



**Wetland Permit Application
Peirce Island Wastewater Treatment Facility
Protective Revetments
Portsmouth, NH**

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

Submitted On:
June 30, 2015

Prepared By:
Normandeau Associates, Inc.
25 Nashua Road
Bedford, NH 03110

www.normandeau.com

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Exhibits

- Exhibit A - Locus
- Exhibit B - “Marsh Elder (*Iva frutescens*) Survey Report”
- Exhibit C1 - NHB Datacheck Results Letter, NHB15-1528
- Exhibit C2 – NHB Memorandum 6-11-2015
- Exhibit D1 - Tax Map
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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, impacts within 100' of the highest observable tide line are subject to wetlands jurisdiction. This application addresses proposed temporary and permanent impacts to tidal waters and to tidal buffers in conjunction with construction of three revetments along the shoreline to protect existing and proposed infrastructure. The proposed construction is anticipated to take three years. The work is expected to be performed with an excavator from the top of bank and erosion controls will be maintained during the work. Any areas disturbed will be stabilized with crushed stone or riprap underlayer stone placed over exposed excavated soils. Work will be performed only when the work is above water level and in the dry. Due to the rocky nature of the shoreline, the anticipated erosion controls will be wood chip net enclosed log, which will either be ballasted in place during the work, or placed and removed each day work is performed during the dry portion of the tidal cycle.

The City is submitting two applications for the project to NHDES. A second application will address impacts to tidal buffers and freshwater wetlands proposed in conjunction with facility improvements.



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

<i>Administrative Use Only</i>	<i>Administrative Use Only</i>	<i>Administrative Use Only</i>	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 <input type="checkbox"/> NA		STREAM WATERSHED SIZE: 990 s miles <input type="checkbox"/> NA	
LOCATION COORDINATES (If known): 70°44'23"W 43°4'24"N		<input type="checkbox"/> Latitude/Longitude <input type="checkbox"/>	
UTM <input type="checkbox"/> 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 on Peirce Island. Revetments along the shoreline to protect existing and proposed infrastructure are proposed at three locations.

4. SHORELINE FRONTAGE

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

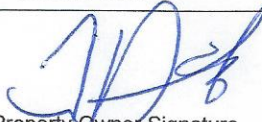
ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize DES to communicate all matters relative to this application electronically

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	<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	1040 sf / 150 lf <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)	2,125 sf <input type="checkbox"/> ATF	320 <input type="checkbox"/> ATF
Previously-developed upland in TBZ	<input type="checkbox"/> ATF	<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	3,770 sf / 150 lf	320 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) 4,090 sq. ft. X \$0.20 = \$ 818

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 = \$ 818

The Application Fee is the above calculated Total or \$200, whichever is greater = \$ 818

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 (NH DES), 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. Because of the construction that will occur relatively close to the shoreline, protective revetments are proposed to stabilize the shoreline at three locations.

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

The work proposed was selected from various alternatives to be the least impacting to resource areas and using large rock for stability with optimum life expectancy to minimize future repeat disturbance.

The existing site, which is characterized by very steep well drained bedrock banks at these locations cannot be vegetatively stabilized. The wave action and seawater inundation that periodically occur during high tides, storm surges and sea level rise will require revetment or wall type stabilization.

The site is bedrock and semi-protected from wave action and this has allowed a steeper than normal 1.25H:1V revetment slope by using large stone to better match the existing slopes and minimize tide zone encroachment. This will be a locally sourced natural material consistent with the adjacent natural bank which has bedrock outcrops and exposed boulders. The riprap stone is durable, resistant to freeze-thaw deterioration and is expected

to have a much longer life cycle than options such as concrete mats. Stone riprap bank armor at mooring structures is typical at marine terminals on the Piscataqua River and it has a track record of good performance.

Other alternatives considered, but found to have a greater impact, included cast-in-place reinforced concrete walls; stone filled gabion baskets (prone to corrosion failure); and precast concrete mats (prone to failure, unsuitable at these steep angles, limited wave resistance, concrete deterioration, light concrete color on otherwise dark bedrock/rocky shoreline).

