

STATE OF NEW HAMPSHIRE INTER-DEPARTMENT COMMUNICATION

DATE: April 20, 2021

FROM: X₀ Andrew O'Sullivan
Wetlands Program Manager

AT (OFFICE): Department of
Transportation

SUBJECT: Dredge & Fill Application
Rye, 42714

Bureau of
Environment

TO: Eben Lewis, Coastal Permitting
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the application package prepared by NHDOT District 6 for the subject major impact project. The project is located along Ocean Blvd / Route 1A in the Town of Rye, NH. The proposed work consists of two work areas that involve temporary impacts to tidally influenced wetlands: 1) existing driveway serving 2125 Ocean Blvd with twin 24" culverts over an excavated drainage ditch in the ROW; these culverts are proposed to be replaced in-kind and lowered 2-3" 2) abandoned drive and twin 21" culverts over same ditch; these culverts are to be removed. A third area was completed in 2018 under an Emergency Authorization by NHDES that involved the replacement of failing 36" CMP culvert with twin 36" HDPE culverts under Rt. 1A.

This project was reviewed at the Natural Resource Agency Coordination Meeting on December 16, 2020. A copy of the minutes has been included with this application package. A copy of this application and plans can be accessed on the Departments website via the following link: <http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/wetland-applications.htm>.

NHDOT anticipates and request that this project be reviewed and permitted by the Army Corp of Engineers through the State Programmatic General Permit process, where coordination has already taken place to that effect. A copy of the application has been sent to the Army Corp of Engineers.

Mitigation is not required for the project as there are no permanent impacts to channel and wetlands associated with the work.

The lead people to contact for this project are Ralph Sanders, District 6 Engineer (603-868-1133 or Ralph.Sanders@dot.nh.gov) or Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment (271-0556 or Andrew.O'Sullivan@dot.nh.gov).

A payment voucher has been processed for this application (Voucher #643168) in the amount of \$714.00.

If and when this application meets with the approval of the Bureau, please send the permit directly to Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment.

AMO:amo

cc:

BOE Original

Town of Rye (4 copies via certified mail)

David Trubey, NH Division of Historic Resources (Cultural Review Within)

Carol Henderson, NH Fish & Game (via electronic notification)

Maria Tur, US Fish & Wildlife (via electronic notification)

Beth Alafat & Jeanie Brochi, US Environmental Protection Agency (via electronic notification)

Michael Hicks, US Army Corp of Engineers (via electronic notification)

Kevin Nyhan, BOE (via electronic notification)

Rye 42714

Route 1A Culvert Replacement and Removal Project Rye, New Hampshire

PREPARED FOR

NH Department of Transportation
Bureau of Environment
7 Hazen Drive
Concord, NH 03302-0483



PREPARED BY

FB Environmental Associates
97A Exchange Street, Suite 305
Portland, ME 04101
www.fbenvironmental.com





**STANDARD DREDGE AND FILL
WETLANDS PERMIT APPLICATION**
Water Division/Land Resources Management
Wetlands Bureau



[Check the Status of your Application](#)

RSA/Rule: RSA 482-A/Env-Wt 100-900

APPLICANT'S NAME: Andrew O'Sullivan

TOWN NAME: Rye

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

A person may request a waiver of the requirements in Rules Env-Wt 100-900 to accommodate situations where strict adherence to the requirements would not be in the best interest of the public or the environment but is still in compliance with RSA 482-A. A person may also request a waiver of the standards for existing dwellings over water pursuant to RSA 482-A:26, III(b). For more information, please consult the [Waiver Request Form](#).

SECTION 1 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05; RSA 482-A:3, I(d)(2))

Please use the [Wetland Permit Planning Tool \(WPPT\)](#), the Natural Heritage Bureau (NHB) [DataCheck Tool](#), the [Aquatic Restoration Mapper](#), or other sources to assist in identifying key features such as: [priority resource areas \(PRAs\)](#), [protected species or habitats](#), coastal areas, designated rivers, or designated prime wetlands.

Has the required planning been completed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Does the property contain a PRA? If yes, provide the following information:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<ul style="list-style-type: none"> • Does the project qualify for an Impact Classification Adjustment (e.g. NH Fish and Game Department (NHF&G) and NHB agreement for a classification downgrade) or a Project-Type Exception (e.g. Maintenance or Statutory Permit-by-Notification (SPN) project)? See Env-Wt 407.02 and Env-Wt 407.04. 	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<ul style="list-style-type: none"> • Protected species or habitat? <ul style="list-style-type: none"> ○ If yes, species or habitat name(s): ○ NHB Project ID #: NHB20-2584 	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
• Bog?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
• Floodplain wetland contiguous to a tier 3 or higher watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
• Designated prime wetland or duly-established 100-foot buffer?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
• Sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Is the property within a Designated River corridor? If yes, provide the following information:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<ul style="list-style-type: none"> • Name of Local River Management Advisory Committee (LAC): • A copy of the application was sent to the LAC on Month: Day: Year: 	

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

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For dredging projects, is the subject property contaminated? • If yes, list contaminant:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Is there potential to impact impaired waters, class A waters, or outstanding resource waters?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
For stream crossing projects, provide watershed size (see WPPT or Stream Stats): 25.6 acres	
SECTION 2 - PROJECT DESCRIPTION (Env-Wt 311.04(i))	
Provide a brief description of the project and the purpose of the project, outlining the scope of work to be performed and whether impacts are temporary or permanent. DO NOT reply "See attached"; please use the space provided below.	
<p>NHDOT District 6 proposes a culvert replacement and removal to improve hydrologic connection and decrease erosion along the west side of Ocean Blvd/Rt 1A in Rye. Three work areas involve impacts to tidally influenced wetlands: 1) driveway serving 2125 Ocean Blvd with twin 24" culverts over an excavated drainage ditch in the ROW; these culverts are proposed to be replaced and lowered 2-3". 2) abandoned drive and twin 21" culverts over same ditch; these culverts are to be removed. 3) Replacement of failing 36" CMP culvert with twin 36" HDPE culverts under Rt 1A that was completed in 2018 under an Emergency Authorization by NHDES. Impacts associated with work areas 1 and 2 are temporary. Work area 3 involved temporary impacts during construction as well as permanent impacts. NHDOT is requesting to retain permanent impacts associated with work area 3, which are self-mitigating with the increased hydrologic connectivity to the marsh to the east of Rt 1A allowed by the additional 36" pipe.</p>	
SECTION 3 - PROJECT LOCATION	
Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.	
ADDRESS: 2125 Ocean Blvd and adjacent highway Right of Way	
TOWN/CITY: Rye	
TAX MAP/BLOCK/LOT/UNIT: Map 8, Lot 44 and 31	
US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: <input checked="" type="checkbox"/> N/A	
(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places): <div style="display: flex; justify-content: space-between;"> ° North ° West </div>	

SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 311.04(a))		
If the applicant is a trust or a company, then complete with the trust or company information.		
NAME: Andrew O'Sullivan, NHDOT Wetlands Program Manager		
MAILING ADDRESS: NHDOT Bureau of Environment, PO Box 483		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03302
EMAIL ADDRESS: andrew.m.osullivan@dot.nh.gov		
FAX:	PHONE: 603-271-0556	
ELECTRONIC COMMUNICATION: By initialing here: _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c))		
<input type="checkbox"/> N/A		
LAST NAME, FIRST NAME, M.I.: Brereton, Richard L.		
COMPANY NAME: FB Environmental Associates		
MAILING ADDRESS: 97A Exchange St Suite 305		
TOWN/CITY: Portland	STATE: ME	ZIP CODE: 04101
EMAIL ADDRESS: richb@fbenvironmental.com		
FAX:	PHONE: 207-221-6699	
ELECTRONIC COMMUNICATION: By initialing here RLB, I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b))		
If the owner is a trust or a company, then complete with the trust or company information.		
<input checked="" type="checkbox"/> Same as applicant		
NAME: _____		
MAILING ADDRESS: _____		
TOWN/CITY: _____	STATE: _____	ZIP CODE: _____
EMAIL ADDRESS: _____		
FAX: _____	PHONE: _____	
ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.		

SECTION 7 - RESOURCE-SPECIFIC CRITERIA ESTABLISHED IN Env-Wt 400, Env-Wt 500, Env-Wt 600, Env-Wt 700, OR Env-Wt 900 HAVE BEEN MET (Env-Wt 313.01(a)(3))

Describe how the resource-specific criteria have been met for each chapter listed above (please attach information about stream crossings, coastal resources, prime wetlands, or non-tidal wetlands and surface waters):
 All jurisdictional areas at the site of the proposed project were delineated and classified in accordance with Env-Wt 400 rules. A wetland and watercourse delineation and wetland functional assessment were conducted within the project area by Heather Storlazzi Ward (NH CWS #206) on September 2, 2020. The Wetland Delineation Report and Functional Assessment Worksheet are reproduced in full as Appendix C. The project complies with the public highway requirements outlined in Env-Wt 527. An estuarine wetland complex with four sub-areas was delineated within the project area. In addition, one section of tidal watercourse/stream channel was delineated within the project area. As the project is proposed within a tidal wetland, Env-Wt 600 rules apply. No prime wetlands are located within or near the project area, making Env-Wt 700 rules non-applicable. Env-Wt 900 rules are applicable as a portion of the project requests that NHDOT be allowed to retain the replacement/upgrade to a regulated tier 4 stream crossing that was conducted May 7-8, 2018 under an Emergency Authorization by NHDES. Appendix E contains the Emergency Authorization and correspondence between NHDES and NHDOT regarding the design of the culvert upgrade. The attached Supplemental Narrative contains further information on the project's conformance with Env-Wt 300, 400, 500, 600, and 900 rules.

SECTION 8 - AVOIDANCE AND MINIMIZATION

Impacts within wetland jurisdiction must be avoided to the maximum extent practicable (Env-Wt 313.03(a)).* Any project with unavoidable jurisdictional impacts must then be minimized as described in the [Wetlands Best Management Practice Techniques For Avoidance and Minimization](#) and the [Wetlands Permitting: Avoidance, Minimization and Mitigation Fact Sheet](#). For minor or major projects, a functional assessment of all wetlands on the project site is required (Env-Wt 311.03(b)(10)).*

Please refer to the application checklist to ensure you have attached all documents related to avoidance and minimization, as well as functional assessment (where applicable). Use the [Avoidance and Minimization Checklist](#), the [Avoidance and Minimization Narrative](#), or your own avoidance and minimization narrative.

**See Env-Wt 311.03(b)(6) and Env-Wt 311.03(b)(10) for shoreline structure exemptions.*

SECTION 9 - MITIGATION REQUIREMENT (Env-Wt 311.02)

If unavoidable jurisdictional impacts require mitigation, a mitigation [pre-application meeting](#) must occur at least 30 days but not more than 90 days prior to submitting this Standard Dredge and Fill Permit Application.

Mitigation Pre-Application Meeting Date: Month: 12 Day: 16 Year: 2020

N/A - Mitigation is not required

SECTION 10 - THE PROJECT MEETS COMPENSATORY MITIGATION REQUIREMENTS (Env-Wt 313.01(a)(1)c)

Confirm that you have submitted a compensatory mitigation proposal that meets the requirements of Env-Wt 800 for all permanent unavoidable impacts that will remain after avoidance and minimization techniques have been exercised to the maximum extent practicable: I confirm submittal.

N/A – Compensatory mitigation is not required

SECTION 11 - IMPACT AREA (Env-Wt 311.04(g))

For each jurisdictional area that will be/has been impacted, provide square feet (SF) and, if applicable, linear feet (LF) of impact, and note whether the impact is after-the-fact (ATF; i.e., work was started or completed without a permit).

For intermittent and ephemeral streams, the linear footage of impact is measured along the thread of the channel. *Please note, installation of a stream crossing in an ephemeral stream may be undertaken without a permit per Rule Env-Wt 309.02(d), however other dredge or fill impacts should be included below.*

For perennial streams/ivers, the linear footage of impact is calculated by summing the lengths of disturbances to the channel and banks.

Permanent impacts are impacts that will remain after the project is complete (e.g., changes in grade or surface materials).

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

JURISDICTIONAL AREA		PERMANENT			TEMPORARY		
		SF	LF	ATF	SF	LF	ATF
Wetlands	Forested Wetland			<input type="checkbox"/>			<input type="checkbox"/>
	Scrub-shrub Wetland			<input type="checkbox"/>			<input type="checkbox"/>
	Emergent Wetland			<input type="checkbox"/>	290		<input type="checkbox"/>
	Wet Meadow			<input type="checkbox"/>			<input type="checkbox"/>
	Vernal Pool			<input type="checkbox"/>			<input type="checkbox"/>
	Designated Prime Wetland			<input type="checkbox"/>			<input type="checkbox"/>
	Duly-established 100-foot Prime Wetland Buffer			<input type="checkbox"/>			<input type="checkbox"/>
Surface Water	Intermittent / Ephemeral Stream			<input type="checkbox"/>			<input type="checkbox"/>
	Perennial Stream or River			<input type="checkbox"/>			<input type="checkbox"/>
	Lake / Pond			<input type="checkbox"/>			<input type="checkbox"/>
	Docking - Lake / Pond			<input type="checkbox"/>			<input type="checkbox"/>
	Docking - River			<input type="checkbox"/>			<input type="checkbox"/>
Banks	Bank - Intermittent Stream			<input type="checkbox"/>			<input type="checkbox"/>
	Bank - Perennial Stream / River			<input type="checkbox"/>			<input type="checkbox"/>
	Bank / Shoreline - Lake / Pond			<input type="checkbox"/>			<input type="checkbox"/>
Tidal	Tidal Waters			<input type="checkbox"/>	265		<input type="checkbox"/>
	Tidal Marsh	50		<input type="checkbox"/>	1180		<input type="checkbox"/>
	Sand Dune			<input type="checkbox"/>			<input type="checkbox"/>
	Undeveloped Tidal Buffer Zone (TBZ)			<input type="checkbox"/>			<input type="checkbox"/>
	Previously-developed TBZ			<input type="checkbox"/>			<input type="checkbox"/>
	Docking - Tidal Water			<input type="checkbox"/>			<input type="checkbox"/>
TOTAL		50			1735		

SECTION 12 - APPLICATION FEE (RSA 482-A:3, I)

MINIMUM IMPACT FEE: Flat fee of \$400.

NON-ENFORCEMENT RELATED, PUBLICLY-FUNDED AND SUPERVISED RESTORATION PROJECTS, REGARDLESS OF IMPACT CLASSIFICATION: Flat fee of \$400 (refer to RSA 482-A:3, 1(c) for restrictions).

MINOR OR MAJOR IMPACT FEE: Calculate using the table below:

Permanent and temporary (non-docking): 1785 SF × \$0.40 = \$ 714

Seasonal docking structure: SF × \$2.00 = \$

Permanent docking structure: SF × \$4.00 = \$

Projects proposing shoreline structures (including docks) add \$400 = \$

Total = \$ 714

The application fee for minor or major impact is the above calculated total or \$400, whichever is greater = \$ 714

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SECTION 13 - PROJECT CLASSIFICATION (Env-Wt 306.05)
 Indicate the project classification.



<input type="checkbox"/> Minimum Impact Project	<input type="checkbox"/> Minor Project	<input checked="" type="checkbox"/> Major Project
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SECTION 14 - REQUIRED CERTIFICATIONS (Env-Wt 311.11)

Initial each box below to certify:

Initials: RLB _____	To the best of the signer’s knowledge and belief, all required notifications have been provided.
Initials: RLB _____	The information submitted on or with the application is true, complete, and not misleading to the best of the signer’s knowledge and belief.
Initials: RLB _____	The signer understands that: <ul style="list-style-type: none"> • The submission of false, incomplete, or misleading information constitutes grounds for NHDES to: <ol style="list-style-type: none"> 1. Deny the application. 2. Revoke any approval that is granted based on the information. 3. If the signer is a certified wetland scientist, licensed surveyor, or professional engineer licensed to practice in New Hampshire, refer the matter to the joint board of licensure and certification established by RSA 310-A:1. • The signer is subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641. • The signature shall constitute authorization for the municipal conservation commission and the Department to inspect the site of the proposed project, except for minimum impact forestry SPN projects and minimum impact trail projects, where the signature shall authorize only the Department to inspect the site pursuant to RSA 482-A:6, II.
Initials: RLB _____	If the applicant is not the owner of the property, each property owner signature shall constitute certification by the signer that he or she is aware of the application being filed and does not object to the filing.

SECTION 15 - REQUIRED SIGNATURES (Env-Wt 311.04(d); Env-Wt 311.11)

SIGNATURE (OWNER): 	PRINT NAME LEGIBLY: Andrew O'Sullivan	DATE: 4/19/2021
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER): _____	PRINT NAME LEGIBLY: _____	DATE: _____
SIGNATURE (AGENT, IF APPLICABLE): 	PRINT NAME LEGIBLY: Richard Brereton	DATE: Feb. 4, 2021

SECTION 16 - TOWN / CITY CLERK SIGNATURE (Env-Wt 311.04(f))

As required by RSA 482-A:3, I(a)(1), 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.

TOWN/CITY CLERK SIGNATURE: *Exempt per RSA 482-A:3 _____	PRINT NAME LEGIBLY: _____
TOWN/CITY: _____	DATE: _____

***Per RSA 482-A:3, I(a)(1), applications and fees for projects by agencies of the state may be filed directly with the department, with 4 copies of the application, plan, and map filed at the same time with the town or city clerk.**

DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3, I(a)(1)

1. IMMEDIATELY sign the original application form and four copies in the signature space provided above.
2. 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.
3. 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.
4. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

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 at the address at the bottom of this page. Make check or money order payable to "Treasurer – State of NH".



LOCUS MAP



Project Location

Approximate Project Limits



NHDOT
Rye, NH
Location Map

0 0.15 0.3
Miles

Data Sources: USGS
Map created by FBE in December, 2020



STANDARD DREDGE AND FILL
WETLANDS PERMIT APPLICATION
ATTACHMENT A: MINOR AND MAJOR PROJECTS



Water Division/Land Resources Management
Wetlands Bureau

[Check the Status of your Application](#)

RSA/ Rule: RSA 482-A/ Env-Wt 311.10; Env-Wt 313.01(a)(1); Env-Wt 313.03

APPLICANT'S NAME: Andrew O'Sullivan, NHDOT **TOWN NAME:** Rye

Attachment A is required for *all minor and major projects*, and must be completed *in addition* to the [Avoidance and Minimization Narrative](#) or [Checklist](#) that is required by Env-Wt 307.11.

For projects involving construction or modification of non-tidal shoreline structures over areas of surface waters having an absence of wetland vegetation, only Sections I.X through I.XV are required to be completed.

PART I: AVOIDANCE AND MINIMIZATION

In accordance with Env-Wt 313.03(a), the Department shall not approve any alteration of any jurisdictional area unless the applicant demonstrates that the potential impacts to jurisdictional areas have been avoided to the maximum extent practicable and that any unavoidable impacts have been minimized, as described in the [Wetlands Best Management Practice Techniques For Avoidance and Minimization](#).

SECTION I.I - ALTERNATIVES (Env-Wt 313.03(b)(1))

Describe how there is no practicable alternative that would have a less adverse impact on the area and environments under the Department's jurisdiction.

THE PURPOSE OF THE PROPOSED PROJECT IS TO MODIFY AN EXISTING DRIVEWAY AND CULVERT TO RESTORE THE NATURAL HYDROLOGY AND DECREASE FLOODING AND EROSION IN THE AREA. THE PROPOSED PROJECT WILL HAVE POSITIVE LASTING IMPACTS TO THE JURISDICTIONAL AREA AND ITS FUNCTIONS AND VALUES. ADDITIONALLY, THE REMOVAL OF THE DRIVEWAY AND CULVERT MODIFICATION WILL BE DONE USING BEST PRACTICES TO AVOID TEMPORARY IMPACTS TO WETLANDS, STREAMS, AND TIDAL MARSHES AND THEIR ASSOCIATED SOILS, VEGETATION, AND WILDLIFE.

