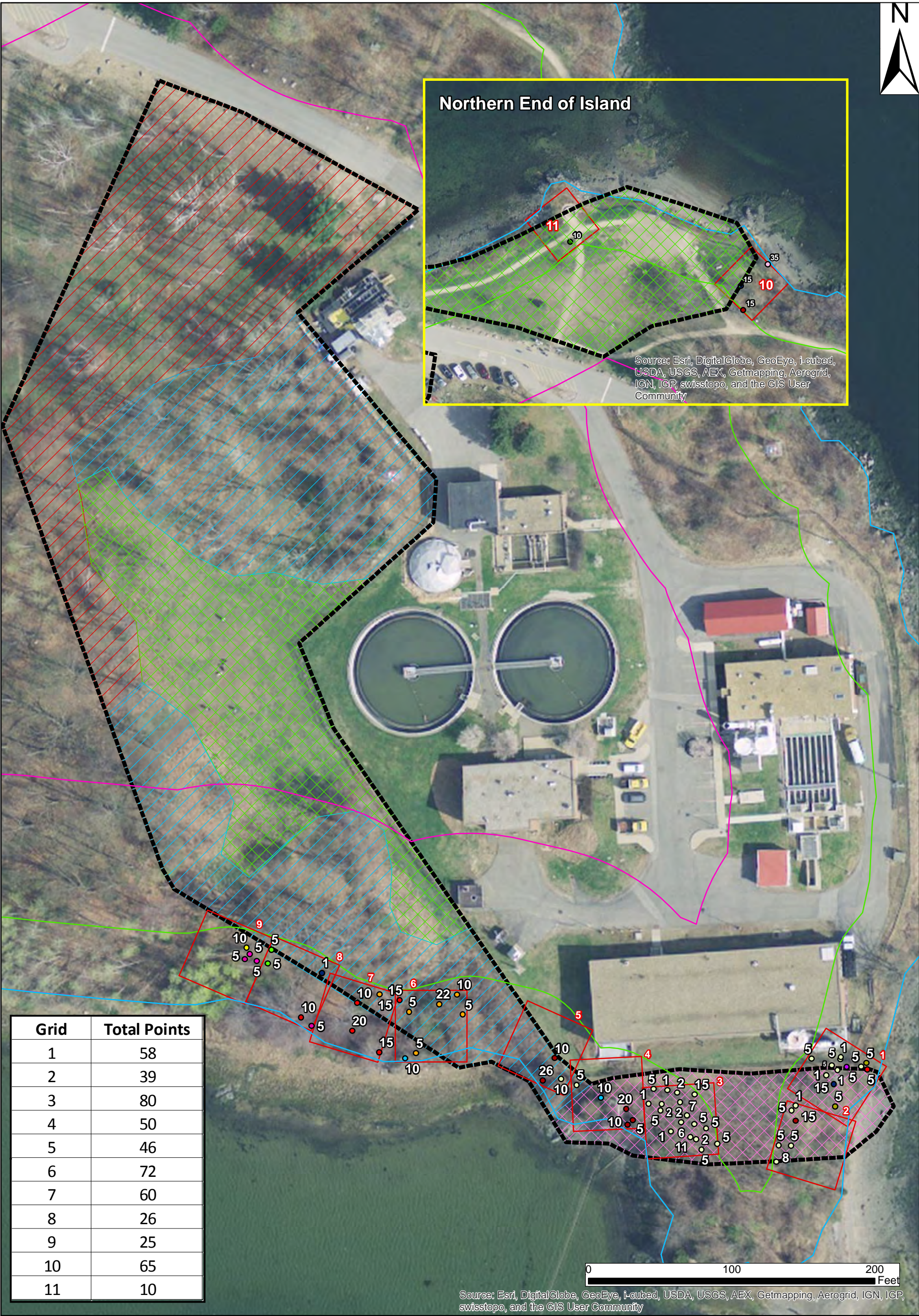
APPENDIX C
Tree Inventory Map



Northern End of Island



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Grid	Total Points
1	58
2	39
3	80
4	50
5	46
6	72
7	60
8	26
9	25
10	65
11	10