(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). Wetlands proposed to be impacted for the proposed revetments include intertidal rocky shore and undeveloped and developed tidal buffer adjacent to the shoreline (Exhibit F – Photographs)

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

1,645 square feet of impact is proposed to the rocky shore intertidal wetland (605 square feet of which is in public waters) and 2,445 square feet of undisturbed tidal buffer will be impacted for reconstruction of the revetments. All wetlands and tidal buffers lie within the watershed of the Piscataqua River.

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

The shoreline proposed to be impacted is typical of the region.

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

1,645 square feet of intertidal rocky shoreline is proposed to be impacted by the proposed project. Of this, 605 square feet of permanent impact to public waters is proposed for Revetments 1 and 2. Revetments 1, 2, and 3 involve impacts to undeveloped tidal buffer upslope of the highest observable tide line. Details of the impacts are depicted on the attached plan set, "Peirce Island Wastewater Treatment Facility Upgrade, May 2015".

(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. Work below the highest observable tide line will be limited in nature and motorized and non-motorized vessels will be able to pass this area during construction.

(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. The proposed revetments along the shoreline will be constructed from natural boulders rather than from concrete or gabions, which would have a less natural appearance for members of the public viewing the shoreline from boats or opposite shorelines.

(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;

Public rights of passage will not be interrupted by the revetment construction.

(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;

The proposed project will not alter the surface waters, ocean waters or groundwater flow and the stabilization of potential storm damage will benefit water quality. Water quality in the Piscataqua River will be protected by all appropriate erosion and sediment controls.

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

The proposed revetments will not cause increases in flooding, erosion, or sedimentation. Revetment 1 will address ongoing erosion along the shoreline. 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;

Stone revetments are very similar to the naturally occurring rocky shoreline and tend to absorb wave energy by the porous nature of the dry set stones set on a slope, thereby minimizing wave reflection. The NHDES Wetlands rules do indicate that stone revetments (riprap) are superior to seawalls in providing storm protection with far less wave reflection than seawalls.

(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 and tidal wetlands such as are proposed, there would be small alterations to the entire shoreland. Peirce Island has approximately 7,100 linear feet of shoreline. The project proposes permanent alterations to approximately 150 linear feet of the total shoreland, or approximately 2%. There are approximately 433,000 square feet of undeveloped tidal buffer on Peirce Island, of which 2,125 square feet, or 0.5%, is proposed to be permanently impacted by the proposed revetments.

(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 revetments will protect the facility and the Piscataqua River from future shoreline erosion.

(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.

Env-Wt 404.04 Riprap

As a bank stabilization project, the proposed revetments must demonstrate compliance with Env-Wt 404.04, Riprap.

(a) Rip-rap applications shall be considered only where the applicant demonstrates that anticipated turbulence, flows, restricted space, or similar factors render vegetative and diversion methods physically impractical.

The Peirce Island Wastewater Treatment Facility, built in the 1960's, lies along the shoreline of Peirce Island. Space constraints of the proposed improvements, and the desire to keep the project footprint very similar to its footprint today, limit the opportunities for expansion on the Island. The revetments are necessary to facilitate construction within the facility footprint and to protect the facility from future erosion.

(b) Applications for rip-rap shall include:

- (1) Designation of a minimum and maximum stone size;**
 - (2) Gradation;**
 - (3) Minimum rip-rap thickness;**
 - (4) Type of bedding for stone;**
 - (5) Cross-section and plan views of the proposed installation;**
 - (6) Sufficient plans to clearly indicate the relationship of the project to fixed points of reference, abutting properties, and features of the natural shoreline;**
- All of the elements above are depicted on Plan Sheets 00 C-118 and 00 C 119 of the Plan set Peirce Island WWTF Upgrade, May 29 2015.

(7) A description of anticipated turbulence, flows, restricted space, or similar factors that would render vegetative and diversion methods physically impractical.

Given the steepness of the existing slope and exposure to wind and tidal action, vegetative stabilization is not feasible at these locations.

(c) Applications to use rip-rap adjacent to great ponds or water bodies where the state holds fee simple ownership shall include a stamped surveyed plan showing the location of the normal high water shoreline and the footprint of the proposed project.

The State of New Hampshire holds the title to land below tidal waters below a depth of 4' NAVD88, the Mean High Water elevation. The attached plans depict plan and section views of the proposed project with Mean High Water.