THE ALTERNATIVE OF LEAVING THE EXISTING DRIVEWAY AND CULVERT SYSTEM AS THEY ARE IS NOT A VIABLE OPTION AS THE EXISTING DRIVEWAY AND CULVERT SYSTEM ARE CAUSING FLOODING AND EROSION OF OCEAN BLVD. FLOODING AND EROSION IN THE AREA IS A PUBLIC SAFETY ISSUE AS WELL AS AN ENVIRONMENTAL ISSUE AS IT IS CAUSING DECREASED WATER QUALITY AND HABITAT LOSS. THEREFORE, THERE IS NO PRACTICAL ALTERNATIVE THAT WOULD HAVE LESS ADVERSE IMPACT ON THE AREA AND ENVIRONMENTS OF THE SURROUNDING AREA. THE PROPOSED PROJECT IS THE MOST VIABLE OPTION WITH THE LEAST IMPACT.

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SECTION I.II - MARSHES (Env-Wt 313.03(b)(2))

Describe how the project avoids and minimizes impacts to tidal marshes and non-tidal marshes where documented to provide sources of nutrients for finfish, crustacean, shellfish, and wildlife of significant value.

The Rt 1A culvert replacement carried out by NHDOT District 6 in 2018 under an Emergency Authorization from NHDES included limited temporary and permanent impacts to the tidal marsh system on the northern boundary of the project site. The completed work avoided and minimized impacts to the greatest extent possible by utilizing best management practices for perimeter and erosion control before, during, and after construction. The permanent impact associated with the replacement of the single 36" CMP culvert with twin 36" HDPE culverts is considered to be self-mitigating due to the improved hydrologic connectivity for the tidal marsh on both sides of Rt 1A, which was historically impeded by the construction of the highway. Functions and values of the tidal marsh are expected to be enhanced by the improved ability of tidal waters to flow unimpeded through the twin culverts.

SECTION I.III - HYDROLOGIC CONNECTION (Env-Wt 313.03(b)(3))

Describe how the project maintains hydrologic connections between adjacent wetland or stream systems.

Both the already-completed Rt 1A culvert replacement and the proposed driveway culvert replacement and removal serve the purpose of improving and maintaining hydrologic connection and conveyance between the adjacent wetland systems.

SECTION I.IV - JURISDICTIONAL IMPACTS (Env-Wt 313.03(b)(4))

Describe how the project avoids and minimizes impacts to wetlands and other areas of jurisdiction under RSA 482-A, especially those in which there are exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, and habitat and reproduction areas for species of concern, or any combination thereof.

A functional assessment of the project area was performed by a New Hampshire-certified wetland scientist. Results from the functional assessment were used to choose a location and design for the project that will have the least impact to wetlands and marshes in the project area. Temporary impacts to wetlands will be minimized through best management practices. The proposed project will have positive long-term impacts to wetlands in the area by improving hydrologic conveyance and restoring the natural hydrology.

SECTION I.V - PUBLIC COMMERCE, NAVIGATION, OR RECREATION (Env-Wt 313.03(b)(5))

Describe how the project avoids and minimizes impacts that eliminate, depreciate or obstruct public commerce, navigation, or recreation.

The proposed project is not anticipated to have any impact on public commerce, navigation, or recreation.

SECTION I.VI - FLOODPLAIN WETLANDS (Env-Wt 313.03(b)(6))

Describe how the project avoids and minimizes impacts to floodplain wetlands that provide flood storage.

The proposed project to modify the existing driveway and culvert system will increase the ability of the delineated and mapped wetland complex to provide flood storage by improving hydrologic connectivity. Currently, the existing driveway culverts are impeding hydrologic conveyance resulting in the flooding of Ocean Blvd and the surrounding area.

SECTION I.VII - RIVERINE FORESTED WETLAND SYSTEMS AND SCRUB-SHRUB – MARSH COMPLEXES (Env-Wt 313.03(b)(7))

Describe how the project avoids and minimizes impacts to natural riverine forested wetland systems and scrub-shrub – marsh complexes of high ecological integrity.

The proposed project is not anticipated to include any impacts to riverine forested wetland systems or scrub-shrub marsh complexes.

SECTION I.VIII - DRINKING WATER SUPPLY AND GROUNDWATER AQUIFER LEVELS (Env-Wt 313.03(b)(8))

Describe how the project avoids and minimizes impacts to wetlands that would be detrimental to adjacent drinking water supply and groundwater aquifer levels.

The proposed project is not anticipated to impact local drinking water supplies or groundwater aquifer levels.

SECTION I.IX - STREAM CHANNELS (Env-Wt 313.03(b)(9))

Describe how the project avoids and minimizes adverse impacts to stream channels and the ability of such channels to handle runoff of waters.

One stream channel is located within the project area connecting the wetland complex on the west side of Rt 1A to the salt marsh on the east side of Rt 1A. The project includes replacement of a failing culvert that was completed in 2018 under an Emergency Authorization from NHDES. A single 36" CMP culvert was replaced with twin 36" HDPE culverts for improved hydrologic connectivity and increased ability to handle runoff. The proposed work is not anticipated to have any impacts to the stream channel and is occurring in a separate drainage ditch south of the stream channel.

SECTION I.X - SHORELINE STRUCTURES - CONSTRUCTION SURFACE AREA (Env-Wt 313.03(c)(1))

Describe how the project has been designed to use the minimum construction surface area over surface waters necessary to meet the stated purpose of the structures.

The proposed project does not include any shoreline structures.

The proposed project will not include a construction area over surface waters. Construction within a small portion of the wetland system is necessary to modify the existing driveway and culvert system.

SECTION I.XI - SHORELINE STRUCTURES - LEAST INTRUSIVE UPON PUBLIC TRUST (Env-Wt 313.03(c)(2))

Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe docking on the frontage.

The proposed project does not include any shoreline structures.

Construction of the proposed project will not be intrusive upon the public trust.

SECTION I.XII - SHORELINE STRUCTURES – ABUTTING PROPERTIES (Env-Wt 313.03(c)(3))

Describe how the structures have been designed to avoid and minimize impacts on ability of abutting owners to use and enjoy their properties.

The proposed project does not include any shoreline structures.

The proposed project will have no permanent negative impacts on the ability of abutting owners to use and enjoy their properties. The project will improve flooding and erosion in the area, improving the ability for abutting owners to use and enjoy their properties.

SECTION I.XIII - SHORELINE STRUCTURES – COMMERCE AND RECREATION (Env-Wt 313.03(c)(4))

Describe how the structures have been designed to avoid and minimize impacts to the public’s right to navigation, passage, and use of the resource for commerce and recreation.

The proposed project does not include any shoreline structures.

The proposed project is not expected to have any impact on public commerce or recreation and is designed to minimize impacts to public navigation. NHDOT is equipped to minimize impacts to public navigation during construction of the proposed project. Additionally, the project will help maintain the long-term function of Ocean Blvd helping mitigate future impacts to public navigation.

SECTION I.XIV - SHORELINE STRUCTURES – WATER QUALITY, AQUATIC VEGETATION, WILDLIFE AND FINFISH HABITAT (Env-Wt 313.03(c)(5))

Describe how the structures have been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.

The proposed project does not include any shoreline structures.

The proposed project will have positive long-term impacts on water quality, aquatic vegetation, and wildlife through the restoration of natural hydrologic conveyance in the area. Temporary impacts to these resources during construction will be minimized through best management practices.

SECTION I.XV - SHORELINE STRUCTURES – VEGETATION REMOVAL, ACCESS POINTS, AND SHORELINE STABILITY (Env-Wt 313.03(c)(6))

Describe how the structures have been designed to avoid and minimize the removal of vegetation, the number of access points through wetlands or over the bank, and activities that may have an adverse effect on shoreline stability.

The proposed project does not include any shoreline structures.

The proposed project will minimize the removal of vegetation through best management practices during construction. The project will improve habitat and bank stability in the area.

PART II: FUNCTIONAL ASSESSMENT	
REQUIREMENTS	
Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).	
FUNCTIONAL ASSESSMENT METHOD USED:	
Wetland functional assessments were performed pursuant to the approach described by the Army Corps Highway Methodology Workbook Supplement: Wetland Functions and Values (USACE, 1995). In this "Descriptive Approach" to functional assessment, evaluators first determine if particular functions and values are present and why, followed by a determination of what functions and values are principal and why.	
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT:	HEATHER STORLAZZI WARD
DATE OF ASSESSMENT:	09/02/2020
Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT:	<input checked="" type="checkbox"/>
For minor or major projects requiring a standard permit without mitigation, the applicant shall submit a wetland evaluation report that includes completed checklists and information demonstrating the RELATIVE FUNCTIONS AND VALUES OF EACH WETLAND EVALUATED. Check this box to confirm that the application includes this information, if applicable:	<input checked="" type="checkbox"/>
Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.	



**AVOIDANCE AND MINIMIZATION
WRITTEN NARRATIVE**
Water Division/Land Resources Management
Wetlands Bureau



[Check the Status of your Application](#)

RSA/ Rule: RSA 482-A/ Env-Wt 311.04(j); Env-Wt 311.07; Env-Wt 313.01(a)(1)b; Env-Wt 313.01(c)

APPLICANT'S NAME: Andrew O'Sullivan

TOWN NAME: Rye

An applicant for a standard permit shall submit with the permit application a written narrative that explains how all impacts to functions and values of all jurisdictional areas have been avoided and minimized to the maximum extent practicable. This attachment can be used to guide the narrative (attach additional pages if needed). Alternatively, the applicant may attach a completed [Avoidance and Minimization Checklist \(NHDES-W-06-050\)](#) to the permit application.

<p>SECTION 1 - WATER ACCESS STRUCTURES (Env-Wt 311.07(b)(1))</p> <p>Is the primary purpose of the proposed project to construct a water access structure?</p> <p>No. A water access structure will not be constructed as part of the proposed project.</p>
<p>SECTION 2 - BUILDABLE LOT (Env-Wt 311.07(b)(1))</p> <p>Does the proposed project require access through wetlands to reach a buildable lot or portion thereof?</p> <p>No. Access through wetlands is not required to reach a buildable lot as part of the proposed project.</p>
<p>SECTION 3 - AVAILABLE PROPERTY (Env-Wt 311.07(b)(2))*</p> <p>For any project that proposes permanent impacts of more than one acre, or that proposes permanent impacts to a PRA, or both, are any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, that could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs?</p> <p><i>*Except as provided in any project-specific criteria and except for NH Department of Transportation projects that qualify for a categorical exclusion under the National Environmental Policy Act.</i></p> <p>The Route 1A culvert replacement portion of this project included 50 square feet of permanent impact to an emergent tidal marsh. This permanent impact associated with replacing a single failing culvert with twin 36" culverts is self-mitigating as it improves functions and values in the marsh. Hydrologic connectivity, ability to handle runoff and floodwaters, aquatic organism passage are all significantly improved over the previous culvert before 2018. The proposed project may cause temporary impacts to a PRA in order to conduct a driveway and culvert modification to improve hydrologic conveyance and restore the natural hydrology of the area. The proposed project is designed to decrease flooding and erosion in the project area, increase connectivity and floodwater storage, and have long term benefits to the PRA.</p>

SECTION 4 - ALTERNATIVES (Env-Wt 311.07(b)(3))

Could alternative designs or techniques, such as different layouts, different construction sequencing, or alternative technologies be used to avoid impacts to jurisdictional areas or their functions and values as described in the [Wetlands Best Management Practice Techniques For Avoidance and Minimization?](#)

The purpose of the proposed project is to modify an existing driveway and culvert to restore the natural hydrology and decrease flooding and erosion in the area. The proposed project will have positive lasting impacts to the jurisdictional area and its functions and values. Additionally, the removal of the driveway and culvert modification will be done using best practices to avoid temporary impacts to wetlands, streams, and tidal marshes and their associated soils, vegetation, and wildlife.

The alternative of leaving the existing drainage system as currently constituted is not a viable option as the existing driveway and culvert system impede hydrologic connectivity and aquatic organism passage.

SECTION 5 - CONFORMANCE WITH Env-Wt 311.10(c) (Env-Wt 311.07(b)(4))**

How does the project conform to Env-Wt 311.10(c)?

***Except for projects solely limited to construction or modification of non-tidal shoreline structures only need to complete relevant sections of Attachment A.*

A functional assessment of the project area was performed by a certified wetland scientist. The purpose of the project is to improve hydrologic conveyance of the stream and wetland systems in the area, resulting in improved wetland functions. The location and design of the project will have the least impact to wetland functions and will include on-site minimization measures and construction management practices to protect aquatic resource functions.

Supplemental Narrative

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NHDES Wetlands Permit Application Form

USGS Location Map

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Avoidance and Minimization Narrative

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1 Introduction

On behalf of the New Hampshire Department of Transportation (NHDOT or “the Applicant”), this Wetlands Permit Application was prepared by FB Environmental Associates (FBE or “the Agent”) pursuant to the New Hampshire Revised Statutes Annotated (RSA) Chapter 482-A, Fill and Dredge Wetlands, and Wetlands Bureau Code of Administrative Rules, Chapters Env-Wt 100 through Env-Wt 900. The following project narrative describes the site, the proposed work, and the project’s observance of the NHDES Wetland Rules.

2 Site Description and Existing Conditions

The project location is along Ocean Boulevard (Route 1A) in Rye, New Hampshire, approximately 2.8 miles north of Atlantic Ave (Route 111) and 956 ft south of the intersection of Rt 1A and Locke Rd. The project consists of the replacement or modification to three structures within the project location that lie within protected resources:

- 1) a single 36-inch CMP culvert under Route 1A that was replaced in 2018;
- 2) the active driveway and twin 24-inch plastic (SPP) culverts serving the private residence at 2125 Ocean Blvd that cross over the drainage ditch running along the west side of Route 1A, completed 2008; and
- 3) the abandoned driveway and twin 21-inch plastic (PVC) culverts approximately 150 feet north of the active driveway that served the private residence and provided crossing over the drainage ditch from c. 2003-2008.

The 36-inch CMP culvert under Route 1A was replaced with twin 36-inch HDPE culverts in 2018 under an Emergency Authorization by NHDES, included in Appendix E of this application. The single 36-inch CMP culvert was failing, was impeding flow, and constituted a safety risk that required immediate removal and replacement. In consultation with NHDES, NHDOT District 6 installed twin 36-inch HDPE culverts along with temporary and permanent erosion control measures. This already completed work is referred to as Phase 1.

The twin 24-inch SPP culverts at the active driveway are perched, resulting in ponding on the upstream side of the culverts, impeding the hydrologic connectivity of the larger wetland complex within the project location. In addition, the culverts and header assembly show signs of needed maintenance. The culverts allowing the abandoned driveway to cross the drainage ditch are also perched, restricting hydrologic connection and aquatic organism passage. The abandoned drive has an unused water line running under it but does not include any sewer connection.

All three structures lie within a contiguous wetland complex that has a subarea palustrine emergent marsh in the furthest south extremity, an excavated tidal mud-substrate ditch in the central area, and a tidal emergent marsh in the northern extremity of the project area that lies on both sides of Route 1A (refer to the Wetland Delineation Report, Appendix E of this application).

3 Proposed Project Description

The new work proposed in this project is described in this application as Phase 2, to differentiate it from the work already carried out (Phase 1). The project proposes to replace the twin 24-inch culverts at the active driveway and install replacement HDPE culverts 2-3 inches lower than the existing pipes. In addition, the abandoned driveway and twin 21-inch SPP culverts are proposed to be removed entirely (refer to the Wetland Impact and Erosion Control Plans provided in Appendix R). This permit application also requests to retain impacts associated with the replacement of the failing 36-inch CMP culvert with twin 36-inch HDPE culverts that was completed under an Emergency Authorization in 2018 (i.e. Phase 1) (refer to the Emergency Authorization provided in Appendix E). The purpose of the proposed project is to restore the hydrology, decrease flooding and erosion, and increase aquatic organism passage of the wetland complex adjacent to Rt 1A in Rye, NH. Additionally, the project is intended to maintain safe and functioning transportation conditions along this section of Rt 1A.

The construction of the project will minimize impacts to the surrounding wetlands, streams, and tidal marshes and their associated soils, vegetation, and wildlife to the greatest extent possible. Appropriate siltation, erosion controls, turbidity, and sedimentation controls will be used throughout construction. No clearing of mature vegetation is proposed. All appropriate measures will be taken to avoid introduction of invasive species. Construction will take place during low tide during the fullest extent practicable. Please refer to the Construction Sequence Narrative provided in Appendix N and the Project Design Narrative provided in section 10.7 for additional description of the work tasks and resource protection measures.

4 Impact Analysis and Best Management Practices

4.1 Proposed Impacts

Permanent Impacts

Phase 1, the Route 1A culvert replacement, resulted in limited permanent impacts within the tidal marsh to remove the failing culvert under Rt 1A and replace it with properly sized twin 36-inch HDPE culverts. The additional culvert and stabilization necessary, resulted in a small permanent impact area (50 square feet) to the tidal marsh (shown in impact area D on the Wetland Impact Plans, Appendix R).

Phase 2, the portion of the project dealing with the proposed driveway and culvert removal/replacement, will have no permanent impacts to any jurisdictional areas.

Temporary Impacts

Phase 1 included 970 square feet of temporary impacts to the tidal marsh associated with construction (shown in impact areas C and D on the Wetland Impact Plans, Appendix R).

Phase 2 will have a total of 765 square feet of temporary impacts associated with the construction, which breaks down by wetland type in the following way:

- 290 square feet within the palustrine emergent marsh (impact area A on the Wetland Impact Plans).
- 265 square feet within the drainage ditch (impact areas A and B).
- 210 square feet within the tidal marsh (impact area B).

4.2 Mitigation and Best Management Practices

Phase 1, the culvert replacement done in 2018, did not require any mitigation pursuant of Env-Wt 313.04(a)(2), Env-Wt 605.03(b)(9) and Env-Wt 904.06(d)(3). The replacement of the failing single 36-inch CMP culvert with twin 36-inch HDPE culverts increased the hydraulic capacity, aquatic organism passage, and geomorphic compatibility of the stream crossing. The replacement of the failing culvert with twin culverts under the Emergency Authorization was carried out after consultation with Eben Lewis of NHDES. Correspondence between Mr. Lewis and NHDOT is included in Appendix E. Cofferdams and turbidity control measures were installed to limit the movement of sediment to the fullest extent practicable, in order to prevent any impacts to water quality. All water quality measures were designed to provide maximum protection during storm events during construction. Temporary erosion controls and cofferdams were removed following construction and the site was monitored for stability.

Phase 2, the replacement and lowering of the twin 24-inch SPP culverts at the active drive, will not require mitigation based on the previously existing permit for the driveway. At the December 16, 2020 Natural Resource Agency Meeting (NRAM), Lori Sommer of NHDES stipulated that mitigation would only be required if the active driveway had not been permitted in 2008. The permit approval for the active driveway is included in Appendix B. Please refer to the Natural Resource Agency Coordination Meeting Minutes provided in Appendix A.

Standard best management practices (BMPs) will be applied throughout Phase 2 construction in accordance with applicable NHDES and NHDOT BMP Manuals to reduce the risk of erosion and sediment transport in the wetland complex and stream within the project area. Erosion and perimeter control BMPs will be installed upslope of project wetlands to ensure that silt, sediment, and other debris do not runoff unsterilized areas. Temporary diversion BMPs (culvert balloons) will be installed in the old driveway culvert to isolate the dry work area at the new driveway culvert, thereby minimizing the risk of erosion from tidal flushing. Refer to the Construction Sequence Narrative included as Appendix N and the Wetland Impact and Erosion Control Plans included as Appendix R for further details.