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

<p>Project No: 23264</p> <p>Drawn By: elema</p> <p>Date: 7/9/2014</p>	<ul style="list-style-type: none"> ● Acer rubrum ● Alnus incana ssp. rugosa ● Betula papyrifera ● Betula populifolia ● Juniperus virginiana ● Malus sp. ● Populus tremuloides ● Prunus serotina ● Prunus pensylvanica ● Quercus bicolor ● Quercus rubra ● Rhus hirta ● Sorbus americana <p>— Highest Observable Tide</p> <p>— 50' Waterfront Buffer</p> <p>— Shoreland 50'x50' Grid</p> <p>— 150' Natural Woodland Buffer</p> <p>■ Staging Area</p>	<p>Groundcover Classes:</p> <ul style="list-style-type: none"> 10% Cover, Turf Species 30% Mowed/Maintained Veg. Cover 70% Understory Cover 90% Understory Cover (100% Invasives) 	<p>Tree and Sapling Inventory Portsmouth Wastewater Treatment Facility Peirce Island Portsmouth, NH</p> <p>25 Nashua Road Bedford, NH 03110 (603) 472-5191 www.normandeau.com</p>
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Photo 7 Proposed revetment 1 - ongoing erosion.



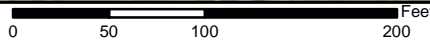
Photo 8 Proposed revetment 1, view north



Photo 9 Proposed revetment 2 - southeast corner of facility



Photo 10 proposed Revetment 3 - No impacts below HOTL proposed.



CITY OF PORTSMOUTH
 PORTSMOUTH, NEW HAMPSHIRE
 PEIRCE ISLAND WASTEWATER TREATMENT FACILITY

EXHIBIT F - PHOTO LOCATIONS 1

Date : 5/15/2015
 Drawn By: volase
 Project No: 8675309

SCALE: 1:1,200



MAY 2015

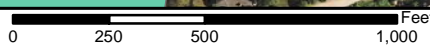


NHEST600031001-02-02
LOWER PISCATAQUA RIVER, SOUTH

Impairments:
 Enterococcus (TMDL Approved)
 Estuarine Bioassessments (TMDL Priority Low)
 Polychlorinated biphenyls (TMDL Priority Low)
 Dioxin (TMDL Priority Low)
 Mercury (TMDL Priority Low)

NHEST600031001-05
BACK CHANNEL

Impairments:
 Light Attenuation Coefficient (TMDL Priority Low)
 Nitrogen (TMDL Priority Low)
 Estuarine Bioassessments (TMDL Priority Low)
 Polychlorinated biphenyls (TMDL Priority Low)
 Dioxin (TMDL Priority Low)
 Mercury (TMDL Priority Low)

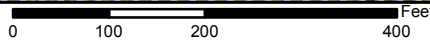


Project No: 8675309	Drawn By: vclase	Date: 5/1/2015
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CITY OF PORTSMOUTH PORTSMOUTH, NEW HAMPSHIRE PEIRCE ISLAND WASTEWATER TREATMENT FACILITY		
EXHIBIT G - IMPAIRED WATERS		
SCALE: 1:6,000	 <small>25 Nashua Road Bedford, NH 03110 (603) 472-5191 www.normandea.com</small>	JUNE 2015



Project No: 8675309	Drawn By: volase	Date: 5/1/2015		CITY OF PORTSMOUTH PORTSMOUTH, NEW HAMPSHIRE PEIRCE ISLAND WASTEWATER TREATMENT FACILITY	
<ul style="list-style-type: none"> Tier 1 Top-ranked in NH Tier 2 Top-ranked in region Tier 3 Supporting Landscape 			EXHIBIT H - WAP PRIORITY AREAS		
Data Source: 2010 Wildlife Action Plan, NHFG			SCALE: 1:6,000	 25 Nashua Road Bedford, NH 03110 (603) 472-5191 www.normandeau.com	MAY 2015



FEMA FLOOD ZONE

 AE - Base flood elevation determined

FEMA FLOODPLAIN LINE FROM "DIGITAL FLOOD INSURANCE RATE MAP DATABASE, ROCKINGHAM COUNTY, NEW HAMPSHIRE". MAP 33015C, PUBLISHED 5-17-2005.