(d) Rip-rap shall be located shoreward of the normal high water shoreline, where practical, and shall not extend more than 2 feet lakeward of that line at any point.

As the proposed revetments are adjacent to a tidal river, and not a lake, Env-Wt 404.04 (c) does not apply to this project. For this project, the riprap slopes have been steepened to the extent possible. Portions of revetments 1 and 2 extend further than 2 feet into tidal waters. Revetment 3 does not involve any fill in tidal waters.

(e) Stamped engineering plans shall be provided as part of any application for rip-rap in excess of 100 linear feet along the bank of a stream or river.

The proposed revetments extend approximately 50' along the shoreline for Revetment 1 and approximately 80' along the shoreline for Revetment 2. Revetment 3 does not involve any impacts within tidal waters, but extends along the shoreline within the tidal buffer for approximately 100'. Plans for the proposed revetments were designed by and are stamped by a Professional Engineer.

Mitigation

The proposed revetments involve impacts to tidal waters and undeveloped tidal buffers and as such qualify as a major impact. The proposed revetments are designed to correct existing erosion and to protect the existing and proposed infrastructure from erosion. As such, the project is exempt from the requirement to mitigate under Env-Wt 302.03 (c) (2)c.



**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?	NOT	
2.7 What is the size of the proposed impervious surface area?	APPLICABLE	
2.8 What is the % of the impervious area (new and existing) to the overall project site?		
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/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?		
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

1.1 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.

2.1 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. Although the project is adjacent to a tidal river, rocky shoreline is the only wetland type that will be affected. 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. Vegetation growing directly upslope of the proposed revetments will need to be removed in order to gain access to and construct the revetments.

2.6 What is the size of the existing impervious surface area?

The revetments will be constructed with large boulders, leaving an impervious surface with large pores. Existing and proposed impervious are not relevant for the revetment project.

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

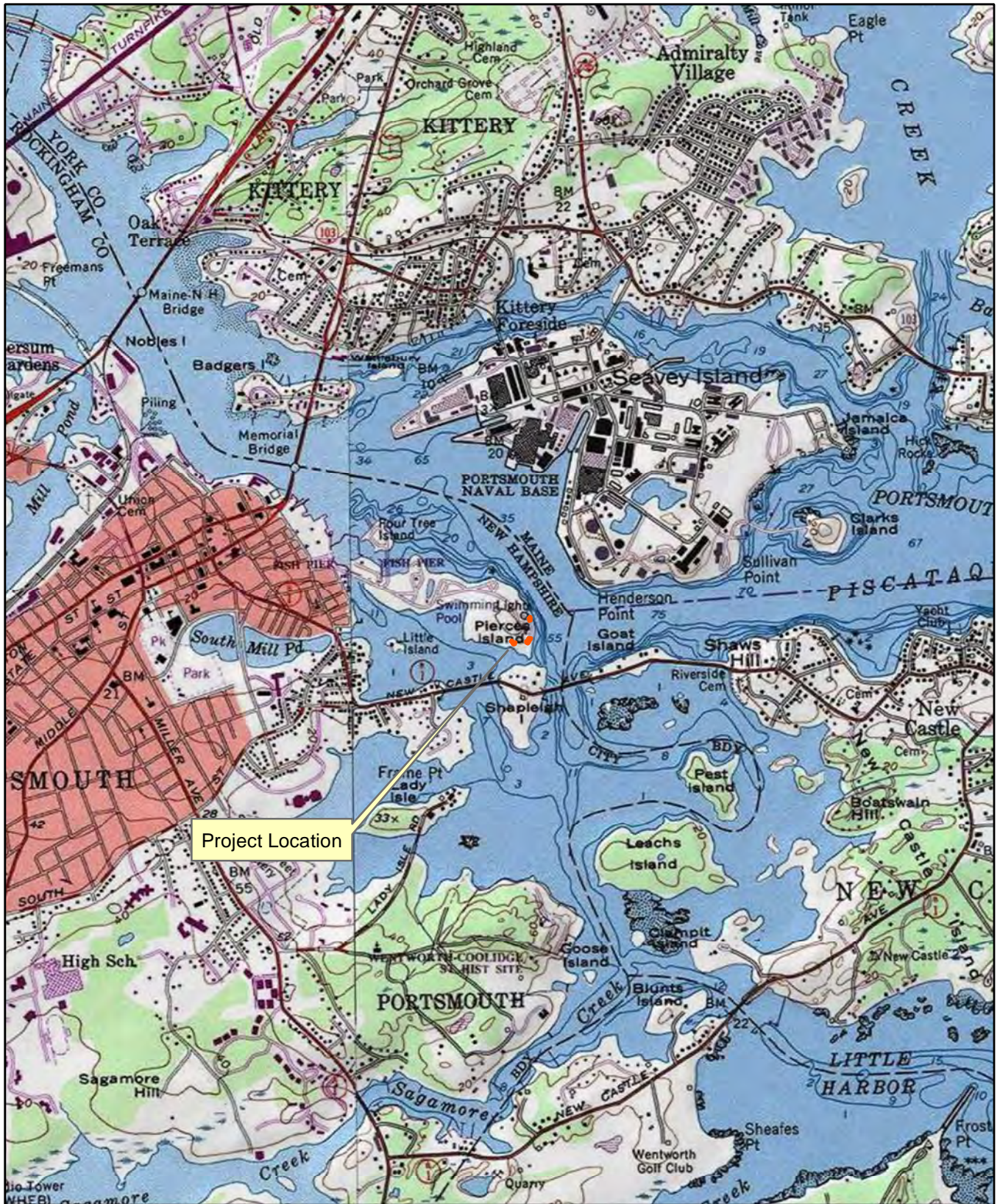
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?