5 Wetland and Surface Water Resources

A wetland and stream delineation and functional assessment was conducted within the 1.3-acre survey area along Ocean Boulevard (Rt 1A), in Rye, NH on September 2, 2020. FBE partnered with New Hampshire Certified Wetland Scientist (#206) Heather Storlazzi Ward of TRC Companies (TRC) to complete the project. Wetland delineations were performed following the protocols described in the Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0, January 2012 (USACE, 2012). Hydric soils were identified by applying

criteria described in the USDA Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 8.1, 2017.

Within the survey area FBE delineated four sections of one wetland complex and a section of watercourse within it. Refer to the Wetland and Watercourse Delineation and Functional Assessment included in Appendix E for further details on wetland and watercourse delineation and functional assessment methods and results.

6 Floodplains and Floodways

The majority of the project area is located within the 100-year floodplain (Special Flood Hazard Zone AE), as shown on the effective Flood Insurance Rate Map, Map No. 33015C0432E; refer to the Floodplain Map provided in Appendix O. A small portion of the project, the eastern inlet of the Route 1A twin culverts, is within the 500-year floodplain (Zone X). The proposed project will result in limited permanent impacts to the floodway and 100-year floodplain that will improve the ability of the culverts to handle excessive runoff and high water.

7 Rare, Threatened, and Endangered Species

7.1 Natural Heritage Bureau

A search for the occurrence of rare plant, animal, or natural communities within the vicinity of the proposed project was completed using the NHB online DataCheck tool. A project report provided by NHB, dated September 4, 2020 indicated that while there was an NHB record in the vicinity of the project, the NHB does not anticipate that the project will have a negative impact on this species or natural community. Therefore, coordination with the NH Fish and Game Department (NHF&G) is not required. Refer to the NHB DataCheck Report provided in Appendix F.

The project description in the NHB DataCheck Report includes only the proposed work, not the already-completed culvert replacement that was completed in 2018 under the Emergency Authorization. During the December 16, 2020 NRAM, Amy Lamb of NHB provided additional detail on the NHB record in the vicinity. The record is the plant species salt marsh agalinis (*Agalinis maritima*), known to occur in the tidal marsh system to the north of the project area. NHDOT responded to Ms. Lamb by clarifying that no new work is proposed on the Route 1A culvert, so the NHB DataCheck Report is sufficient for the proposed work. Refer to the NRAM minutes in Appendix A.

7.2 US Fish and Wildlife Service

The project area was reviewed for the presence of federally listed or proposed, threatened, or endangered species, designated critical habitat, or other natural resources concerning the USFWS IPaC System. Results dated August 26, 2020 indicate the potential presence of two species within the vicinity of the project area, the Northern Long-eared Bat (*Myotis septentrionalis*) and the Red Knot (*Calidris canutus rufa*). Refer to the USFWS IPaC Report provided in Appendix H.

Northern Long-Eared Bat

The proposed project is located within the federally protected range of the federally threatened species the Northern Long-eared Bat (NLEB). The largest threats to NLEB habitat are tree clearing activities and bridge work where NLEB roosts could exist. The project does not include any tree clearing or bridge work activities. A consistency letter for the project was generated in the IPaC system on December 10, 2020 and found that the proposed project is consistent with activities analyzed by the Programmatic Biological Opinion; however, incidental take of this species resulting from this project is not prohibited under the Endangered Species Act final Section 4(d) rule at 50 CFR §17.40(o). Refer to the NLEB 4(d) Consistency Letter provided in Appendix I.

Red Knot

The proposed project is not anticipated to negatively impact the Red Knot, which is a federally threatened species. The Red Knot is a shorebird that nests in High Arctic habitats and migrates south for the winter months. Migrating Red Knots use marine habitats, most commonly sandy beaches, that contain invertebrate prey. The project is not expected to result in any disturbance of the Red Knot. Kevin Ryan, Ph.D., FBE Wildlife Ecologist, determined that the project is not likely to negatively impact the Red Knot. Refer to Dr. Ryan’s Memorandum regarding the Red Knot provided in Appendix I.

7.3 Wildlife

The NHF&G Wildlife Action Plan (WAP) identifies ranked habitat tiers that recognize the highest quality habitats in the state. The tidal marsh in the project area is ranked as Highest Ranked Habitat in New Hampshire (refer to the Ranked Habitat map provided in Appendix P). The culvert replacement completed in 2018, that is included as part of this wetlands application, resulted in a small, unavoidable, area of permanent impact. However, the project will have long-term beneficial impacts to the tidal marsh habitat due to the increased hydraulic capacity, aquatic organism passage, and geomorphic compatibility of the stream crossing.

8 Cultural Resources

Under a Section 106 Programmatic Agreement between NHDOT and the NH Division of Historical Resources (NHDHR), NHDOT may complete cultural resources review to satisfy Section 106 and Army Corps of Engineers Appendix B requirements. NHDOT issued a “Cultural Resources Review Effect Finding” concluding with an “Appendix B Certification – Activities with Minimal Potential to Cause Effects” on December 23, 2020. Refer to Appendix J for the NHDOT document.

9 US Army Corps of Engineers and US Coast Guard

The US Coast Guard reviewed the location of the project and determined that, because the Route 1A culvert crossing does not cross a named waterway, there is no data on navigability and no need for further review. Correspondence with the USCG Bridges Program is included in Appendix E.

10 Coastal Resources (Env-Wt 600)

The culvert replacement completed in 2018, that is included as part of this application, occurred within a tidal emergent marsh. The proposed driveway modification and driveway removal occur within a palustrine emergent marsh and an excavated intertidal streambed (drainage ditch), both within the highest observable tide line (HOTL). Therefore, the project occurs in a coastal area and is required to present additional information pursuant of Env-Wt 603.02.

10.1 Project Purpose and Description (Env-Wt 603.02(a))

The purpose of the proposed project is to restore the hydrology, decrease flooding and erosion, and increase aquatic organism passage of the wetland complex adjacent to Route 1A in Rye, NH. Additionally, the project is intended to maintain safe and functioning transportation conditions along this section of Rt 1A. Refer to sections 2 (Site Description and Existing Conditions), 3 (Proposed Project Description), and 4 (Impact Analysis and Best Management Practices) of this narrative for further details on the proposed work and anticipated impacts to jurisdictional areas.

10.2 Description of Natural Resources (Env-Wt 603.02(b))

The project includes permanent and temporary impacts to a contiguous wetland complex that includes a tidal marsh classified as an estuarine intertidal emergent marsh (E2EM1/5), a palustrine emergent marsh (PEM5), and an excavated estuarine intertidal streambed with mud substrate (E2SB5x). The project area occurs within the highest observable tide line (HOTL). Refer to the Wetland and Watercourse Delineation and Functional Assessment included as Appendix E for further details on wetland and watercourse delineation methods and results.

10.3 Coastal Functional Assessment (Env-Wt 603.02(c)(1))

Functional assessments were performed by Kevin Ryan and NH-certified Wetland Scientist Heather Storlazzi Ward, pursuant to the approach described by the Army Corps Highway Methodology Workbook Supplement: Wetland Functions and Values (USACE, 1995). The principal functions of the wetland complex within the project area consist of Floodflow Alteration, Sediment/Toxicant Retention, and Nutrient Removal, due to much of the wetland having dense herbaceous vegetation. Other functions include Groundwater Recharge/Discharge, Production Export, Wildlife Habitat, and Uniqueness/Heritage. Refer to the Wetland and Watercourse Delineation and Functional Assessment included as Appendix E for further details on functional assessment methods and results.

10.4 Vulnerability Assessment (Env-Wt 603.02(c)(2))

A site-specific vulnerability assessment was conducted by FBE. See Section 4 of the Coastal Resources Worksheet included as Appendix Q.

10.5 Natural Resource Protection (Env-Wt 603.02(d))

The construction of the project will minimize impacts to the surrounding wetlands, streams, and tidal marshes and their associated soils, vegetation, and wildlife to the greatest extent possible. Appropriate siltation, erosion controls, turbidity, and sedimentation controls will be used

throughout construction. Standard BMPs will be applied throughout project construction in accordance with applicable NHDES and NHDOT BMP Manuals to reduce the risk of erosion and sediment transport in the wetland complex and stream within the project area. Refer to the Construction Sequence Narrative provided in Appendix N and the Wetland Impact and Erosion Control Plans included as Appendix R for further details.

10.6 Relevant Standard Conditions

Standard Conditions (Env-Wt 603.02(e)(1), Env-Wt 307)

Env-Wt 307.03 Protection of Water Quality Required

Phase 1 construction (culvert replacement under Route 1A) was done in accordance with Env-Wt 307. Cofferdams and turbidity control measures were installed to limit movement of sediment to the fullest extent practicable, in order to prevent any impacts to water quality. All water quality measures were designed to provide maximum protection during storm events during construction. Temporary erosion controls and cofferdams were removed following construction and the site was monitored for stability.

Throughout Phase 2 construction, appropriate standard BMPs will be applied in accordance with applicable NHDES and NHDOT BMP Manuals to reduce the risk of erosion and sediment transport in the wetland complex and stream within the project area. Natural buffers and perimeter controls will be installed upslope of wetland areas to ensure that silt, sediment, and other debris do not runoff unsterilized areas, and will consist of silt fence and silt sock (see Appendix R, Erosion Control Plans). In addition, rows of haybales will be installed and staked in place across the drainage ditch to ensure no migration of silt, sediment, and other debris into the palustrine emergent marsh to the south or the tidal marsh to the north (in the event of any tidal flow or stormwater runoff during construction; however, work will be timed for low tide and dry weather to minimize the risk). Erosion and perimeter control structures will be inspected daily, and any sediments accumulated behind erosion control structures will be removed and disposed at a stable and suitable site. Temporary diversion BMPs (culvert balloons) will be installed in the old driveway culvert to isolate the dry work area at the new driveway culvert, thereby minimizing the risk of erosion from tidal flushing. The contractor will be required to inspect equipment daily for leaking fuel, oil, and hydraulic fluid prior to initiating work. All leaks shall be contained and repaired to prevent fluids from reaching groundwater, surface water, or wetlands. Kits for oil and diesel spills will be readily accessible at each work site, and equipment operators will be trained in their use. Lastly, equipment will be staged and refueled in accordance to Env-Wt 307.15.

Please refer to the Construction Sequence Narrative provided in Appendix N and the Wetland Impact and Erosion Control Plans included as Appendix R for further work and erosion control details.

Env-Wt 307.05 Protection Against Invasive Species

All equipment used during the culvert replacement was inspected to ensure it was completely free of aquatic and terrestrial invasive vegetation, seeds, and all exotic aquatic species, pursuant

with Env-Wt 307.05. For the proposed driveway modifications, the contractor will follow the invasive plant BMPs provided by NHDES, to prevent the use of soil or seed stock containing nuisance or invasive species.

Env-Wt 307.06 Protection of Rare, Threatened or Endangered Species

The project will not jeopardize the continued existence of a threatened or endangered species, a species proposed for listing as threatened or endangered, or designated or proposed critical habitat. Refer to Section 7 of this narrative, Rare, Threatened, and Endangered Species, for further details.

Env-Wt 307.07 Consistency with Shoreland Water Quality Protection Act

All project activities shall be conducted in compliance with the applicable requirements of RSA 483-B and Env-Wq 1400 during and after construction.

Env-Wt 307.12 Restoring Temporary Impacts: Site Stabilization

- a) Within 3 days of final grading or temporary suspension of work in an area that is in or adjacent to surface waters, all exposed soil areas shall be stabilized by:
 - (1) Seeding and mulching, if during the growing season; or
 - (2) mulching with tackifiers on slopes less than 3:1 or netting and pinning on slopes steeper than 3:1 if not within the growing season
- b) Any seed mix used shall not contain plant species that are exotic aquatic weeds;
- c) Mulch used within an area being restored shall be natural straw or equivalent non-toxic, non-seedbearing organic material;
- d) If any temporary impact area that is stabilized with seeding or plantings does not have at least 75% successful establishment of wetlands vegetation after 2 growing seasons, the area shall be replanted or reseeded, as applicable;
- e) Wetland soils from areas vegetated with purple loosestrife or other state-listed invasive plant species shall not be used in the area being restored;
- f) If a temporary impact area is restored by seeding or plantings, then:
 - (1) The work shall not be deemed successful if the area is invaded by nuisance species such as common reed or purple loosestrife during the first full growing season following the completion of construction; and
 - (2) The person responsible for the work shall submit a remediation plan to the department that proposes measures to be taken to eradicate nuisance species during this same period;
- g) Does not apply.

10.7 Project Design Narrative Required (Env-Wt 603.06)

The project will use BMPs and standard conditions pursuant to Env-Wt 307, and approval and evaluation criteria in Env-Wt 313.01 have been met. All avoidance and minimization

requirements will be met pursuant to Env-Wt 311.07 and Env-Wt 313.03; refer to Section 4.2. A coastal functional assessment has been conducted pursuant to Env-Wt 603.04; refer to Section 10.3 and the Wetland and Watercourse Delineation and Functional Assessment included as Appendix E.

Sea-level rise and potential flooding scenarios have been evaluated pursuant to Env-Wt 603.05; refer to Section 4 of the Coastal Resources Worksheet included as Appendix Q.

Details on construction sequence, erosion control methods to be used, a dewatering plan, and discussion on how the completed project will be maintained and managed are included as the Construction Sequence Narrative provided in Appendix N and the Wetland Impact and Erosion Control Plans included as Appendix R.

10.8 Design Plans (Env-Wt 603.07)

Design plans consistent with Env-Wt 603.07 are presented in the Existing Conditions Plans (Appendix Q) and the Wetland Impact and Erosion Control Plans (Appendix R).

10.9 Water Depth Supporting Information Required (Env-Wt 603.08)

Water depth supporting information consistent with Env-Wt 603.08 requirements is presented in the Tidal Datum Worksheet and the Existing Conditions Plans, both found within Appendix Q.

10.10 Statement Regarding Impact on Navigation and Passage (Env-Wt 603.09)

The statement regarding impact on navigation and passage, consistent with Env-Wt 603.09, is presented in Appendix E (US Coast Guard Consultation).

11 Stream Crossings

The Route 1A culvert replacement completed under the 2018 Emergency Authorization from NHDES is located on a tidal watercourse, classifying it as a tier 4 stream crossing. Therefore, the culvert replacement work done in 2018 must address stream crossing standards as outlined in Env-Wt 900. Design consultation between NHDOT and NHDES in 2018 led to the approval of the twin culvert design by NHDES. Eben Lewis of NHDES and Ralph Sanders and Tim Mallette of NHDOT corresponded with regard to the culvert replacement between April 24 and April 30, 2018. Tim Mallette conducted a hydraulic analysis and determined that the proposed twin culvert design was indeed feasible. NHDOT requested and received the Emergency Authorization on May 2, 2018 and carried out construction on May 7 and 8 in accordance with all conditions of the Emergency Authorization. The twin culverts meet the criteria of an approved Alternative Design under Env-Wt 904.10.

Env-Wt 904.10 Alternative Designs.

(a) If the applicant can demonstrate that installing the structure specified in the applicable rule is not practicable, as that term is defined in Env-Wt 103, the applicant may propose an alternative design in accordance with this section.

Work conducted under the Emergency Authorization was done to alleviate a safety hazard, thus the design process under the applicable rule was not practicable. The alternative design (rather than in-kind replacement) was requested by NHDES and determined feasible by NHDOT.

(b) To request approval of an alternative design, the applicant shall submit a written request to the department, accompanied by a technical report that:

(1) Clearly explains how the proposed alternative meets the criteria for approval specified in (c) or (d), below, as applicable; and

(2) Has been prepared by:

a. An environmental scientist or professional engineer for a tier 1 stream crossing; or

b. A professional engineer for a tier 2, tier 3, or tier 4 stream crossing.

Not applicable. NHDES approved the alternative design and issued the Emergency Authorization in 2018.

(c) The department shall approve an alternative design for a tier 3 or tier 4 stream crossing if:

(1) The report submitted pursuant to (b), above, demonstrates that adhering to the stated requirements is not practicable, by providing:

a. A detailed financial comparison of the costs of a structure that complies with all applicable design requirements, the proposed structure, and a structure that requires fewer waivers than the proposed structure, with a range of costs estimates for each;

b. A detailed description of the physical limitations of the site; and

c. A hydraulic analysis to show that the proposed stream crossing can accommodate the applicable design storm or that the crossing, together with the associated roadway and roadway embankment, can safely accommodate overtopping flows; and

(2) The proposed alternative meets:

a. The general design criteria established in Env-Wt 904.01; and

b. The applicable design criteria established in Env-Wt 904.07 to the maximum extent practicable.

NHDES approved the alternative design, which fulfills the general design criteria Env-Wt 904.01 and 904.07 to the maximum extent practicable and comprised an improvement over the failing culvert in all respects.

Appendix A – Natural Resource Agency Coordination Meeting Minutes



TO: Sarah Large, NHDOT Bureau of Environment
FROM: Rich Brereton, FB Environmental Associates (FBE)
SUBJECT: NHDOT Rye 42714 Natural Resource Agency Meeting Minutes
DATE: December 16, 2020
CC: Andy O'Sullivan, NHDOT Bureau of Environment

Rich introduced the project on behalf of FBE and Ralph Sanders of NHDOT District 6 (not in attendance). FBE has been an on-call wetland contractor for NHDOT since 2013, but this was FBE's first NHDES Standard Dredge and Fill application development for NHDOT.

Rich presented the project which lies along Route 1A/Ocean Blvd in Rye. Three work areas are included in the project: one abandoned driveway and one currently used driveway serving 2125 Ocean Blvd; and one culvert under Route 1A previously replaced in 2018 under a NHDES Emergency Authorization when the culvert was failing, which was done by NHDOT in cooperation with Eben Lewis of NHDES. The proposed work includes replacing and modifying one driveway culvert, removing one driveway culvert, and retroactively replacing the Route 1A culvert in 2018. NHDOT's Standard Dredge and Fill Wetlands permit application will include this work, and serve as the Department's follow up to the 2018 Emergency Authorization for the culvert replacement work under Route 1A.

The full extent of the highway Right of Way is being sorted out with FBE's partner HEB working on the question. It is either in the ROW or within an easement granted to NHDOT at the time of construction of this section of highway. This stretch of Route 1A was constructed in the 1950s and involved extensive fill and dredging/excavation of drainage ditches. The road bisects a larger wetland complex.

The overall problem with the driveways is perched culverts and standing, impounded water. This situation impedes tidal flow and is an impediment to aquatic organism passage. The new driveway has twin 24" culverts that are likely in poor condition and need to be assessed. The stone header also needs to be reset. Water and sewer concerns regarding the old driveway have been sorted out. There is no sewer connection buried in the old driveway and the water connection is not in use, making no issue with removal. The proposed work is to completely remove the old driveway and its twin 21" culverts, which will alleviate the standing water problem. The third work area is the 2018 culvert replacement. A single 36" CMP culvert was failing, and was replaced with twin 36" HDPE culverts.

Rich then summarized the natural resources present. He showed the wetland delineation map, showing that the wetlands were delineated as one continuous wetland complex with four sub-areas and one stream channel. Additional tidal survey data was collected in Sep-Oct 2020 by HEB Engineers. Wetland area A1, a palustrine emergent marsh, does not receive salt water during mean high water, but does during plus tides. Wetland area A2, categorized as an excavated estuarine intertidal streambed with mud bottom, is a manmade drainage ditch and has been maintained as such. Wetland area A3 is an estuarine intertidal emergent marsh, as is wetland area A4. A3 and A4 are connected via the Route 1A culvert.