Date : 5/19/2015
 Drawn By: volase
 Project No: 8675309

CITY OF PORTSMOUTH
 PORTSMOUTH, NEW HAMPSHIRE
 PEIRCE ISLAND WASTEWATER TREATMENT FACILITY

EXHIBIT I - FEMA FLOODPLAIN

SCALE: 1:2,400


 NORMANDEAU
 environmental consultants
 25 Nashua Road Bedford, NH 03110
 (603) 472-5191 www.normandeau.com

MAY 2015



Exhibit J

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES

State of New Hampshire, Department of Cultural Resources
19 Pillsbury Street, Concord, NH 03301-3570
TDD Access: Relay NH 1-800-735-2964
www.nh.gov/nhdhr

603-271-3483
603-271-3558
FAX 603-271-3433
preservation@dcr.nh.gov

May 27, 2014

Jon Pearson
AECOM
701 Edgewater Drive
Wakefield, MA 01880

Re: Project Report Review: *Results of Phase I Intensive Archaeological Survey Peirce Island Wastewater Treatment Facility Portsmouth (Rockingham County), New Hampshire*. Prepared by Independent Archaeological Consulting, LLC. (DHR #5070)

Dear Mr. Pearson:

The Division of Historical Resources (Division) is in receipt of your request for review for the report prepared by Dr. Wheeler of Independent Archaeological Consulting for the project cited above. The Division concurs with the recommendations provided and understands that the project proponent have designed the project to avoid two sensitive areas containing "middens". The report is acceptable as written.

In accordance with the National Historic Preservation Act of 1966 (P.L. 89-655), as amended, and as implemented by regulations of the Federal Advisory Council on Historic Preservation ("36 CFR Part 800: Protection of Historic Properties"), the New Hampshire Division of Historical Resources/State Historic Preservation Office has reviewed the undertaking referenced above to identify potential effects on properties listed, or potentially eligible for listing, in the National Register of Historic Places.

Based upon the information provided in the above cited report, it has been determined that no further evaluative studies are required within the major portion of the project area and that Areas 5 and 6 contain sensitive archaeological areas that need avoidance through protective measures, these areas include two identified middens and a probable remnant of the Fort Washington earthworks slightly east of Area 6. The Division understands that the area will be fenced for protection and an archaeologist will monitor placement of fencing.

If archeological resources are discovered or affected as a result of project planning or implementation, the Division of Historical Resources is to be consulted on the need for appropriate evaluative studies, determinations of National Register eligibility, and mitigative measures (redesign, resource protection, or data recovery) as required by federal law and regulations.

Sincerely,

Richard Boisvert, State Archaeologist
Deputy State Historic Preservation Officer

RAB:emf

Cc: EPA/DES
Kathleen Wheeler, IAC



NHDES PRELIMINARY MITIGATION AGREEMENT FORM

The City of Portsmouth ("Applicant"), represented by Terry Desmarais, and the Department of Environmental Services ("DES") hereby agree to the process described below to streamline the review of Applicant's application for a permit under RSA 482-A.

A Preliminary Mitigation package is being submitted with the Standard Dredge and Fill Application in accordance with Env-Wt 501.06 and Env-Wt 800. The package contains the information required as outlined in the DES Compensatory Mitigation Checklist.

The preliminary mitigation proposal type is (please check one or more types):

- Wetland Restoration
Upland Buffer Invasive Species Management Plan
Wetland Creation
Payment into the Aquatic Resource Mitigation Fund following consideration of the three options noted above and determining them to not be feasible for complete mitigation.

By executing this agreement, DES agrees to accept Applicant's Preliminary Mitigation proposal for purposes of determining whether the application is administratively complete. However, the application will not be deemed complete if other basic information is missing such as the required plans, attachments, and/or fees.

Applicant agrees to submit the final mitigation plans to DES for review by September 1, 2015 Date

Applicant and DES, by mutual agreement authorized under RSA 482-A:3, XIV(c)(3), agree to extend the response time for DES to review the final mitigation proposal, once received, to 60 days from receipt of the final mitigation plans.

The applicant agrees that if the information required under Env Wt 800 is not submitted by the date specified in this agreement or 120 days from a Request For More Information by DES, the application will be denied.

I, Applicant Authorized Agent [check one] hereby certify that the information submitted with the application meets the Preliminary Mitigation requirements for the DES Wetlands Bureau to understand the nature and appropriateness of the proposed mitigation.

Terry Desmarais, City Engineer Date

7/1/15 Date

The NHDES Wetlands Bureau agrees, by the signature below, that the information submitted meets the Preliminary Mitigation requirements, and that technical review of the mitigation proposal will not commence until the required items are submitted before or on the date noted above.

NHDES Wetland Mitigation Coordinator

7/1/15 Date

May 12, 2015
NHDES Meeting Minutes
Portsmouth Peirce Island WWTF NHDES Wetland Permit
Pre-Application Meeting

NHDES Portsmouth Office
In Attendance:

Terry Desmarais, City of Portsmouth
Peter Britz, City of Portsmouth
Dori Wiggin, NHDES
Jon Pearson, AECOM
Erik Meserve, AECOM
Vicki Chase, Normandeau Associates
Adele Fiorello, Normandeau Associates
Jeff Clifford, Altus Engineering

Purpose of the meeting: Introduce the project to NHDES coastal office personnel, discuss proposed revetments, fee, and mitigation.