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.

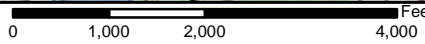
5. Historic/Archaeological Resources

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

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

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 --

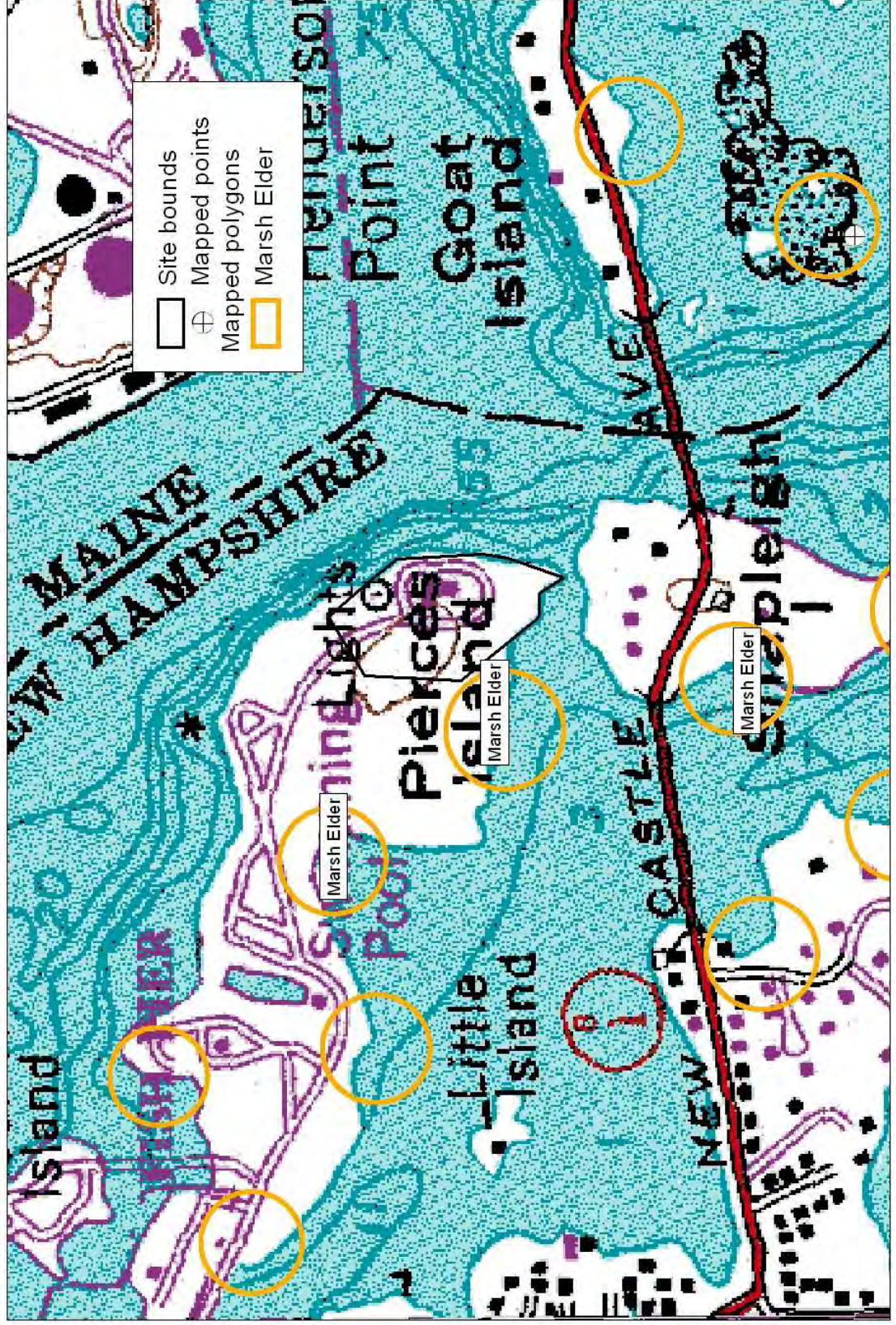
Threats are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that eliminate plants, and increased input of nutrients and pollutants in storm runoff.