Rich summarized the details of the Chapter 600 coastal resource work. The project is proposed for a 25-year design life with a high tolerance for flooding risk based on the type of asset (culverts) and the area's known frequency of flooding during coastal storms. In the appropriate sea level rise scenario, the Relative SLR is 1.15 feet and the RSLR-adjusted Design Flood Elevation is 10 feet.

Rich summarized the Water Quality context of the project site, which is ~0.75 miles upstream of Rye Harbor, a waterbody listed as impaired for mercury, PCBs, and dioxin. This project is not anticipated to have any impacts on water quality in Rye Harbor. Rich showed a map of nearby conserved lands showing no conservation land within or adjacent to the project area. Next, Rich showed a map of wildlife habitat and rare species. Wetland areas A3 and A4, as salt marsh, are classified as highest ranked habitat. The USFWS IPAC review showed the presence of northern long-eared bat and red knot. No tree removal is proposed, meaning there is no potential impact to northern long-eared bat. Red knot is a shorebird that prefers sandy shore habitats, and as such is not anticipated to be impacted by the proposed impacts to the intertidal marshes with mud substrates involved in this project.

Sarah Large then asked the Resource Agency members for their questions and comments in a roll call format.

Karl Benedict of NHDES said that, on the basis of the Emergency Authorization and the previous consultation with Eben Lewis, he would defer to Eben on this project.

Eben Lewis asked if Rich could speak to how the project would approach stabilization of the drainage ditch during and after construction activities around the two driveways. Rich replied that FBE, HEB, District 6, and BOE are still planning the proposed construction sequence and identifying appropriate erosion control measures, but that Ralph Sanders of District 6 anticipates that the project will only require excavation of the driveways and in the immediate vicinity as needed for culvert replacement/removal. No excavation is proposed along the ditch itself. The work is to be completed during low tide and not while inundated. Eben reminded Rich to make sure to include dewatering notes. Rich replied that Ralph is planning to supply dewatering information, though he hopes timing work at low tide will minimize the need to dewater.

Kevin Lucey of NHDES said the work so far is thorough. DES actually missed this culvert during a recent culvert assessment initiative covering the area. Kevin raised the potential for the marsh southwest of the project to serve as a salt marsh migration location. He also noted that NHDES was aware of complaints of nuisance flooding from nearby residents, and suggested that this project might help ease flooding as well. Kevin asked for confirmation that the culverts were an in-kind replacement. Rich replied that yes, the plan was to install the same diameter (24") twin culverts under the new driveway. The twin 21" culverts under the old driveway are to be removed. Lastly, Kevin noted that it's an interesting watershed for many reasons. When Jenness Beach surges, the marsh area east of the project receives tidewater from the east, thus flooding concerns exist both east and west of site.

Chris Williams of NHDES echoed the comments of Eben and Kevin about the thorough presentation and asked whether we anticipate the project will be covered under the Army Corps General Permit. Rick Kristoff of the Corps responded to say that any new construction will not be covered under the GP and would be an Individual Permit. Rick advised the project team to check with DES as to whether the existing driveway already has a Corps permit. If not, the property owner may need to acquire one. Rick and Andy agreed to follow up after the meeting, and Eben agreed to look up the relevant DES permits for the new driveway. Chris Williams of NHDES added that any new Corps permit will need review from the DES Coastal Program.

Lori Sommer of NHDES said that her office will look to Andy and Eben for an update on what they find in terms of a new driveway permit. If a permit is needed now, it would require mitigation. Lori agreed with the project team that the old driveway removal will improve hydrologic conveyance and allow better tidal movement. She added a reminder to take all precaution to avoid introducing invasive species during the lifetime of the project.

Carol Henderson of NH Fish & Game commented that she appreciates the effort and encourages the proposal to remove the driveway and to remove the perched culvert and alleviate perching in the remaining culvert, and agrees that it will increase aquatic passage.

Amy Lamb of NHB commented that during NHB review it was not clear that culvert under 1A was going to be replaced. There is a record of salt marsh agalinis (*Agalinis maritima*) in the salt marsh area north and east of the project. Amy suggested that a new letter could be reissued to ensure that the plant is kept in mind during permitting and construction. Rich agreed to revisit the NHB letter and coordinate any needed changes. Matt Urban commented that DOT is not proposing to replace the pipes under Rt 1A, only to retain the impacts already incurred under the Emergency Authorization in 2018.

Rick Kristoff said that his previous comments were sufficient and that he would follow up with Andy. Mark Hemmerlein of DOT asked for clarification from Rick on whether he thought this project would be a Corps Individual Permit? Rick replied that the answer would be yes if it's new construction. Mark asked Rick if the Corps has already reviewed the new Section 401 rules, and if so, is there any effect on this project. Rick said that, in short, the Corps is working on it with EPA and he'd be glad to catch up Mark at a later date.

Beth Alafat of EPA commented that Jeanie Brocchi will be the EPA lead for this project but couldn't make it to the meeting. Beth asked on behalf of Jeanie and herself about the project's designated design life. Is 25 years typical for this type of project, and is that long enough? Beth suggested that the project team coordinate with Jeanie about the design life question, and Rich agreed.

Peter Steckler of TNC asked whether there are any stream channels draining from the wetland south and west of the project toward the drainage ditch and the driveways. And are the other culverts sized appropriately? Rich replied that the wetland delineation did not find a stream channel connecting the marsh area south and west of the project area and the drainage ditch, but that the drainage ditch itself was classified as an estuarine intertidal streambed and certainly received tidal flow in plus-tide conditions. As for the culvert sizing, Rich replied that the twin 36" culverts under Rt 1A reflected the hydraulic analysis done at the time of the Emergency Authorization in 2018, and that Rich and DOT Bureau of Environment would confer with Eben about the twin 24" culverts under the new drive.

This project has not been previously discussed at the Monthly Natural Resource Agency Coordination Meeting.



Rich Brereton <richb@fbenvironmental.com>

NHDOT Rye culvert replacement

3 messages

Rich Brereton <richb@fbenvironmental.com>

Thu, Jan 28, 2021 at 9:40 AM

To: brochi.jean@epa.gov, alafat.beth@epa.gov

Cc: "OSullivan, Andrew" <Andrew.M.OSullivan@dot.nh.gov>, "Sanders, Ralph" <Ralph.W.Sanders@dot.nh.gov>

Hi Jean and Beth,

I'm writing to follow up on the presentation I made to the NHDOT Natural Resource Agency Meeting on December 16. Thank you for your review of the project and the comments you provided. Specifically I wanted to follow up on the design life for the project that we designated to satisfy NHDES's coastal wetland requirements. Beth, you asked if 25 years was standard for projects like this, and if that was long enough.

As a reminder, a portion of the work in this project was already completed under a 2018 Emergency Authorization by NHDES - the Route 1A culvert replacement/upgrade. The proposed portion of the project is the removal of one abandoned driveway and modification/replacement of one active driveway accessing a private residence over a drainage ditch that handles tidal waters. NRAM presentation attached.

Our rationale for designating a 25-year design life as opposed to 50 or longer was the low value of the replacement culverts, low sensitivity to possible inundation, and the adaptability of the Route 1A crossing and the driveway crossing the drainage ditch to future sea level rise. We followed the guidelines laid out by the NHDES Coastal Resource Worksheet (attached).

In addition, the project will result in improved resilience to sea level rise, which is the ultimate goal of the analysis required by NHDES's Chapter 600 rules. The upgrade of the Route 1A crossing from a single 36" to twin 36" culverts increases hydrologic connectivity between the marsh areas east and west of the highway. The driveway culvert modification will alleviate the current perch, improve the ability to handle runoff, and accommodate tidal inflow at plus tides.

I hope this helps and I would be happy to receive any input from you on our rationale for our proposal.

Best,
Rich

Rich Brereton, Ph.D.
Permitting Division Lead & Water Resource Scientist
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2 attachments

Rye42714_CoastalResourcesWorksheet_22Jan2021.pdf
277K

Rye42714_NRAM pres_14December2020.pdf
3668K

Brochi, Jean <Brochi.Jean@epa.gov>

Mon, Feb 1, 2021 at 9:19 AM

To: Rich Brereton <richb@fbenvironmental.com>, "Alafat, Beth" <alafat.beth@epa.gov>

Cc: "OSullivan, Andrew" <Andrew.M.OSullivan@dot.nh.gov>, "Sanders, Ralph" <Ralph.W.Sanders@dot.nh.gov>

Hi Rich,

2/4/2021

FB Environmental Mail - NHDOT Rye culvert replacement

Thank you for your detailed response.

You have addressed my questions.

There are no further comments or questions.

I appreciate your attention to this matter.

Thank you, Jeannie

[Quoted text hidden]

Rich Brereton <richb@fbenvironmental.com>

Mon, Feb 1, 2021 at 9:40 AM

To: "Brochi, Jean" <Brochi.Jean@epa.gov>

Cc: "Alafat, Beth" <alafat.beth@epa.gov>, "OSullivan, Andrew" <Andrew.M.OSullivan@dot.nh.gov>, "Sanders, Ralph" <Ralph.W.Sanders@dot.nh.gov>

Hi Jeannie,

Thanks very much for your response. I'm glad that I was able to address your questions on this project.

Rich

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Appendix B – Mitigation Report/Coordination/ARM Calculations

Mitigation is not required for this project, so a mitigation report, coordination, and ARM calculations are not provided.

This appendix includes the permit approval for the construction of the new driveway in 2008.

File Number	2008-00628	Application Type	STANDARD DREDGE AND FILL APPLICATION
Date Received	10/30/2008	Preliminary Category	MINOR IMPACT PROJECT
Owner Name	DENNIS & TERESA JENSON	Application Status	PERMIT APPROVED
Site Address	2125 OCEAN BLVD RYE, ROCKINGHAM	Final Category	MINIMUM IMPACT PROJECT
Site Map/Lot	84; 44;	DES Reviewer	EBEN LEWIS
Waterbody Name	ATLANTIC OCEAN	Agent	
Project Description	Retain 540 square feet of impact within a roadside drainage ditch containing two (2) 24-inch HDPE culverts and associated fill for the purpose of obtaining vehicular access to a single-family residential dwelling.		
Designated River			

**Appendix C – Wetland Delineation Report (Includes
Functional Assessment Worksheet w-06-049)**

**Wetland and Watercourse Delineation and
Functional Assessment
NHDOT Drainage Improvement/Culvert
Replacement Project
Rye, New Hampshire
NHDOT# 42714**



Prepared for:

*NH Department of Transportation
7 Hazen Drive
Concord, NH 03302*



Prepared by:

*FB Environmental Associates
170 West Road, Suite 6
Portsmouth, NH 03801*



December 2020

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A salt marsh along the east side of Ocean Boulevard in Rye, NH

Summary

FB Environmental (FBE) conducted a wetland and stream delineation, wetland functional assessments, and invasive plant survey within an approximately 1.3-acre survey area along Ocean Boulevard (US Route 1) in Rye, New Hampshire, just east of the intersection with Jenness Avenue. Within the survey area FBE delineated four sections of one estuarine wetland complex and a section of watercourse within it. FBE also documented the presence of six species of non-native, invasive plants.

1. Introduction

FBE was contracted by the New Hampshire Department of Transportation (NHDOT) to delineate wetlands and watercourses, and conduct wetland functions and values assessments at a site in Rye, NH in support of a drainage improvement and culvert replacement project. The survey area is approximately 1.3 acres in size and is situated along the west side of Ocean Boulevard (US Route 1) just east from the intersection of Jenness Avenue.

FBE also inventoried and mapped non-native, invasive plant species present within the survey area. FBE partnered with New Hampshire Certified Wetland Scientist (#206) Heather Storlazzi Ward of TRC Companies (TRC) to complete the project.

Fieldwork took place on September 2, 2020. Ms. Storlazzi Ward reviewed field delineations and a draft version of this report, including the delineation map.

2. Methods

2.1 Soils

Soil information for the survey area was obtained from the USDA-Natural Resources Conservation Service's Web Soil Survey and the Soil Survey of Rockingham County, New Hampshire (USDA Soil Conservation Service, 1959). Wetland scientists used the soil survey as a general guide but relied on field-based hydric/non-hydric soil evaluations for the wetland delineation.

2.2 Wetlands

Based on current State and U.S. Army Corps of Engineers (USACE) policy for identifying jurisdictional wetlands, wetland delineations were performed following the protocols described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0, January, 2012* (USACE, 2012). Hydric soils were identified by applying criteria described in the *USDA Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 8.1, 2017*.

The Routine Onsite Determination Method (Routine Method) was used for this project. The Routine Method involves identifying wetlands based on three criteria: the predominance of hydrophytic vegetation, hydric soils, and hydrology. For a given area to be considered a wetland, all three of these parameters must be met, with some exceptions for disturbed areas.



Figure 1. Project survey area along Ocean Boulevard in Rye, New Hampshire.

Hydrophytic vegetation is defined as the community of macrophytes that occur in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to influence plant occurrence (USACE, 2012). An indicator status is assigned to each plant species; this indicator status is then used to calculate the overall dominance of wetland plants in each stratum at each sample point. Following the 2018 National Wetland Plant List (USACE, 2018), the frequency of a plant species’ occurrence in a wetland community determines the five categories of indicator status (Table 1).

Table 1. Qualitative description of the five wetland indicator status ratings used during wetland delineations, based on the 2018 National Wetland Plant List.

Indicator Status Rating	Designation	Qualitative description
Obligate (OBL)	Hydrophyte	Almost always occurs in wetlands.
Facultative Wetland (FACW)	Hydrophyte	Usually occurs in wetlands, but may occur in non-wetlands.
Facultative (FAC)	Hydrophyte	Occurs in wetlands and non-wetlands.
Facultative Upland (FACU)	Non-hydrophyte	Usually occurs in non-wetlands, but may occur in wetlands.
Upland (UPL)	Non-hydrophyte	Almost never occurs in wetlands.

A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA Soil Conservation Service, 1994). Examples of hydric soil indicators include a histic epipedon or the presence of a dark A or Ap soil horizon underlain by a high value, low chroma (light-gray) colored soil horizon with redoximorphic features (e.g., iron and manganese concentrations or depletions).

The term "wetland hydrology" encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Typical indicators of wetland hydrology include inundated soils, soils saturated to the surface, drainage patterns, water marks, and morphological adaptations such as buttressed trunks, shallow root systems, or multiple stemmed trees.

All wetlands and watercourses were classified using the Federal Geographic Data Committee’s *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC, 2013). This water resource classification system was developed by the USFWS and is commonly referred to as “Cowardin Classification” (Appendix B). The Cowardin Classification is used to define wetlands and other aquatic resources by their landscape position, cover type, and hydrologic regime. Special modifiers can be added that describe water regime/chemistry, soil types, or disturbances.

Where wetlands are present, FBE flagged wetland boundaries using glo-pink survey flagging emblazoned with the words “WETLAND DELINEATION” and labeled with an alphanumeric code denoting the resource name and flag number. Wetland delineation data plots (a.k.a. “Corps plots”) are marked with red survey flagging.

2.2 Streams

The following definitions were used for delineating streams:

- *Top-of-Bank (TOB)* - "Bank" means the transitional slope immediately adjacent to the edge of a surface water body, the upper limit of which is usually defined by a break in slope. (Source: *New Hampshire Code of Administrative Rules Env-Wt 101.07*).
- *Ordinary High Water (OHW)* - the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (Source: <https://www.law.cornell.edu/cfr/text/33/329.11>).

FBE flags OHW and TOB with blue and blue/white striped survey flagging, respectively. When TOB and OHW do not diverge, only blue flagging is used and therefore represents both.

2.3 Non-Jurisdictional Drainages

Non-jurisdictional drainages are ephemeral drainages that are typically not jurisdictional under state and federal environmental regulations. These features do not meet the definition of a watercourse or fail to display the three criteria required to meet the definition of a wetland. Examples of non-jurisdictional drainages may include but are not limited to rock-filled channels, ephemeral drainage swales, ditch turnouts, swales with water-pushed leaf litter, or other similar features. FBE flagged non-jurisdictional drainages with orange/black striped flagging.

2.4 Invasive Plants

FBE documented the type, approximate extent, and location of invasive plant species within the survey area, and GPS data were collected for each invasive plant community. Plant locations were not marked with flagging. Table 2 (below) lists the codes used to identify invasive plant species on delineation plans.

Table 2. Scientific name, common name, and species code of invasive plants noted on delineation plans.

Scientific Name	Common Name	Species Code
<i>Celastrus orbiculatus</i>	Oriental bittersweet	CEOR
<i>Fallopia japonica</i>	Japanese knotweed	FAJA
<i>Frangula alnus</i>	Glossy false buckthorn	FRAL
<i>Lythrum salicaria</i>	Purple loosestrife	LYSA
<i>Phragmites australis</i>	Common reed	PHAU
<i>Rosa multiflora</i>	Multiflora rose	ROMU

2.5 Global Positioning System (GPS) Data Collection

FBE geo-located natural resource feature flags (e.g., wetlands, streams, and non-jurisdictional drainages) using a mapping-grade GPS unit (Eos Arrow 100), in accordance with the manufacturer's data collection standards designed to achieve sub-meter accuracy. (Note that sub-meter accuracy is attained only in ideal conditions, which are seldom present in the field.) All data were then exported as an ESRI shapefile in the coordinate system New Hampshire State Plane, Zone 4676 (FIPS 2800), NAD83, Survey Feet. In addition, FBE collected GPS points representing each invasive plant community (a community represents an isolated grouping of an individual species). GPS data points were also collected at culverts and catch basins observed near mapped resources.

2.6 Wetland Functional Assessment

Wetland functional assessments were performed pursuant to the approach described by the Army Corps Highway Methodology Workbook Supplement: Wetland Functions and Values (USACE, 1995). In this "Descriptive Approach" to functional assessment, evaluators first determine if particular functions and values are present and why, followed by a determination of what functions and values are principal and why. Functions and values can be considered "principal" if they are an important physical component of a wetland ecosystem (function only), and/or are considered of special value to society, from a local, regional, and/or national perspective. When making determinations on the wetland, evaluators are encouraged to determine whether the wetland has the potential to serve the functions and values as well.

Functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and that result from both living and non-living components of a specific wetland resource. These include all processes necessary for the self-maintenance of the wetland ecosystem such as primary productivity and nutrient cycling, among others. Therefore, functions relate to the ecological significance of wetland properties without regard to subjective human values.

Values are benefits that derive from one or more functions and the physical characteristics associated with a wetland. Most wetlands have corresponding societal value. The value of a particular wetland function, or combination of functions, is based on human judgment of the worth, merit, quality, or importance attributed to those functions. The 13 functions and values associated with a wetland functional assessment are described below:

Groundwater Recharge/Discharge: This function considers the potential for the wetland to serve as a groundwater recharge and/or discharge area. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.

Floodflow Alteration (Storage & Desynchronization): This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events and the gradual release of floodwaters. It adds to the stability of the wetland ecosystem or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.

Fish and Shellfish Habitat: This function considers the effectiveness of seasonal or permanent watercourses associated with the wetland in providing fish and shellfish habitat.

Sediment/Toxicant/Pathogen Retention: This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants or pathogens in runoff water from surrounding uplands, or upstream erosive wetland areas.

Nutrient Removal/Retention/Transformation: This function considers the effectiveness of the wetland as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels. One aspect of this function is to prevent ill effects of nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.

Production Export: This function evaluates the effectiveness of the wetland to produce food or usable products for man or other living organisms.

Sediment/Shoreline Stabilization: This function considers the effectiveness of the wetland in stabilizing stream banks and shorelines against erosion.