Terry Desmarais provided an overview of the proposed project. The City of Portsmouth has two wastewater treatment facilities, one at Peirce Island and one at Pease. The facility at Peirce Island provides only chemically enhanced primary treatment to wastewater. The City is under a consent decree (Administrative Order) from the USEPA to upgrade the Peirce Island facility to provide secondary treatment.

The proposed upgrade would involve demolition of several buildings and construction of new buildings, which include a new headworks; a new gravity thickener; replacement of the existing Administration Building with a new Solids Building; a new two-stage Biological Aerated Filter (BAF) system; and replacement of the existing Solids Processing Building with a new Operations/Lab Building. Construction will take approximately three years and the plant would be operational throughout the duration of construction.

There are three areas proposed for construction staging beyond the immediate area surrounding the wastewater treatment facility, all of which lie partially within the tidal buffer. These are an existing "dog park", a grassed area north of the treatment plant facility; the "snow dump", a dirt parking lot opposite the dog park, used seasonally for parking and seasonally for the City's snow disposal, and the paved parking lot for the public swimming pool. There was discussion of these staging areas and whether use of developed upland tidal buffer zone for staging would require a wetland permit. D. Wiggin stated it depended on the use – parking of construction worker vehicles would not require a permit, but construction trailers or any placement of fill piles for temporary storage within the tidal buffer would require a permit. She indicated that the dog park is the most sensitive of these areas, and that it would be helpful to have a detailed list of possible uses that could occur within the staging areas.

Fee

There was discussion of the application fee. Under the law, impacts to previously developed tidal buffer (alone) are reviewed as a minimum impact permit, and require a \$200 fee. Impacts to undeveloped tidal buffer

constitute a major impact permit, and require a \$0.20/sf fee. Impacts to tidal waters or freshwater wetlands require a \$0.20/sf fee. Because the application would be for a major impact permit, if all of the impacts required a \$0.20/sf fee, the total fee would be \$27,765. D. Wiggin stated that as the project is for the public benefit, it would be fair to pay a \$0.20/sf fee for impacts to undeveloped tidal buffer and other jurisdictional resources, and a blanket \$200 fee for impacts to developed tidal buffer. This would bring the fee to \$5,120. D. Wiggin will confirm with others at NHDES that this approach is acceptable.

Revetments

The three proposed revetments were described with an explanation of why they are needed at each location. Two of the revetments (Revetments 1 and 2) will involve impacts to tidal waters (below HOTL) and to public waters (below MHW). The revetments are needed to address existing erosion and to protect existing and proposed infrastructure. Because of the proposed fill in public waters, the permit would require approval by the Governor and Executive Council (G&C). Because the G&C approves what is on the approved permit as it is written, if the permit for the entire project needed to be amended (as design is advanced or if design changes during construction) NHDES would need to go back to G&C for approval again. To minimize any unnecessary delays, a wetland permit application for the revetments only could be submitted, and an application for all other elements of construction could be submitted separately. As with the approach for reducing the fee, D. Wiggin will confirm that dividing the work into two permit applications is acceptable.

Mitigation

As a major impact permit, the permanent impacts to jurisdictional resources (except developed tidal buffer) require mitigation. The City has developed a detailed landscaping plan to mitigate for impacts to the undeveloped tidal buffer. D. Wiggin emphasized that the existing functions and values provided by the undeveloped tidal buffer, along with the functions and values that will be mitigated for by the planting plan, should be identified.

Summary

The City will submit two wetland permit applications. Permit 1 will be for impacts to undeveloped tidal buffers, developed tidal buffers, and a small temporary impact to freshwater wetland. These impacts are all associated with the construction of improvements at the plant. The fee for Permit 1 will be calculated as \$0.20 for all undeveloped tidal buffer and freshwater wetland impacts, and a \$200 fee for all developed tidal buffer impacts, and will total approximately \$5,000. Permit 2 will be for the revetment construction, and will include all proposed work in Public Waters that will require approval by the G&C.

The permit applications will be submitted to the Portsmouth Conservation Commission for the June 10, 2015 meeting. It is anticipated that they will be submitted to NHDES shortly thereafter.