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



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 overtopped 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	Description
? Evidence of disease	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
5-10 sq. m.	_____	_____	(If "other", describe below)
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

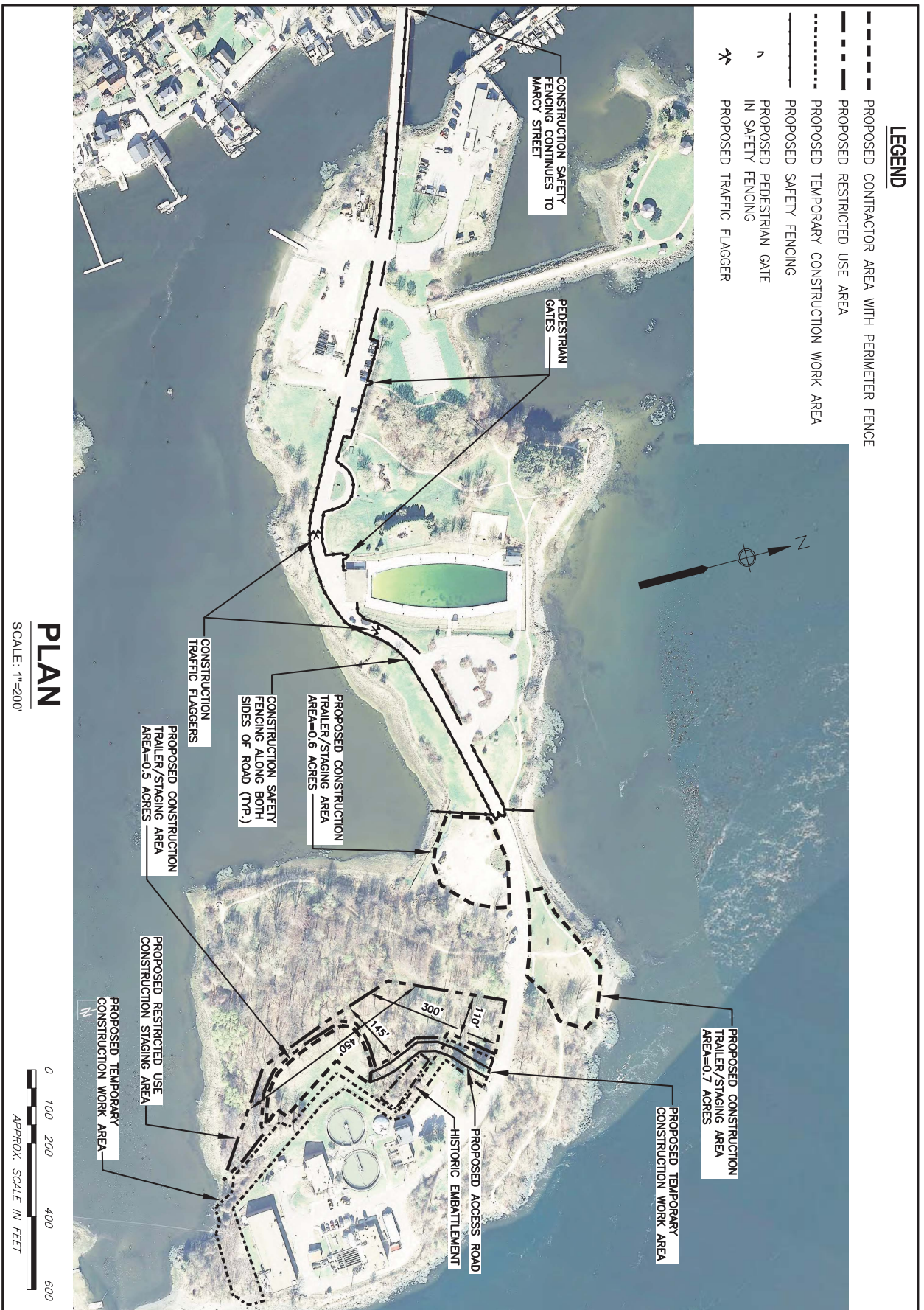
Comments on population size / distribution / etc.: **Confined to a characteristic narrow band along high tide line. All individuals exhibit marked dieback and low vigor. Potential saltwater intrusion from storm disturbance and sea level rise may be contributing to decline.**