Wildlife Habitat: This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and migrating species are considered.

Recreation: This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting and other active or passive recreational activities.

Educational/Scientific Value: This value considers the suitability of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research.

Uniqueness/Heritage: This value considers the effectiveness of the wetland or its associated waterbodies to provide certain special values, including archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, or its relative importance as a typical wetland class for the geographic location.

Visual Quality/Aesthetics: This value considers the visual and aesthetic quality or usefulness of the wetland.

Endangered Species Habitat: This value considers suitability of the wetland to support threatened or endangered species.

3. Results

3.1 Fieldwork

Fieldwork was conducted by Kevin Ryan and NH-Certified Wetland Scientist Heather Storlazzi Ward on September 2, 2020. Ms. Storlazzi Ward reviewed a draft form of this report (including the delineation plan). Wetlands and watercourses delineated within the survey area are described below.

3.2 Wetlands

FBE identified one wetland complex, Wetland A, within the survey area. A *Phragmites* marsh (Wetland Area A1), which continues beyond the survey area boundary, is present at the southwestern end of the survey area. The marsh drains to a culvert (underneath a driveway to a residence) which leads to an excavated/ditched portion of the wetland complex (Wetland Area A2). This area in turn is connected via a culvert (underneath a former driveway to the same residence) to a salt marsh at the northwestern end of the survey area (Wetland Area A3).

This salt marsh in turn is connected to another area of salt marsh situated along the east side of Ocean Boulevard (Wetland Area A4) via a culvert under the road.

Wetland Area A1

Wetland Area A1 is a seasonally flooded/saturated emergent wetland meeting the classification of a palustrine emergent marsh dominated by common reed (*Phragmites australis*) (PEM5). NWI maps also show this wetland as a freshwater PEM, however it is possible that saltwater backs up into the wetland during exceedingly high tide events.

At the USACE plot location red maple (*Acer rubrum*) and gray birch (*Betula populifolia*) dominate the canopy (note however that canopy cover at this location totals only 16%) with sparse common winterberry (*Ilex verticillata*) comprising the shrub layer. Common reed (*Phragmites australis*) accounts for 100% coverage of the herb layer.

Soil within Wetland Area A1 meets the criteria for A1 – *Histosol* and A4 – *Hydrogen Sulfide* as the soil profile consists of 27+ inches of organic material (muck) having a strong odor of rotten eggs (hydrogen sulfide). Observed indicators of hydrology consisted of High Water Table (A2), Saturation (A3), and Hydrogen Sulfide Odor (C1).

Wetland Area A2

Wetland Area A2 is a ditched/excavated area meeting the classification of estuarine intertidal streambed with mud substrate (E2SB5x). Culverts at both ends of the ditch connect Wetland Area A2 to Wetland Area A3. Vegetation immediately surrounding Wetland Area A2 includes red maple, red oak (*Quercus rubra*), Virginia rose (*Rosa virginiana*), multiflora rose (*Rosa multiflora*), arrowwood (*Viburnum dentatum*), bayberry (*Morella caroliniensis*), and pin cherry (*Prunus pensylvanica*).

Wetland Area A3

Wetland Area A3 is the northernmost end of the overall wetland complex within the survey area. The area is a *Spartina* marsh that is being invaded by common reed. The wetland meets the classification as an estuarine intertidal emergent marsh with persistent vegetation (E2EM1/5).

At the USACE plot location a single gray birch (*Betula populifolia*) is present in the canopy. No shrubs are present, and the herb layer is dominated by saltmeadow cordgrass (*Spartina patens*) with smooth cordgrass (*Spartina alterniflora*), seaside goldenrod (*Solidago sempervirens*) and common reed also present.

Soil within Wetland Area A3 meets the criteria for A1 – *Histosol* as the soil profile consists of 20 inches of organic material (mucky peat). Observed primary indicators of hydrology consisted of High Water Table (A2) and Saturation (A3).

Wetland Area A4

Wetland Area A4 is situated along the east side of Ocean Boulevard and is connected to Wetland Area A3 via a culvert under the road. Vegetation and hydrology within the wetland are like that of Wetland Area A3 and thus the area is classified as an estuarine intertidal emergent marsh with persistent vegetation (E2EM1/5). This wetland area is dominated by common reed.

Wetland Functional Assessment

Due largely to much of the wetland complex having dense herbaceous vegetation, principal functions of Wetland A consist of Floodflow Alteration, Sediment/Toxicant Retention, and Nutrient Removal. Other functions provided by the wetland are Groundwater Recharge/Discharge, Production Export, Wildlife Habitat, and Uniqueness/Heritage. Appendix C contains a completed Wetland Function-Value Evaluation Form.

3.3 Watercourses

FBE identified one watercourse within the survey area. The watercourse was not flagged due to lack of suitable vegetation to which to tie flagging and because the stream channel is easily discernable (even to the untrained eye).

Stream One

Stream one connects the wetland complex within the survey area to a large salt marsh system that drains to Rye Harbor. Only a short section (approximately 75 feet) of watercourse is present within the survey area. The system meets the classification of a tidal unconsolidated bottom system with a mud substrate (E2SB5). For its length in the survey area the channel ranges two to four feet in width with water depths in excess of twelve inches.

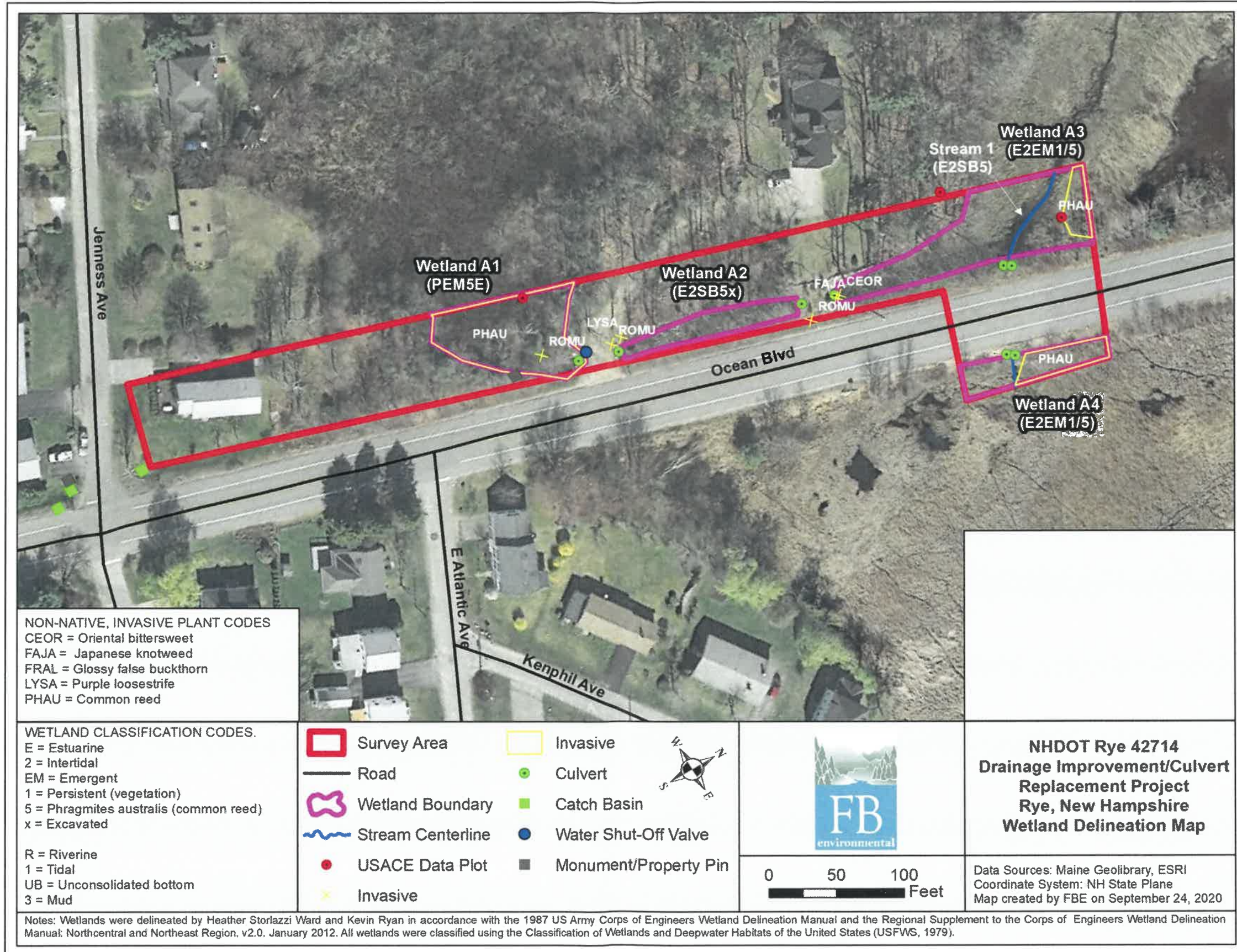
3.5 Non-Native, Invasive Plants

FBE identified six species of non-native, invasive plants are present within the survey area. The most prominent species in this category is common reed, which dominates Wetland Area A1 and is also present in Wetland Areas A3 and A4. Glossy false buckthorn (*Frangula alnus*) is a component of the understory in all non-wetland, forested portions of the survey area. A single small patch of Japanese knotweed (*Fallopia japonica*) is present at the very southern end of Wetland Area A3 as is a few vines of oriental bittersweet (*Celastrus orbiculatus*). A small patch of purple loosestrife (*Lythrum salicaria*) is present at the southern end of Wetland Area A2 and multiflora rose is present near the purple loosestrife and along Ocean Boulevard.

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DELINEATION MAP



APPENDIX A. Wetland Functional Assessment Criteria



Appendix A

Wetland evaluation supporting documentation; Reproducible forms.

Below is an example list of considerations that was used for a New Hampshire highway project. Considerations are flexible, based on best professional judgment and interdisciplinary team consensus. This example provides a comprehensive base, however, and may only need slight modifications for use in other projects.



GROUNDWATER RECHARGE/DISCHARGE— This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.

CONSIDERATIONS/QUALIFIERS

1. Public or private wells occur downstream of the wetland.
2. Potential exists for public or private wells downstream of the wetland.
3. Wetland is underlain by stratified drift.
4. Gravel or sandy soils present in or adjacent to the wetland.
5. Fragipan does not occur in the wetland.
6. Fragipan, impervious soils, or bedrock does occur in the wetland.
7. Wetland is associated with a perennial or intermittent watercourse.
8. Signs of groundwater recharge are present or piezometer data demonstrates recharge.
9. Wetland is associated with a watercourse but lacks a defined outlet or contains a constricted outlet.
10. Wetland contains only an outlet, no inlet.
11. Groundwater quality of stratified drift aquifer within or downstream of wetland meets drinking water standards.
12. Quality of water associated with the wetland is high.
13. Signs of groundwater discharge are present (e.g., springs).
14. Water temperature suggests it is a discharge site.
15. Wetland shows signs of variable water levels.
16. Piezometer data demonstrates discharge.
17. Other



FLOODFLOW ALTERATION (Storage & Desynchronization) — This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters. It adds to the stability of the wetland ecological system or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.

CONSIDERATIONS/QUALIFIERS

1. Area of this wetland is large relative to its watershed.
2. Wetland occurs in the upper portions of its watershed.
3. Effective flood storage is small or non-existent upslope of or above the wetland.
4. Wetland watershed contains a high percent of impervious surfaces.
5. Wetland contains hydric soils which are able to absorb and detain water.
6. Wetland exists in a relatively flat area that has flood storage potential.
7. Wetland has an intermittent outlet, ponded water, or signs are present of variable water level.
8. During flood events, this wetland can retain higher volumes of water than under normal or average rainfall conditions.
9. Wetland receives and retains overland or sheet flow runoff from surrounding uplands.
10. In the event of a large storm, this wetland may receive and detain excessive flood water from a nearby watercourse.
11. Valuable properties, structures, or resources are located in or near the floodplain downstream from the wetland.
12. The watershed has a history of economic loss due to flooding.
13. This wetland is associated with one or more watercourses.
14. This wetland watercourse is sinuous or diffuse.
15. This wetland outlet is constricted.
16. Channel flow velocity is affected by this wetland.
17. Land uses downstream are protected by this wetland.
18. This wetland contains a high density of vegetation.
19. Other

FISH AND SHELLFISH HABITAT (FRESHWATER) — This function considers the effectiveness of seasonal or permanent watercourses associated with the wetland in question for fish and shellfish habitat.



CONSIDERATIONS/QUALIFIERS

1. Forest land dominant in the watershed above this wetland.
2. Abundance of cover objects present.

STOP HERE IF THIS WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE

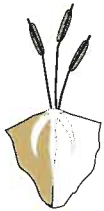
3. Size of this wetland is able to support large fish/shellfish populations.
4. Wetland is part of a larger, contiguous watercourse.
5. Wetland has sufficient size and depth in open water areas so as not to freeze solid and retain some open water during winter.
6. Stream width (bank to bank) is more than 50 feet.
7. Quality of the watercourse associated with this wetland is able to support healthy fish/shellfish populations.
8. Streamside vegetation provides shade for the watercourse.
9. Spawning areas are present (submerged vegetation or gravel beds).
10. Food is available to fish/shellfish populations within this wetland.
11. Barrier(s) to anadromous fish (such as dams, including beaver dams, waterfalls, road crossing) are absent from the stream reach associated with this wetland.
12. Evidence of fish is present.
13. Wetland is stocked with fish.
14. The watercourse is persistent.
15. Man-made streams are absent.
16. Water velocities are not too excessive for fish usage.
17. Defined stream channel is present.
18. Other

Although the above example refers to freshwater wetlands, it can also be adapted for marine ecosystems. The following is an example provided by the National Marine Fisheries Service (NMFS) of an adaptation for the fish and shellfish function.

FISH AND SHELLFISH HABITAT (MARINE) — This function considers the effectiveness of wetlands, embayments, tidal flats, vegetated shallows, and other environments in supporting marine resources such as fish, shellfish, marine mammals, and sea turtles.

CONSIDERATIONS/QUALIFIERS

1. Special aquatic sites (tidal marsh, mud flats, eelgrass beds) are present.
2. Suitable spawning habitat is present at the site or in the area.
3. Commercially or recreationally important species are present or suitable habitat exists.
4. The wetland/waterway supports prey for higher trophic level marine organisms.
5. The waterway provides migratory habitat for anadromous fish.
6. Essential fish habitat, as defined by the 1996 amendments to the Magnuson-Stevens Fishery & Conservation Act, is present (consultation with NMFS may be necessary).
7. Other



SEDIMENT/TOXICANT/PATHOGEN RETENTION — This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas.

CONSIDERATIONS/QUALIFIERS

1. Potential sources of excess sediment are in the watershed above the wetland.
2. Potential or known sources of toxicants are in the watershed above the wetland.
3. Opportunity for sediment trapping by slow moving water or deepwater habitat are present in this wetland.
4. Fine grained mineral or organic soils are present.
5. Long duration water retention time is present in this wetland.
6. Public or private water sources occur downstream.
7. The wetland edge is broad and intermittently aerobic.
8. The wetland is known to have existed for more than 50 years.
9. Drainage ditches have not been constructed in the wetland.

STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.

10. Wetland is associated with an intermittent or perennial stream or a lake.
11. Channelized flows have visible velocity decreases in the wetland.
12. Effective floodwater storage in wetland is occurring. Areas of impounded open water are present.
13. No indicators of erosive forces are present. No high water velocities are present.
14. Diffuse water flows are present in the wetland.
15. Wetland has a high degree of water and vegetation interspersion.
16. Dense vegetation provides opportunity for sediment trapping and/or signs of sediment accumulation by dense vegetation is present.
17. Other



NUTRIENT REMOVAL/RETENTION/TRANSFORMATION — This function considers the effectiveness of the wetland as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels. One aspect of this function is to prevent ill effects of nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.

CONSIDERATIONS/QUALIFIERS

1. Wetland is large relative to the size of its watershed.
2. Deep water or open water habitat exists.
3. Overall potential for sediment trapping exists in the wetland.

4. Potential sources of excess nutrients are present in the watershed above the wetland.
 5. Wetland saturated for most of the season. Pounded water is present in the wetland.
 6. Deep organic/sediment deposits are present.
 7. Slowly drained fine grained mineral or organic soils are present.
 8. Dense vegetation is present.
 9. Emergent vegetation and/or dense woody stems are dominant.
 10. Opportunity for nutrient attenuation exists.
 11. Vegetation diversity/abundance sufficient to utilize nutrients.
- STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.
12. Waterflow through this wetland is diffuse.
 13. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.
 14. Water moves slowly through this wetland.
 15. Other

PRODUCTION EXPORT (Nutrient) — This function evaluates the effectiveness of the wetland to produce food or usable products for humans or other living organisms.



CONSIDERATIONS/QUALIFIERS

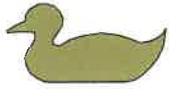
1. Wildlife food sources grow within this wetland.
2. Detritus development is present within this wetland
3. Economically or commercially used products found in this wetland.
4. Evidence of wildlife use found within this wetland.
5. Higher trophic level consumers are utilizing this wetland.
6. Fish or shellfish develop or occur in this wetland.
7. High vegetation density is present.
8. Wetland exhibits high degree of plant community structure/species diversity.
9. High aquatic vegetative diversity/abundance is present.
10. Nutrients exported in wetland watercourses (permanent outlet present).
11. “Flushing” of relatively large amounts of organic plant material occurs from this wetland.
12. Wetland contains flowering plants that are used by nectar-gathering insects.
13. Indications of export are present.
14. High production levels occurring, however, no visible signs of export (assumes export is attenuated).
15. Other

SEDIMENT/SHORELINE STABILIZATION — This function considers the effectiveness of a wetland to stabilize streambanks and shorelines against erosion.



CONSIDERATIONS/QUALIFIERS

1. Indications of erosion or siltation are present.
2. Topographical gradient is present in wetland.
3. Potential sediment sources are present up-slope.
4. Potential sediment sources are present upstream.
5. No distinct shoreline or bank is evident between the waterbody and the wetland or upland.
6. A distinct step between the open waterbody or stream and the adjacent land exists (i.e., sharp bank) with dense roots throughout.
7. Wide wetland (>10') borders watercourse, lake, or pond.
8. High flow velocities in the wetland.
9. The watershed is of sufficient size to produce channelized flow.
10. Open water fetch is present.
11. Boating activity is present.
12. Dense vegetation is bordering watercourse, lake, or pond.
13. High percentage of energy-absorbing emergents and/or shrubs border a watercourse, lake, or pond.
14. Vegetation is comprised of large trees and shrubs that withstand major flood events or erosive incidents and stabilize the shoreline on a large scale (feet).
15. Vegetation is comprised of a dense resilient herbaceous layer that stabilizes sediments and the shoreline on a small scale (inches) during minor flood events or potentially erosive events.
16. Other



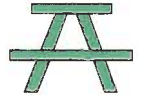
WILDLIFE HABITAT — This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species must be considered. Species lists of observed and potential animals should be included in the wetland assessment report.¹

CONSIDERATIONS/QUALIFIERS

1. Wetland is not degraded by human activity.
2. Water quality of the watercourse, pond, or lake associated with this wetland meets or exceeds Class A or B standards.
3. Wetland is not fragmented by development.
4. Upland surrounding this wetland is undeveloped.
5. More than 40% of this wetland edge is bordered by upland wildlife habitat (e.g., brushland, woodland, active farmland, or idle land) at least 500 feet in width.
6. Wetland is contiguous with other wetland systems connected by a watercourse or lake.
7. Wildlife overland access to other wetlands is present.
8. Wildlife food sources are within this wetland or are nearby.
9. Wetland exhibits a high degree of interspersed vegetation classes and/or open water.
10. Two or more islands or inclusions of upland within the wetland are present.
11. Dominant wetland class includes deep or shallow marsh or wooded swamp.
12. More than three acres of shallow permanent open water (less than 6.6 feet deep), including streams in or adjacent to wetland, are present.
13. Density of the wetland vegetation is high.
14. Wetland exhibits a high degree of plant species diversity.
15. Wetland exhibits a high degree of diversity in plant community structure (e.g., tree/shrub/vine/grasses/mosses)
16. Plant/animal indicator species are present. (List species for project)
17. Animal signs observed (tracks, scats, nesting areas, etc.)
18. Seasonal uses vary for wildlife and wetland appears to support varied population diversity/abundance during different seasons.
19. Wetland contains or has potential to contain a high population of insects.
20. Wetland contains or has potential to contain large amphibian populations.
21. Wetland has a high avian utilization or its potential.
22. Indications of less disturbance-tolerant species are present.
23. Signs of wildlife habitat enhancement are present (birdhouses, nesting boxes, food sources, etc.).
24. Other

¹In March 1995, a rapid wildlife habitat assessment method was completed by a University of Massachusetts research team with funding and oversight provided by the New England Transportation Consortium. The method is called WEThings (wetland habitat indicators for non-game species). It produces a list of potential wetland-dependent mammal, reptile, and amphibian species that may be present in the wetland. The output is based on observable habitat characteristics documented on the field data form. This method may be used to generate the wildlife species list recommended as backup information to the wetland evaluation form and to augment the considerations. Use of this method should first be coordinated with the Corps project manager. A computer program is also available to expedite this process.

RECREATION (Consumptive and Non-Consumptive) — This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland. Non-consumptive opportunities do not consume or diminish these resources of the wetland.



CONSIDERATIONS/QUALIFIERS

1. Wetland is part of a recreation area, park, forest, or refuge.
2. Fishing is available within or from the wetland.
3. Hunting is permitted in the wetland.
4. Hiking occurs or has potential to occur within the wetland.
5. Wetland is a valuable wildlife habitat.
6. The watercourse, pond, or lake associated with the wetland is unpolluted.
7. High visual/aesthetic quality of this potential recreation site.
8. Access to water is available at this potential recreation site for boating, canoeing, or fishing.
9. The watercourse associated with this wetland is wide and deep enough to accommodate canoeing and/or non-powered boating.
10. Off-road public parking available at the potential recreation site.
11. Accessibility and travel ease is present at this site.
12. The wetland is within a short drive or safe walk from highly populated public and private areas.
13. Other

EDUCATIONAL/SCIENTIFIC VALUE — This value considers the suitability of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research.



CONSIDERATIONS/QUALIFIERS

1. Wetland contains or is known to contain threatened, rare, or endangered species.
2. Little or no disturbance is occurring in this wetland.
3. Potential educational site contains a diversity of wetland classes which are accessible or potentially accessible.
4. Potential educational site is undisturbed and natural.
5. Wetland is considered to be a valuable wildlife habitat.
6. Wetland is located within a nature preserve or wildlife management area.
7. Signs of wildlife habitat enhancement present (bird houses, nesting boxes, food sources, etc.).
8. Off-road parking at potential educational site suitable for school bus access in or near wetland.
9. Potential educational site is within safe walking distance or a short drive to schools.
10. Potential educational site is within safe walking distance to other plant communities.
11. Direct access to perennial stream at potential educational site is available.
12. Direct access to pond or lake at potential educational site is available.
13. No known safety hazards exist within the potential educational site.
14. Public access to the potential educational site is controlled.
15. Handicap accessibility is available.
16. Site is currently used for educational or scientific purposes.
17. Other



UNIQUENESS/HERITAGE — This value considers the effectiveness of the wetland or its associated waterbodies to provide certain special values. These may include archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, its relative importance as a typical wetland class for this geographic location. These functions are clearly valuable wetland attributes relative to aspects of public health, recreation, and habitat diversity.

CONSIDERATIONS/QUALIFIERS

1. Upland surrounding wetland is primarily urban.
2. Upland surrounding wetland is developing rapidly.
3. More than 3 acres of shallow permanent open water (less than 6.6 feet deep), including streams, occur in wetlands.
4. Three or more wetland classes are present.
5. Deep and/or shallow marsh or wooded swamp dominate.
6. High degree of interspersion of vegetation and/or open water occur in this wetland.
7. Well-vegetated stream corridor (15 feet on each side of the stream) occurs in this wetland.
8. Potential educational site is within a short drive or a safe walk from schools.
9. Off-road parking at potential educational site is suitable for school buses.
10. No known safety hazards exist within this potential educational site.
11. Direct access to perennial stream or lake exists at potential educational site.
12. Two or more wetland classes are visible from primary viewing locations.
13. Low-growing wetlands (marshes, scrub-shrub, bogs, open water) are visible from primary viewing locations.
14. Half an acre of open water or 200 feet of stream is visible from the primary viewing locations.
15. Large area of wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
16. General appearance of the wetland visible from primary viewing locations is unpolluted and/or undisturbed.
17. Overall view of the wetland is available from the surrounding upland.
18. Quality of the water associated with the wetland is high.
19. Opportunities for wildlife observations are available.
20. Historical buildings are found within the wetland.
21. Presence of pond or pond site and remains of a dam occur within the wetland.
22. Wetland is within 50 yards of the nearest perennial watercourse.
23. Visible stone or earthen foundations, berms, dams, standing structures, or associated features occur within the wetland.
24. Wetland contains critical habitat for a state- or federally-listed threatened or endangered species.
25. Wetland is known to be a study site for scientific research.
26. Wetland is a natural landmark or recognized by the state natural heritage inventory authority as an exemplary natural community.
27. Wetland has local significance because it serves several functional values.
28. Wetland has local significance because it has biological, geological, or other features that are locally rare or unique.
29. Wetland is known to contain an important archaeological site.
30. Wetland is hydrologically connected to a state or federally designated scenic river.
31. Wetland is located in an area experiencing a high wetland loss rate.
32. Other

VISUAL QUALITY/AESTHETICS — This value considers the visual and aesthetic quality or usefulness of the wetland.



CONSIDERATIONS/QUALIFIERS

1. Multiple wetland classes are visible from primary viewing locations.
2. Emergent marsh and/or open water are visible from primary viewing locations.
3. A diversity of vegetative species is visible from primary viewing locations.
4. Wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
5. Land use surrounding the wetland is undeveloped as seen from primary viewing locations.
6. Visible surrounding land use form contrasts with wetland.
7. Wetland views absent of trash, debris, and signs of disturbance.
8. Wetland is considered to be a valuable wildlife habitat.
9. Wetland is easily accessed.
10. Low noise level at primary viewing locations.
11. Unpleasant odors absent at primary viewing locations.
12. Relatively unobstructed sight line exists through wetland.
13. Other

ENDANGERED SPECIES HABITAT — This value considers the suitability of the wetland to support threatened or endangered species.

ES

CONSIDERATIONS/QUALIFIERS

1. Wetland contains or is known to contain threatened or endangered species.
2. Wetland contains critical habitat for a state or federally listed threatened or endangered species.

APPENDIX B. Completed Wetland Functional Assessment Form

Wetland Function-Value Evaluation Form

Wetland I.D. Wetland A
 Latitude 42.992673 Longitude -70.759358
 Prepared by: K. Ryan Date 24 Sep. 20

Wetland Impact:
 Type _____ Area _____

Evaluation based on:
 Office Field

Corps manual wetland delineation
 completed? Y N

Total area of wetland 10+ ac. Human made? N Is wetland part of a wildlife corridor? N or a "habitat island"? N

Adjacent land use Residential Distance to nearest roadway or other development < 5 feet

Dominant wetland systems present Estuarine marsh Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Low - coastal

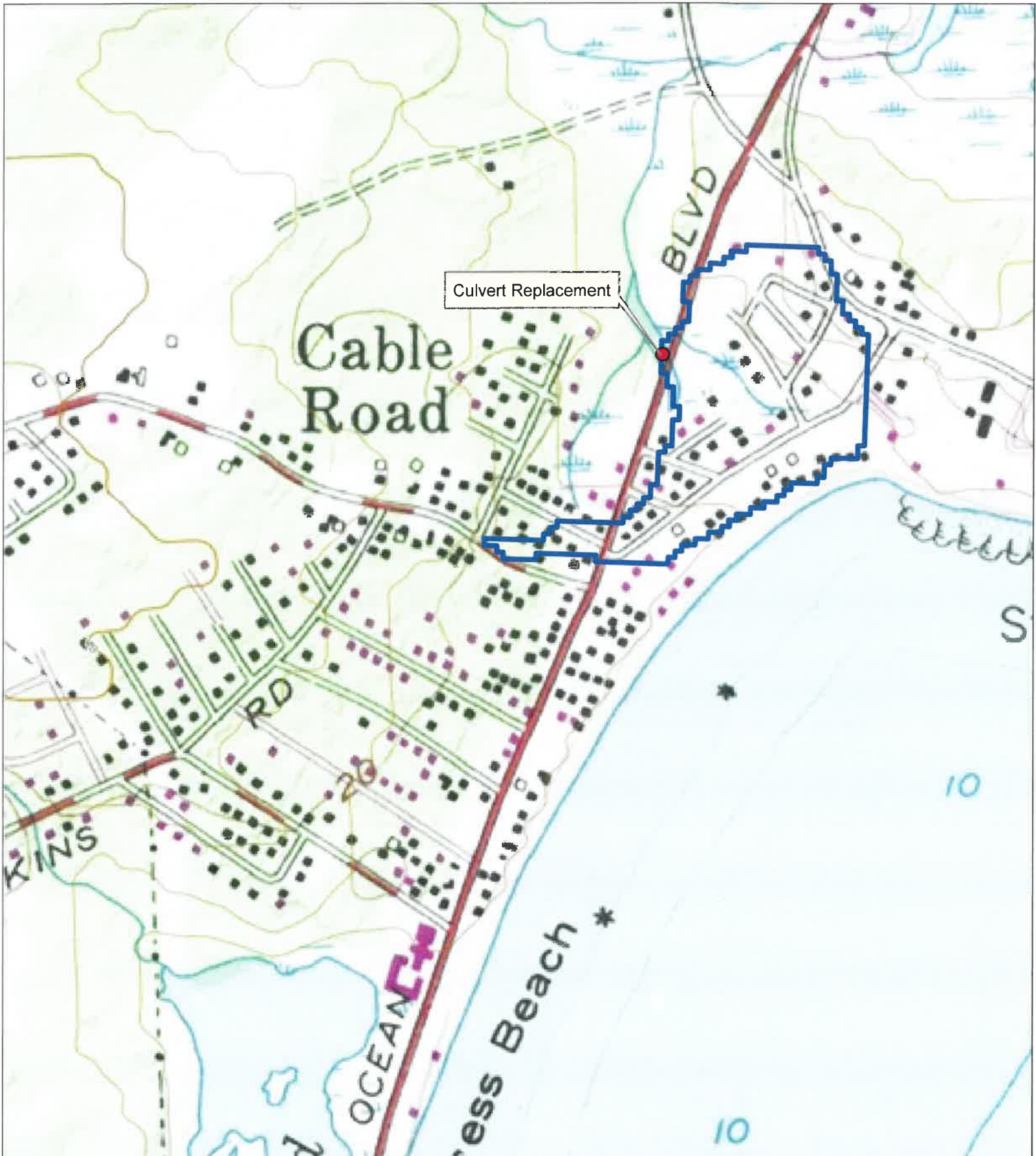
How many tributaries contribute to the wetland? ≥1 Wildlife & vegetation diversity/abundance (see attached list)

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
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Groundwater Recharge/Discharge	Y	7		
Floodflow Alteration	Y	3,4,5,6,9,13,18	X	Salt marshes are known to attenuate floodflow.
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,2,4,8,16	X	Substantial residential development in watershed.
Nutrient Removal	Y	3,4,5,6,8,9,10	X	Wetland contains areas of dense vegetation, both native and non-native.
Production Export	Y	1,2,4,5,7		Wetland is characterized by high density of herbaceous vegetation.
Sediment/Shoreline Stabilization	N			
Wildlife Habitat	Y	6,8,11,13,19		The marsh is undoubtedly utilized by numerous wildlife species.
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	Y	2,5		Area is a estuarine marsh surrounded by development.
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes: *Refer to the Army Corps Highway Methodology Workbook Supplement: Wetland Functions and Values (USACE, 1995) reproduced in Appendix A.

Appendix D – Watershed Boundary Map



Culvert Replacement

Cable Road

BLVD

RD

Ocean Beach

10

10

LOCUS MAP



Approximate Watershed Boundary (StreamStats)



0 250 500 Feet

**NHDOT
Rye, NH
Watershed Map**

Data Sources: USGS StreamStats,
USGS 7.5-minute quadrangle
Map created by FBE in January, 2020

Appendix E - Applicable Stream Crossing Forms

Stream crossing forms are not applicable because the Route 1A culvert replacement design was approved by NHDES under the 2018 Emergency Authorization.

Included in this appendix:

- *Email correspondence between NHDES and NHDOT Re: Route 1A culvert replacement*
- *Emergency Authorization Verification*
- *US Coast Guard Consultation*

From: Sanders, Ralph
Sent: Monday, April 30, 2018 10:50 AM
To: Lewis, Eben
Cc: Mallette, Timothy
Subject: RE: Rye 1A

Hi Eben, will you be authorizing emergency permit for this culvert? May 7th & 8th the tide times will work best for us and we need to plan the detour with the town of Rye. We will install twin 36" HDPE culverts. Thanks Eben.

Sandy

From: Mallette, Timothy
Sent: Wednesday, April 25, 2018 2:52 PM
To: Lewis, Eben
Cc: Sanders, Ralph; Schutt, Brian
Subject: RE: Rye 1A

Eben:

Thanks for checking-in. I did look at the elevations near this crossing. Contours are color coded by the range shown on the bar to the left.

Based on the lidar it appears that all houses on the east side of NH 1A are above ~ 8ft. on the NAVD 88 datum. The low point on NH 1A is

also ~ 8 ft. so the road would be overtopping prior to the water reaching the foundations. In other words, adding another pipe would not

make it any worse for the properties on the east side of NH 1A in the upper elevation of the marsh as far as I can see. If there isn't anything

that you are aware of, such as a dug well (unlikely at this location), that might be inundated because of the added equalizing capacity, then

I would say a second pipe makes sense. The dark black line is the 7 ft. contour. The FEMA AE Zone is at elevation 9, and that line does touch

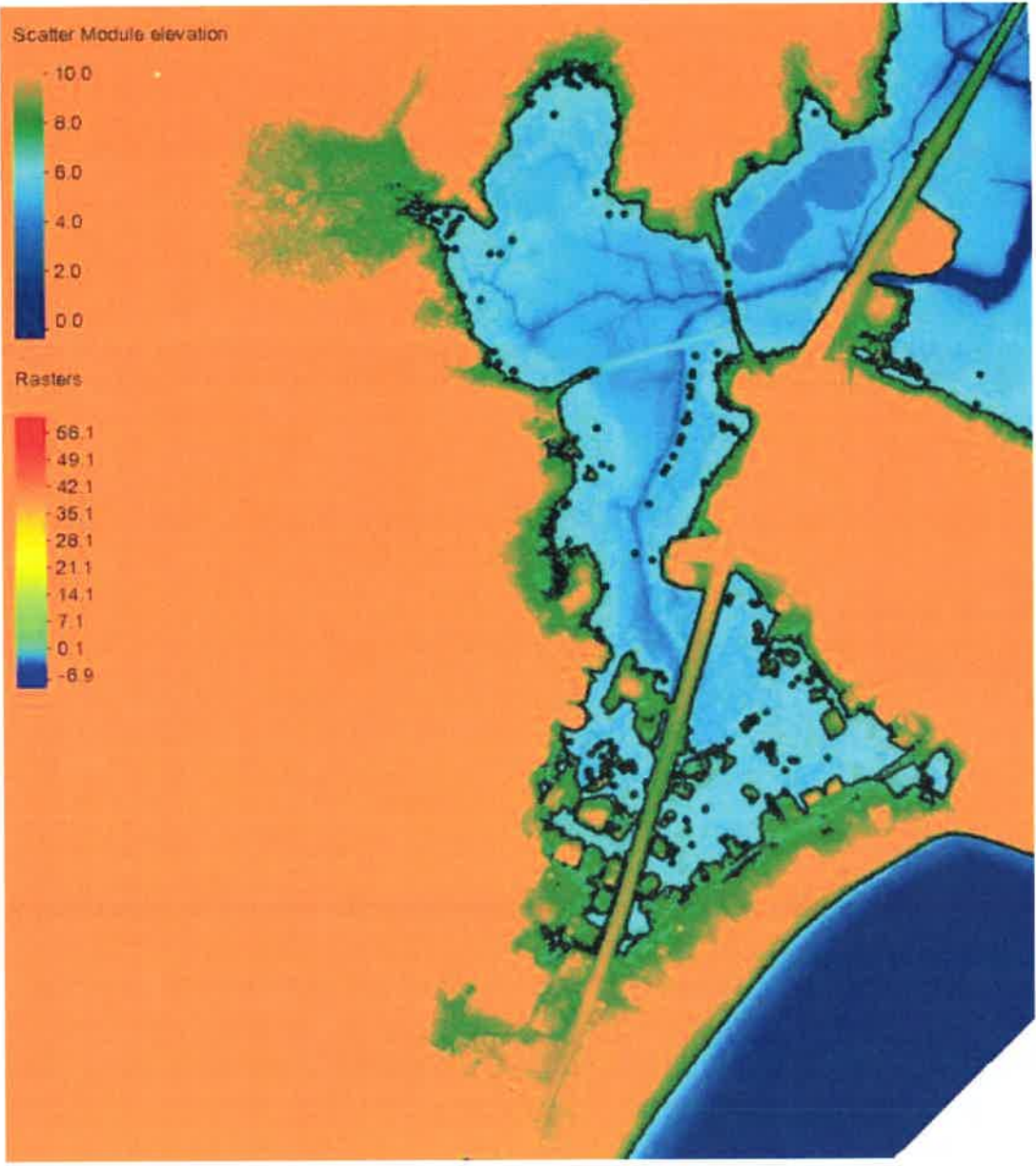
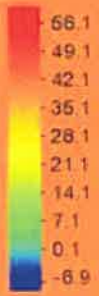
some of the houses on the east side. We would not be making it worse by constructing twin 36" pipes. If these are to be plastic then it

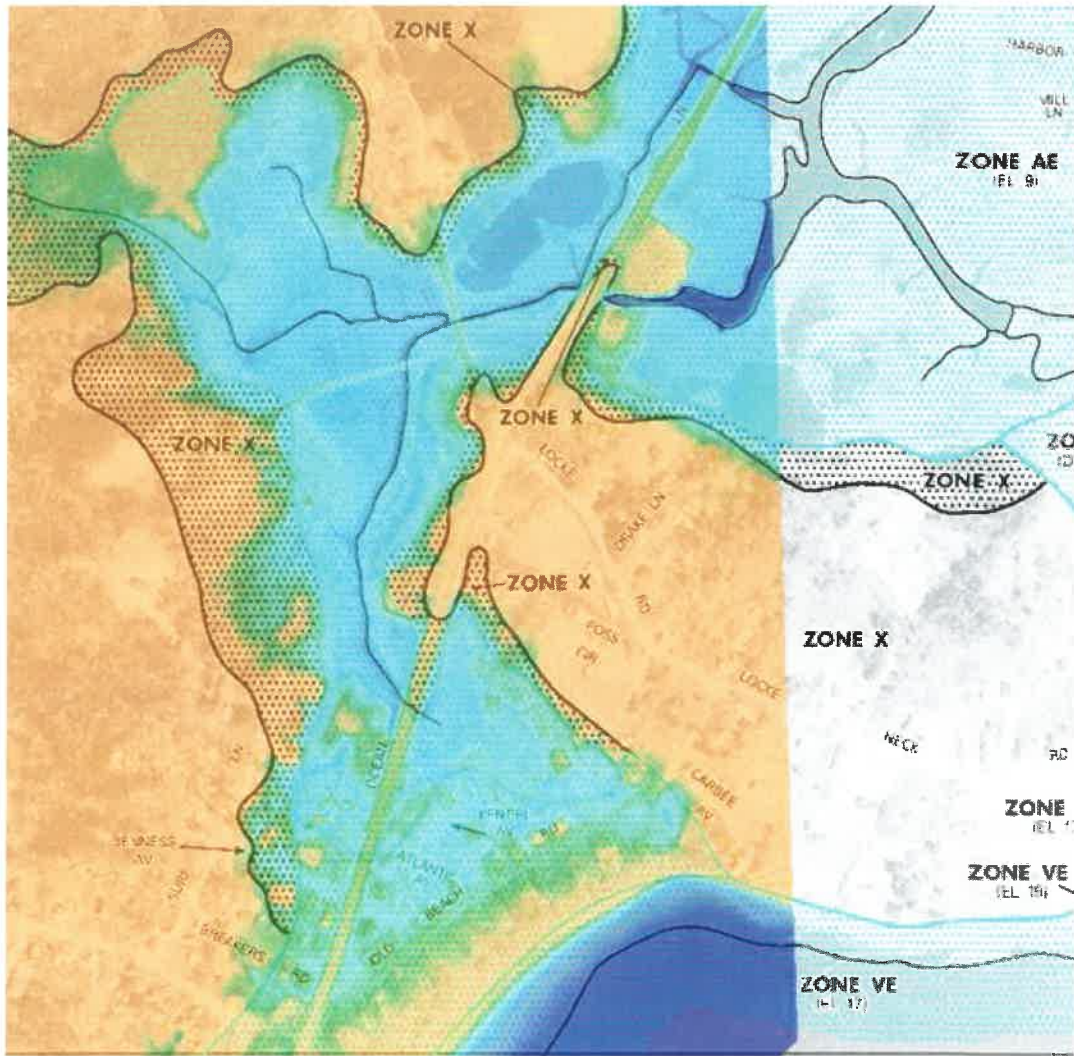
would be prudent to do a bouncy calc. for the case of a road overtopping.