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:	Satmarsh (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.		
<p>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).</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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?).</p> <p>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.</p>			
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'



<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>
----------------------	---	---

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*)

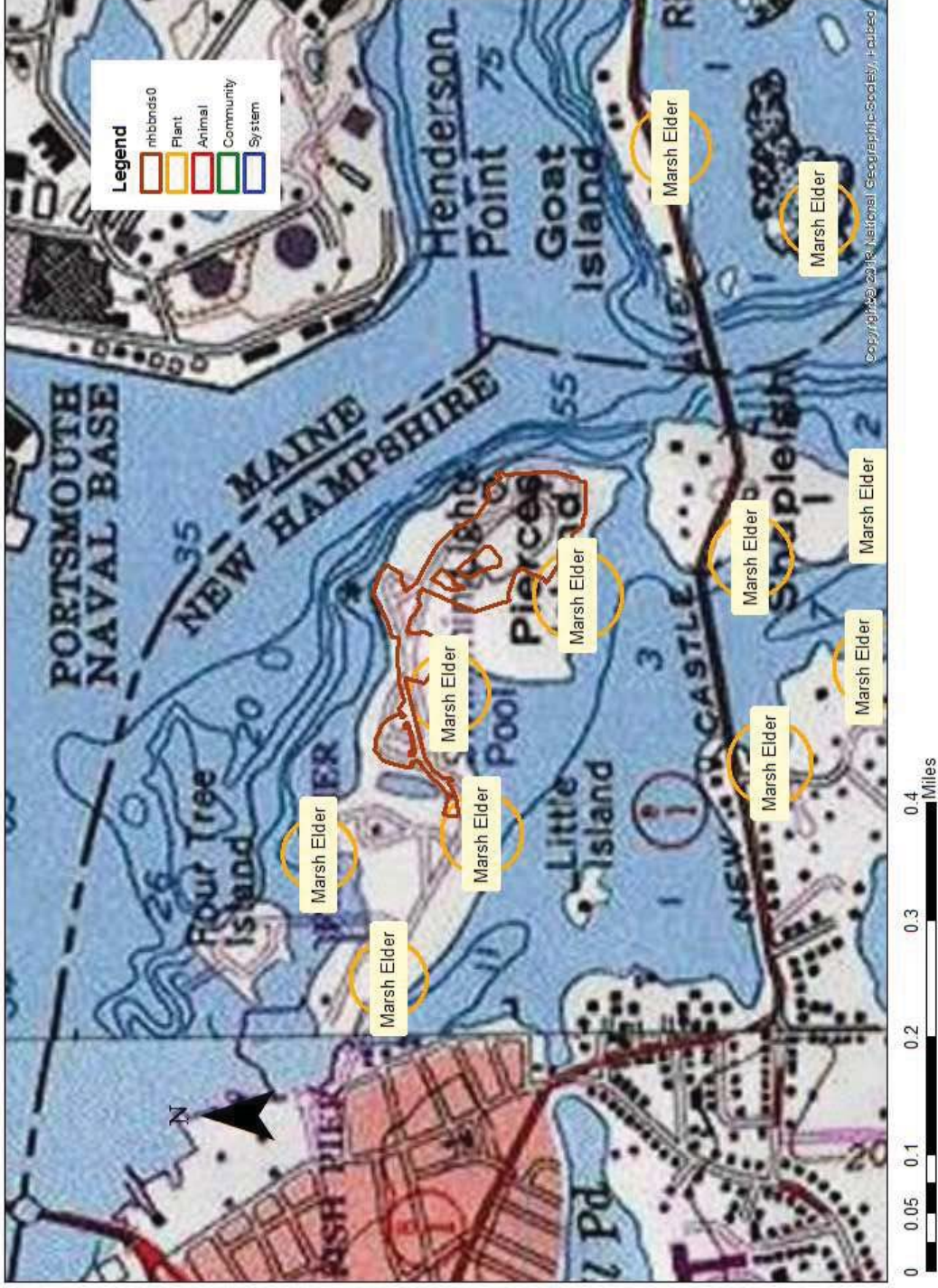
State¹ Federal Notes

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.

¹ Codes: "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.

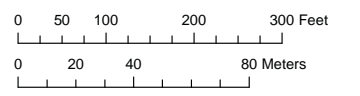