Scatter Module elevation



Rasters





Tim

Timothy S. Mallette, PE, CFM

Hydraulics Engineer

New Hampshire DOT

Bureau of Highway Design

Specialty Section

T: 603-271-2011

From: Lewis, Eben
Sent: Wednesday, April 25, 2018 1:00 PM
To: Mallette, Timothy
Subject: RE: Rye 1A

Good afternoon, Tim,

With Sandy out of the office, I hope you don't mind me contacting you directly. I wanted to check in to see if you were able to determine the feasibility of the twin culverts in this location.

Thank you,

Eben

Eben M. Lewis, Wetlands Inspector, Southeast Region Supervisor, New Hampshire Department of Environmental Services, Land Resource Management Program, Pease Field Office , [222 International Drive, Suite 175, Portsmouth, NH 03801](#), p: 603.559.1515, f: 603.559.1510 e: eben.lewis@des.nh.gov

Visit [DES Land Resources Management](#) for helpful tools and information! We value your feedback! Please complete our survey: www.surveymonkey.com/r/lrmsurvey

From: Sanders, Ralph
Sent: Tuesday, April 24, 2018 9:40 AM
To: Mallette, Timothy
Cc: Lewis, Eben; Russell, Kevin; Williams, Chris
Subject: Rye 1A

Hi Tim, this is the location we discussed about on the phone this morning. The proposal is to replace the single 36" CMP with twin 36" HDPE. Reviewing the tide chart May 7th & 8th are the target dates for the work. Thanks for your help.

Sandy



The State of New Hampshire
Department of Environmental Services



Robert R. Scott, Commissioner

EMERGENCY AUTHORIZATION VERIFICATION

SENT VIA EMAIL

File Number: 2018-01150
Owner: NH Dept. of Transportation
Site Location: Ocean Blvd, Rye Tax Map 84 ROW
Agent/Contractor: NHDOT
Waterbody: Salt Marsh/Tidal Stream

This is to confirm that the New Hampshire Department of Environmental Services (NHDES) has given emergency authorization in accordance with NH Administrative Rule Env-Wt 500 to the owner/agent to conduct the following work in the NHDES Wetlands Bureau jurisdiction (under RSA 482-A):

DESCRIPTION: Emergency Authorization to replace a failing, single 36 inch CMP culvert beneath Rt. 1A with twin 36 inch HDPE culverts.

This authorization is subject to the following conditions:

1. The applicant/contractor shall file a follow up report describing the work performed under this authorization including pre-construction and post-construction photos to NHDES by June 15, 2018; the need for additional permitting will then be determined by NHDES (if no further impacts are needed);
2. Work shall be conducted in a manner so as to minimize turbidity and sedimentation to surface waters and wetlands;
3. Work shall occur during low tide during the fullest extent practicable;
4. Appropriate siltation, erosion controls, turbidity, and sedimentation controls shall be utilized;
5. Extreme precautions shall be taken within riparian areas to limit unnecessary removal of vegetation for access;
6. Construction equipment shall be inspected daily for leaking fuel, oil, and hydraulic fluid prior to working near surface waters or wetlands;
7. Prior to commencing work within surface waters, a cofferdam shall be constructed to isolate the substructure work area from the surface waters.
8. Temporary cofferdams shall be entirely removed immediately following construction
9. Discharge from dewatering of work areas shall be to sediment basins that are: a) located in uplands; b) lined with hay bales or other acceptable sediment trapping liners; c) set back as far as possible from wetlands and surface waters, in all cases with a minimum of 20 feet of undisturbed vegetated buffer
10. Dredged material shall be placed outside of the jurisdiction of the DES Wetlands Bureau.
11. Faulty equipment shall be repaired prior to working near jurisdictional areas;
12. The contractor shall have appropriate oil spill kits on site and readily accessible at all times during construction and each operator shall be trained in its use;
13. This form shall be properly posted at the work site;
14. This authorization does not convey a property right, nor authorize any injury to property of others, nor invasion of rights of others.

THIS AUTHORIZATION EXPIRES ON JUNE 1, 2018. All work must be completed by this date. This authorization has been given file number **2018-01150**. Please use this number in all future correspondence. This form is valid only if signed below by the NHDES Wetlands Bureau Administrator or his designee.

Signed:

Eben M. Lewis

Date: May 2, 2018

cc: Rye Town Manager, Board of Selectmen, Conservation Commission



Rich Brereton <richb@fbenvironmental.com>

Request for navigation determination, Route 1A Culvert, Rye New Hampshire

2 messages

Stieb, Jeffrey D CIV <Jeffrey.D.Stieb@uscg.mil>

Wed, Jan 27, 2021 at 11:03 AM

To: Rich Brereton <richb@fbenvironmental.com>

Cc: "OSullivan, Andrew" <Andrew.M.OSullivan@dot.nh.gov>, "Lewis, Dale K CIV" <Dale.K.Lewis2@uscg.mil>, "Fisher, Donna A CIV" <Donna.A.Fisher@uscg.mil>, "Doyle, Shaun T LT" <Shaun.T.Doyle@uscg.mil>, "Ammons, Nolan L MST1" <Nolan.L.Ammons@uscg.mil>

Rich,

Thank you for the notice and the call. I was able to find the mailbox marked [2125 Ocean Blvd](#) on Google maps and the culvert which connects two marsh areas separated by the highway. (The roadway is discolored over the culvert due to a previous repair). As the culvert is not carrying a previously existing waterway and there are no vessels navigating in the marshes (with the possible exception of a kayak at high tide which can't pass through the culvert) there are no applicable requirements of the Coast Guard Bridge Program other than reporting oil or chemical spills should they occur. Please call if you have any questions.

Regards, Jeff

Jeffrey Stieb

Bridge Management Specialist

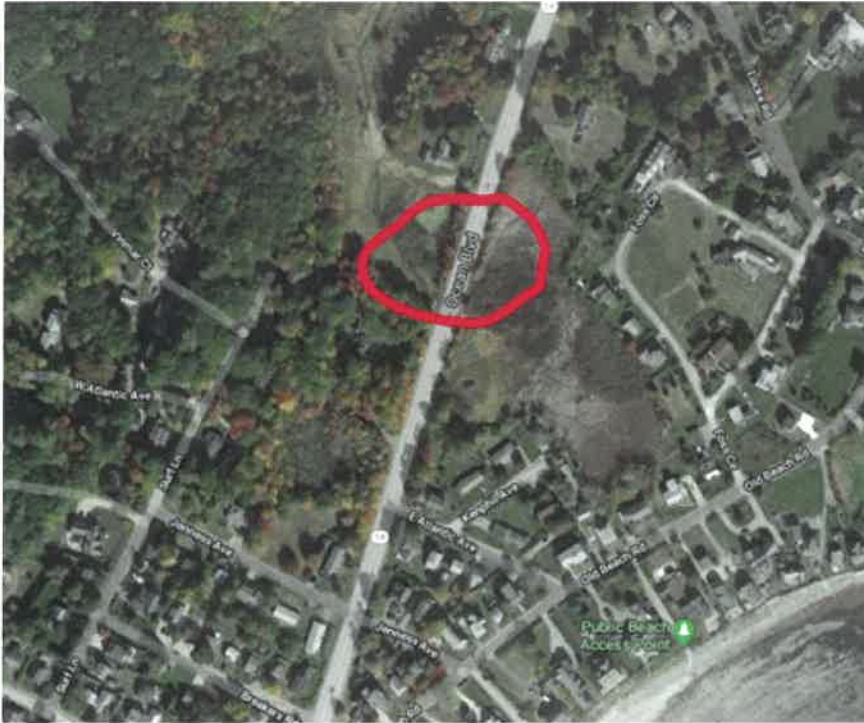
First Coast Guard District

781-901-0348

From: Rich Brereton <richb@fbenvironmental.com>**Sent:** Tuesday, January 26, 2021 3:29 PM**To:** Stieb, Jeffrey D CIV <Jeffrey.D.Stieb@uscg.mil>; Lewis, Dale K CIV <Dale.K.Lewis2@uscg.mil>; Fisher, Donna A CIV <Donna.A.Fisher@uscg.mil>**Cc:** OSullivan, Andrew <Andrew.M.OSullivan@dot.nh.gov>**Subject:** [Non-DoD Source] request for navigation determination

Dear Jeffrey, Dale, and Donna,

On behalf of Andy O'Sullivan of the NH DOT Bureau of Environment, I'd like to request a navigability determination for a culvert on Route 1A in Rye, NH. See map below. The crossing in question is just north of the residence at 2125 Ocean Blvd.



Please let me know if I can provide any further information.

Thanks,

Rich

Rich Breton, Ph.D.

Permitting Division Lead & Water Resource Scientist

FB Environmental Associates

[97A Exchange St. Suite 305](#)

[Portland, ME 04101](#)

[\(207\) 221-6699](#) (office)

[\(617\) 519-7993](#) (cell)

www.fbenvironmental.com

Wed, Jan 27, 2021 at 2:41 PM

Rich Breton <richb@fbenvironmental.com>

To: "Stieb, Jeffrey D CIV" <Jeffrey.D.Stieb@uscg.mil>

Cc: "OSullivan, Andrew" <Andrew.M.OSullivan@dot.nh.gov>, "Lewis, Dale K CIV" <Dale.K.Lewis2@uscg.mil>, "Fisher, Donna A CIV" <Donna.A.Fisher@uscg.mil>, "Doyle, Shaun T LT" <Shaun.T.Doyle@uscg.mil>, "Ammons, Nolan L MST1" <Nolan.L.Ammons@uscg.mil>

Hi Jeff,

Thank you the prompt replies and for looking into the specifics of this site!

Rich

Rich Brereton, Ph.D.
Permitting Division Lead & Water Resource Scientist
FB Environmental Associates
97A Exchange St. Suite 305
Portland, ME 04101
(207) 221-6699 (office)
(617) 519-7993 (cell)
www.fbenvironmental.com

[Quoted text hidden]

Appendix F – NHB DataCheck Report



NEW HAMPSHIRE NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Cameron Twombly, FB Environmental Associates
97A Exchange St

Portland, ME 04101

From: NH Natural Heritage Bureau

Date: 9/4/2020 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau of request submitted 8/26/2020

NHB File ID: NHB20-2584

Applicant: Rich Brereton

Location: Rye

West side of Ocean Boulevard (US Route 1) from Jenness Ave north to stream crossing in Rye, NH

Project

Description: NHDOT plans to conduct a driveway and culvert modification to improve hydrologic conveyance and decrease erosion along the west side of Ocean Boulevard (US Route 1) in Rye, NH. The project site includes two existing driveways and the associated drainage system. The project consists of lowering the twin 24-inch High Density Polyethylene (HDPE) culverts located at the western drive 2-3 inches. The eastern drive will be completely removed to allow for hydrologic connectivity without the use of a culvert system. The associated drainage system will be removed, and new system will be installed in the same location with the same dimensions as the old system.

The NH Natural Heritage database has been checked by staff of the NH Natural Heritage Bureau and/or the NH Nongame and Endangered Species Program for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government.

It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 8/26/2020, and cannot be used for any other project.



NEW HAMPSHIRE NATURAL HERITAGE BUREAU
NHB DATA CHECK RESULTS LETTER

MAP OF PROJECT BOUNDARIES FOR: **NHB20-2584**

NHB20-2584



Appendix G – NHB/F&G Correspondence

NHB and Fish and Game review was completed during the December 16th NRAM meeting. Further correspondence is not required for this project, as stated in Appendix A – Natural Resource Agency Coordination Meeting Minutes.

Appendix H – USF&WS IPac Report



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
<http://www.fws.gov/newengland>

In Reply Refer To:
Consultation Code: 05E1NE00-2020-SLI-3782
Event Code: 05E1NE00-2020-E-11662
Project Name: NHDOT Rye

August 26, 2020

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2020-SLI-3782

Event Code: 05E1NE00-2020-E-11662

Project Name: NHDOT Rye

Project Type: DREDGE / EXCAVATION

Project Description: NHDOT plans to conduct a driveway and culvert modification to improve hydrologic conveyance and decrease erosion along the west side of Ocean Boulevard (US Route 1) in Rye, NH. The project site includes two existing driveways and the associated drainage system. The project consists of lowering the twin 24-inch High Density Polyethylene (HDPE) culverts located at the western drive 2-3 inches. The eastern drive will be completely removed to allow for hydrologic connectivity without the use of a culvert system. The associated drainage system will be removed, and new system will be installed in the same location with the same dimensions as the old system.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/42.99292410307619N70.75930860148765W>



Counties: Rockingham, NH

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Red Knot <i>Calidris canutus rufa</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix I – USF&WS Correspondence



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
<http://www.fws.gov/newengland>

IPaC Record Locator: 011-24636904

December 10, 2020

Subject: Consistency letter for the 'NH DOT Rye' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Cameron Twombly:

The U.S. Fish and Wildlife Service (Service) received on December 10, 2020 your effects determination for the 'NH DOT Rye' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause “take”^[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action’s effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

The IPaC-assisted determination for the northern long-eared bat **does not** apply to the following ESA-protected species that also may occur in your Action area:

- Red Knot, *Calidris canutus rufa* (Threatened)

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species listed above.

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description

You provided to IPaC the following name and description for the subject Action.

1. Name

NHDOT Rye

2. Description

The following description was provided for the project 'NHDOT Rye':

NHDOT plans to conduct a driveway and culvert modification to improve hydrologic conveyance and decrease erosion along the west side of Ocean Boulevard (US Route 1) in Rye, NH. The project site includes two existing driveways and the associated drainage system. The project consists of lowering the twin 24-inch High Density Polyethylene (HDPE) culverts located at the western drive 2-3 inches. The eastern drive will be completely removed to allow for hydrologic connectivity without the use of a culvert system. The associated drainage system will be removed, and new system will be installed in the same location with the same dimensions as the old system.

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/42.99292410307619N70.75930860148765W>

**Determination Key Result**

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

No

2. Will your activity purposefully **Take** northern long-eared bats?

No

3. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

Automatically answered

No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

No

6. Will the action involve Tree Removal?

No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0



TO: Andrew O'Sullivan, Wetlands Program Manager, NHDOT Bureau of Environment
FROM: Kevin Ryan, Ph.D., Manager, Ecological Services Division, FB Environmental Associates (FBE)
SUBJECT: Habitat suitability of the Ocean Blvd project site in Rye for red knot (*Calidris canutus rufa*)
DATE: January 20, 2021
CC: Rich Brereton, Ph.D., Manager, Land and Water Permitting Division, FBE

The red knot (*Calidris canutus rufa*) is a large, stocky sandpiper with a medium-length bill and relatively short legs. Its summer plumage consists of terracotta-orange underparts and gold, buff, rufous and black upperparts. Nonbreeding plumage is an indistinct white and gray. The bird is a coastal species that inhabits all continents except Antarctica. Migration distance for the species is exceptionally long from nesting areas in the high arctic to wintering spots in southern South America, Africa, and Australia.

Red knots feed on a wide variety of marine and freshwater invertebrates, including mollusks (which are eaten whole). Protein-rich horseshoe crab (*Limulus polyphemus*) eggs are an important food source to red knots during their spring migration. Unsustainable harvest of horseshoe crab eggs in eastern North America has resulted in sharp declines in red knot populations in recent decades. The *rufa* subspecies of the red knot is listed as Threatened under the Federal Endangered Species Act.

During migration and winter in the northeast, red knot habitat consists of sandy beaches, intertidal mudflats, cobbles shores, and rocky coast. In New Hampshire, the red knot is primarily found on beaches or tidal mudflats. The USFWS IPaC review listed known occurrences in the vicinity of the proposed project site. Based on my field observations during the natural resource delineation, the lack of these preferred cover types in or adjacent to the project site makes it very unlikely that the red knot occurs there.

References:

New Hampshire Wildlife Action Plan Appendix A Birds-72

All About Birds website (The Cornell Lab of Ornithology)

American Bird Conservancy website

Appendix J – NHDOT Section 106 Cultural Resource Review

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Date Reviewed: 12/23/2020
(Desktop or Field Review Date)

This Project uses only State funding; however project activities listed below comply with the PA.

Project Name: RYE

State Number: 42714

FHWA Number: none

Environmental Contact: Matt Urban
Email Address: Matt.Urban@dot.nh.gov

DOT Project Manager: Roger Appleton

Project Description: District 6, along with FB Environmental under a statewide wetlands contract, proposes a Culvert Replacement and Roadside Drainage Ditch Modification along Rt 1A, Rye, NH. The purpose of the proposed project is to restore the hydrology, decrease flooding and erosion, and increase aquatic organism passage along Route 1A. This section of the highway dates to the 1950s (Rich Brereton email 12/18/2020). The project proposes the replacement of a failing culvert under Rt. 1A, which dates to a DES Emergency Authorization in 2018. The culvert replacement in 2018 consisted of replacing a failing 36-inch CMP culvert with twin 36-inch HDPE culverts; DOT is requesting to retain that impact. Two drainage system modifications are proposed: 1) replacing poorly functioning twin 24-inch SPP culverts below an active driveway (new drive) and installing the replacement culverts 2-3” lower to alleviate perching; and 2) removal of an abandoned driveway (old drive constructed between 1992 and 2003 as indicated by Google Earth aerial imagery) and the associated twin 21-inch PVC culverts to help restore the hydrologic connectivity that the roadside drainage ditch provides. In addition, the project proposes the modification of an existing roadway drainage system along Rt. 1A. The new drive was permitted in October 2008. After construction of the new drive, the old drive was abandoned. The old drive’s exact construction date is unknown but available aerial imagery on Google Earth indicates that construction took place sometime between 1992 and 2003. Matt Urban summarized the proposed activities: 1) Lower the existing driveway pipes of twin 24” metal pipes by a few inches. (possibly replace the pipes in-kind during the process if they are in bad condition).2) Completely remove two additional twin 21” pipes under the abandoned driveway along with all the driveway fill.3) Do nothing at the 3rd location (the third location consist of prior work done in 2018 under an emergency authorization for the pipes going under 1A. we are simply including them in this project and wetlands application to be able to allow DES to close their permit file on this past work.)