If these statements are no longer true of project, the dismissal of concerns would not apply. Should you have any further questions, or if the project should change, contact me at 603-271-2215 ext. 323 or at Amy.Lamb@dred.nh.gov

Exhibit D1

Partial Legend

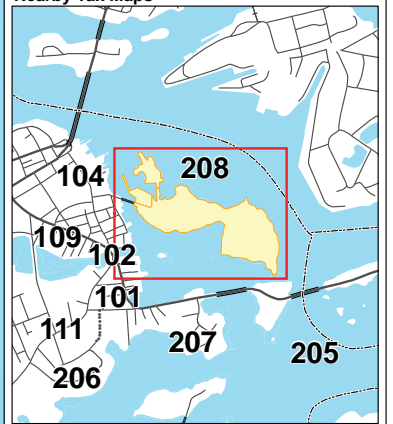
See the cover sheet for the complete legend.

- 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)

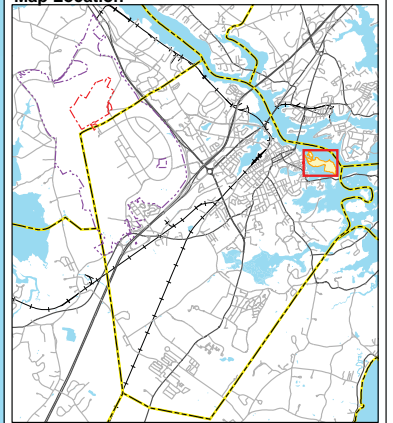


This map is for assessment purposes only. It is not intended for legal description or conveyance. Parcels are mapped as of April 1. Building footprints are 2006 data and may not represent current structures. Streets appearing on this map may be paper (unbuilt) streets. Lot numbers take precedence over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

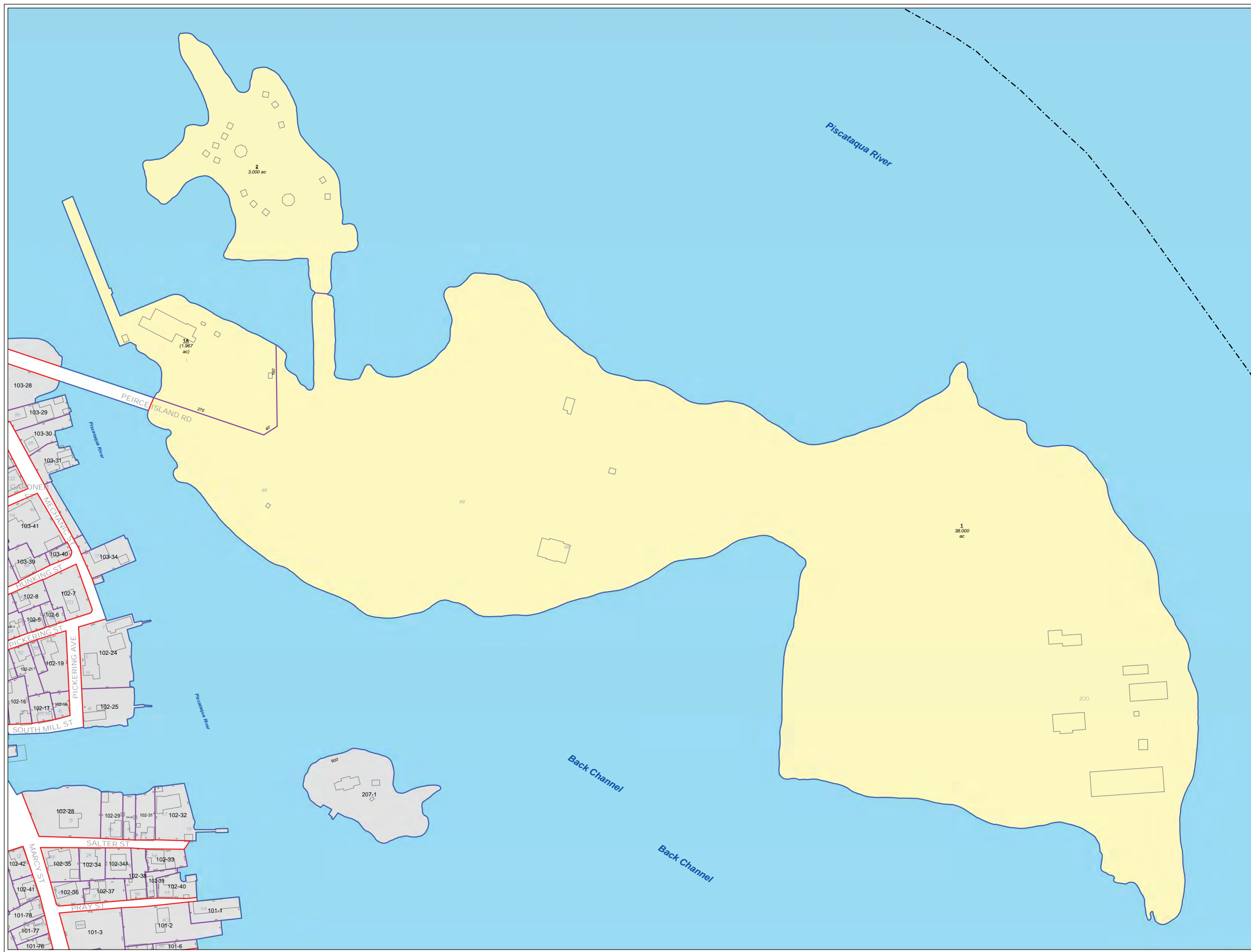


Exhibit D2

7012 3050 0001 5455 1000 050E 2101

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

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

Postmark Here
SDSN
JUL 9 2007
WAKEFIELD MA

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

Exhibit D2

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



Photo 7 Proposed revetment 1 - ongoing erosion.



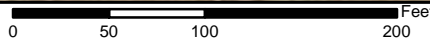
Photo 8 Proposed revetment 1, view north



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	 25 Nashua Road Bedford, NH 03110 (603) 472-5191 www.normandea.com	MAY 2015
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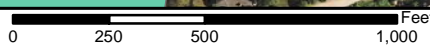


NHEST600031001-02-02
LOWER PISCATAQUA RIVER, SOUTH

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)



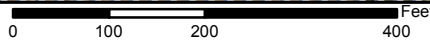
Project No: 8675309	Date: 5/1/2015	Drawn By: vclase
---------------------	----------------	------------------

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.normandeau.com</small>	JUNE 2015




Project No: 8675309 Drawn By: vdase Date: 5/1/2015	0 250 500 1,000 Feet	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	
		SCALE: 1:6,000	MAY 2015

Data Source: 2010 Wildlife Action Plan, NHFG



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