Please select the applicable activity/activities:

Highway and Roadway Improvements	
<input type="checkbox"/>	1. Modernization and general highway maintenance that may require additional highway right-of-way or easement , including: <i>Choose an item.</i> <i>Choose an item.</i>
<input type="checkbox"/>	2. Installation of rumble strips or rumble stripes
<input type="checkbox"/>	3. Installation or replacement of pole-mounted signs

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

<input type="checkbox"/>	4. Guardrail replacement, provided any extension does not connect to a bridge older than 50 years old (unless it does already), and there is no change in access associated with the extension
Bridge and Culvert Improvements	
<input checked="" type="checkbox"/>	5. Culvert replacement (excluding stone box culverts), when the culvert is less than 60" in diameter and excavation for replacement is limited to previously disturbed areas
<input type="checkbox"/>	6. Bridge deck preservation and replacement, as long as no character defining features are impacted
<input checked="" type="checkbox"/>	7. Non-historic bridge and culvert maintenance, renovation, or total replacement, <u>that may require minor additional right-of-way or easement</u> , including:
<input type="checkbox"/>	8. Historic bridge maintenance activities within the limits of existing right-of-way, including: Choose an item. Choose an item.
<input type="checkbox"/>	9. Stream and/or slope stabilization and restoration activities (including removal of debris or sediment obstructing the natural waterway, or any non-invasive action to restore natural conditions)
Bicycle and Pedestrian Improvements	
<input type="checkbox"/>	10. Construction of pedestrian walkways, sidewalks, sidewalk tip-downs, small passenger shelters, and alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons
<input type="checkbox"/>	11. Installation of bicycle racks
<input type="checkbox"/>	12. Recreational trail construction
<input type="checkbox"/>	13. Recreational trail maintenance when done on existing alignment
<input type="checkbox"/>	14. Construction of bicycle lanes and shared use paths and facilities within the existing right-of-way
Railroad Improvements	
<input type="checkbox"/>	15. Modernization, maintenance, and safety improvements of railroad facilities within the existing railroad or highway right-of-way, <u>provided no historic railroad features are impacted</u> , including, but not limited to: Choose an item. Choose an item.
<input type="checkbox"/>	16. In-kind replacement of modern railroad features (i.e. those features that are less than 50 years old)
<input type="checkbox"/>	17. Modernization/modification of railroad/roadway crossings provided that all work is undertaken within the limits of the roadway structure (edge of roadway fill to edge of roadway fill) and no associated character defining features are impacted
Other Improvements	
<input type="checkbox"/>	18. Installation of Intelligent Transportation Systems
<input type="checkbox"/>	19. Acquisition or renewal of scenic, conservation, habitat, or other land preservation easements where no construction will occur
<input type="checkbox"/>	20. Rehabilitation or replacement of existing storm drains.
<input type="checkbox"/>	21. Maintenance of stormwater treatment features and related infrastructure

Please describe how this project is applicable under Appendix B of the Programmatic Agreement.

Associated activities to replace poorly functioning c.2018 twin 24" SPP culverts with culverts 2-3" lower in elevation, and remove an abandoned. C.1992-2003 driveway and associated twin 21" PVC culverts under the driveway along with driveway fill represent Activities with Minimal Potential to Cause Effects. The house associated with the parcel was built in 2003. There are no known archaeological sites, identified historic properties or districts associated with the project area.

Please submit this Certification Form along with the Transportation RPR, including photographs, USGS maps, design plans and as-built plans, if available, for review. Note: The RPR can be waived for in-house projects, please consult Cultural Resources Program Staff.


Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Coordination Efforts:

Has an RPR been submitted to NHDOT for this project?	No	NHDHR R&C # assigned?	Click here to enter text.
Please identify public outreach effort contacts; method of outreach and date:	The Town of Rye is aware of this proposed work based on Districts discussions with them. There have been no concerns raised to date. The property owners of the driveways (Mosaic indicates House built 2003) are also aware of the proposal for work. They have supported the project all along as it will solve a driveway issue for them for free. NHDOT will be sending copies of the wetlands applications to the Town officials when it's time to submit to DES.		

Finding: (To be filled out by NHDOT Cultural Resources Staff)

<input checked="" type="checkbox"/>	No Potential to Cause Effects	<input type="checkbox"/>	No Historic Properties Affected
This finding serves as the Section 106 Memorandum of Effect. No further coordination is necessary.			
<input type="checkbox"/>	This project does <i>not</i> comply with Appendix B. Review will continue under Stipulation VII of the Programmatic Agreement. Please contact NHDOT Cultural Resources Staff to determine next steps.		
NHDOT comments:			
		12/23/2020	
_____ NHDOT Cultural Resources Staff		_____ Date	

Coordination of the Section 106 process should begin as early as possible in the planning phase of the project (undertaking) so as not to cause a delay.

Project sponsors should not predetermine a Section 106 finding under the assumption a project is limited to the activities listed in Appendix B until this form is signed by the NHDOT Bureau of Environment Cultural Resources Program staff.

Every project shall be coordinated with, and reviewed by the NHDOT-BOE Cultural Resources Program in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the New Hampshire State Historic Preservation Office, the Army Corps of Engineers, New England District, the Advisory Council on Historic Preservation, and the New Hampshire Department of Transportation Regarding the Federal Aid Highway Program in New Hampshire*. In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

NHDOT and the State Historic Preservation Office may use provisions of the Programmatic Agreement to address the applicable requirements of NH RSA 227-C:9 in the location, identification, evaluation and management of historic resources, for projects funded by State funds.

If any portion of the project is not entirely limited to any one or a combination of the activities specified in Appendix B (with, or without the inclusion of any activities listed in Appendix A), please continue discussions with NHDOT Cultural Resources staff.

This No Potential to Cause Effect or No Historic Properties Affected project determination is your Section 106 finding, as defined in the Programmatic Agreement.

Should project plans change, please inform the NHDOT Cultural Resources staff in accordance with Stipulation VII of the Programmatic Agreement.

Appendix K – ACOE Appendix B/Supplemental Narrative



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

**New Hampshire General Permits (GPs)
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 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, special wetlands. Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) DataCheck Tool for information about resources located on the property at https://www2.des.state.nh.us/nhb_datacheck/ . The book Natural Community Systems of New Hampshire also contains specific information about the natural communities found in NH.	X	
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	X	
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 area of the previously filled wetlands?	0	
2.7 What is the area of the proposed fill in wetlands?	50 sq ft	
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?	0%	
3. Wildlife	Yes	No
3.1 Has the NHB & USFWS 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 an NHB ID number & a USFWS IPAC determination.) NHB DataCheck Tool: https://www2.des.state.nh.us/nhb_datacheck/ USFWS IPAC website: https://ecos.fws.gov/ipac/location/index	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 GC 21?	X	
4. Flooding/Floodplain Values	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?	X	
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 11 GC 8(d) of the GP document**	X	

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

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

**NH Department of Transportation
Bureau of Highway Design
Rye, NH**

ACOE Appendix B Supplemental Narrative

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

The NHDES draft 2020 Section 303(d) Surface Water Quality List (most recent available) identifies surface water impairments for Rye Harbor (Assessment Unit ID NHOCN000000000-11), which is within 1 mile upstream of the project location. Rye Harbor is impaired for fish consumption by mercury and PCBs and shellfish consumption by mercury, PCBs, and dioxin.

The project will not add any additional loading of pollutants to, or negatively impact the water quality of, Rye Harbor. The project will result in increased water quality in surrounding surface waters through the enhancement of hydrologic conveyance and the associated decreased flooding and erosion. Additionally, proper erosion and sediment control practices will be used during construction to minimize any temporary impacts to surface waters.

3.1 Has the NHB & USFWS 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?

The NH Natural Heritage Bureau does not expect that the proposed project will impact any sensitive species or natural communities of concern. The USFWS Information, Planning, and Conservation System (IPaC) web tool identified the Northern Long-eared Bat (*Myotis septentrionalis*) and the Red Knot (*Calidris canutus rufa*) as federally listed species of potential concern in New Hampshire. The project area consists of the right-of-way of Ocean Blvd and does not likely include suitable habitat for either of these species. Additionally, the project will not negatively impact potential habitat for either of these species.

3.2 Would work occur in any area identified as either “Highest Ranked Habitat in N.H.” or “Highest Ranked Habitat in Ecological Region”?

A salt marsh that feeds into Rye Harbor on the north end of the approximate project area is identified as Highest Ranked Habitat in NH. The project will have a small permanent impact to the salt marsh. The project is expected to enhance the salt marsh habitat by enhancing the hydrologic conveyance of the larger wetland complex in the area, decreasing flooding and erosion. The small permanent impact to the marsh through the replacement of the failing culvert is less than the impact resulting from leaving the failing culvert in place.

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

According to FEMA flood hazard maps the project area is within the 100-year floodplain. However, the project will not decrease flood storage. In fact, the purpose of the project is to increase flood storage and hydrologic conveyance. The existing culverts in the project area are causing decreased flood storage capacity and need to be modified.

5. For a minimum, minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 11 GC 8(d) of the GP document.

An internal NH DOT Cultural Review of this project was completed on December 23, 2020. The review concluded there are no known archaeological sites, identified historic properties or districts associated with the project area. Refer to Exhibit 18 for Section 106 Programmatic Agreement- Cultural Resources Review Effect Finding, Appendix B Certification - Activities with Minimal Potential to Cause Effects.

NH DOT and NH DHR have a programmatic agreement allowing DOT staff to make certain decisions on behalf of DHR for particular types of projects. No further coordination with DHR is required. Additionally, this project is not within Federal jurisdiction and therefore coordination with NH DHR is not required under law.

Appendix L – ACOE Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NHDOT Rye Drainage Improvement/Culvert Replacement City/County: Rye/Rockingham Sampling Date: 2 Sep. 20

Applicant/Owner: NH Department of Transportation State: ME Sampling Point: A-A (wet)

Investigator(s): Kevin Ryan, Heather Storlazzi Ward Section, Township, Range: _____

Landform (hillside, terrace, etc.): floodplain Local relief (concave, convex, none): concave Slope %: 0

Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Pawcatuck mucky peat NWI classification: E2EM1P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) <u>X</u> High Water Table (A2) _____ Aquatic Fauna (B13) <u>X</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>7</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: A-A (wet)

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30'</u>)																				
1. <u>Betula populifolia</u>	1	No	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
1 =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>None</u>	_____	_____	_____	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2" style="text-align:center">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
_____ =Total Cover																				
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Spartina patens</u>	100	Yes	FACW	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Spartina alterniflora</u>	3	No	OBL																	
3. <u>Solidago sempervirens</u>	1	No	FACW																	
4. <u>Phragmites australis</u>	1	No	FACW																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
105 =Total Cover																				
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
_____ =Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point A-A (wet)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	7.5YR 2.5/1	100					Mucky Peat	Organic soil material

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

- | | | |
|--|--|--|
| Hydric Soil Indicators: | | Indicators for Problematic Hydric Soils³: |
| <input checked="" type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B) | <input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> High Chroma Sands (S11) (LRR K, L) | <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L) | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Red Parent Material (F21) |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Marl (F10) (LRR K, L) | <input type="checkbox"/> Very Shallow Dark Surface (F22) |
| <input type="checkbox"/> Stripped Matrix (S6) | | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Dark Surface (S7) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	
Type: <u>n/a</u>	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Depth (inches): _____	

Remarks:
This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NHDOT Rye Drainage Improvement/Culvert Replacement City/County: Rye/Rockingham Sampling Date: 2 Sep. 20
 Applicant/Owner: NH Department of Transportation State: ME Sampling Point: A-B (Upland)
 Investigator(s): Kevin Ryan, Heather Storlazzi Ward Section, Township, Range: _____
 Landform (hillside, terrace, etc.): hillside Local relief (concave, convex, none): convex Slope %: 1-3
 Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Scarboro muck NWI classification: n/a

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
_____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	_____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ ? Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: A-B (Upland)

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Quercus rubra</u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>
2. <u>Acer rubrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>
3. <u>Pinus strobus</u>	<u>5</u>	<u>No</u>	<u>FACU</u>
4. <u>Picea rubens</u>	<u>1</u>	<u>No</u>	<u>FACU</u>
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
<u>76</u> =Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Pinus strobus</u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>
2. <u>Ilex verticillata</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>
3. <u>Frangula alnus</u>	<u>3</u>	<u>No</u>	<u>FAC</u>
4. <u>Ilex mucronata</u>	<u>5</u>	<u>No</u>	<u>OBL</u>
5. <u>Vaccinium corymbosum</u>	<u>1</u>	<u>No</u>	<u>FACW</u>
6. _____	_____	_____	_____
7. _____	_____	_____	_____
<u>64</u> =Total Cover			
Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Osmundastrum cinnamomeum</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>
2. <u>Quercus rubra</u>	<u>3</u>	<u>Yes</u>	<u>FACU</u>
3. <u>Aralia nudicaulis</u>	<u>3</u>	<u>Yes</u>	<u>FACU</u>
4. <u>Lysimachia borealis</u>	<u>1</u>	<u>No</u>	<u>FAC</u>
5. <u>Frangula alnus</u>	<u>1</u>	<u>No</u>	<u>FAC</u>
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
<u>13</u> =Total Cover			
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
_____ =Total Cover			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.9% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>5</u>	x 1 = <u>5</u>
FACW species <u>21</u>	x 2 = <u>42</u>
FAC species <u>35</u>	x 3 = <u>105</u>
FACU species <u>92</u>	x 4 = <u>368</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>153</u> (A)	<u>520</u> (B)
Prevalence Index = B/A = <u>3.40</u>	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is $\leq 3.0^1$
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point A-B (Upland)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-1	2.5Y 2.5/1	100					Loamy/Clayey	
1-4	10YR 3/2	100					Loamy/Clayey	Fine sandy loam
4-6	10YR 5/2	100					Loamy/Clayey	Fine sandy loam
6-8	10YR 3/2	100					Loamy/Clayey	Fine sandy loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- High Chroma Sands (S11) (LRR K, L)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR K, L)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (F22)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Stones
 Depth (inches): 8

Hydric Soil Present? Yes No

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NHDOT Rye Drainage Improvement/Culvert Replacement City/County: Rye/Rockingham Sampling Date: 2 Sep. 20
 Applicant/Owner: NH Department of Transportation State: ME Sampling Point: A-C (wet)
 Investigator(s): Kevin Ryan, Heather Storlazzi Ward Section, Township, Range: _____
 Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope %: 0
 Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Scarboro muck NWI classification: PSS1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) <u>X</u> High Water Table (A2) _____ Aquatic Fauna (B13) <u>X</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) <u>X</u> Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>8</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: A-C (wet)

	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30'</u>)																				
1. <u>Acer rubrum</u>	<u>10</u>	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. <u>Betula populifolia</u>	<u>5</u>	Yes	FAC																	
3. <u>Pinus strobus</u>	<u>1</u>	No	FACU																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u>16</u>	=Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>Ilex verticillata</u>	<u>5</u>	Yes	FACW	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>105</u></td> <td>x 2 = <u>210</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>1</u></td> <td>x 4 = <u>4</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>121</u> (A)</td> <td><u>259</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center;">Prevalence Index = B/A = <u>2.14</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>105</u>	x 2 = <u>210</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>1</u>	x 4 = <u>4</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>121</u> (A)	<u>259</u> (B)	Prevalence Index = B/A = <u>2.14</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>105</u>	x 2 = <u>210</u>																			
FAC species <u>15</u>	x 3 = <u>45</u>																			
FACU species <u>1</u>	x 4 = <u>4</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>121</u> (A)	<u>259</u> (B)																			
Prevalence Index = B/A = <u>2.14</u>																				
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u>5</u>	=Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Phragmites australis</u>	<u>100</u>	Yes	FACW	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <input checked="" type="checkbox"/> <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	<u>100</u>	=Total Cover																		
Woody Vine Stratum (Plot size: _____)																				
1. _____				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. _____																				
3. _____																				
4. _____																				
				Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point A-C (wet)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-27	2.5YR 2.5/1	100					Muck	Organic soil material

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- High Chroma Sands (S11) (LRR K, L)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Marl (F10) (LRR K, L)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (F22)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____ n/a _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Appendix M – Representative Site Photographs



Photo 1- View north along Ocean Blvd (Route 1A) from intersection with E Atlantic Ave. New driveway (built 2008) serving 2125 Ocean Blvd residence is visible just left of center.

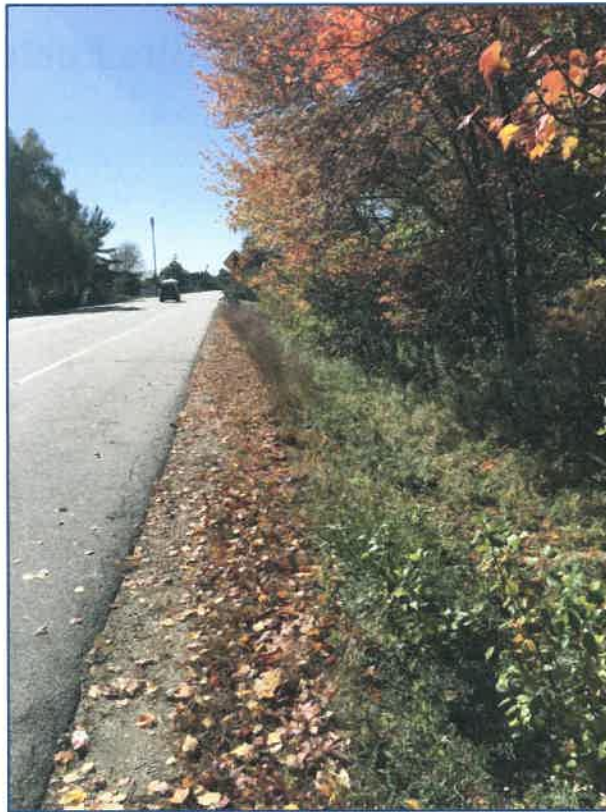


Photo 2- View south along Ocean Blvd (Route 1A) from intersection with E Atlantic Ave.



Photo 3- New driveway (built 2008) serving 2125 Ocean Blvd. Stone header is visible.



Photo 4- Closeup (looking north) of new driveway (built 2008) with stone header and twin 24" plastic culverts shown. Standing water in Wetland area A1.



Photo 5- View south standing atop new driveway (built 2008). Southern terminus of Wetland area A1 (excavated drainage ditch) is hidden in shrubs at center of photo.



Photo 6- View south toward new driveway (built 2008). Twin 24" plastic culverts (to be replaced and lowered) are partially obscured by vegetation. Wetland area A2 in foreground.



Photo 7- View north along Wetland area A2 (excavated drainage ditch) toward old driveway (built in 2003, to be removed). Twin 21" plastic culverts and stone header clearly visible.



Photo 8- Closeup of old driveway (built 2003, to be removed). Twin 21" plastic culverts also to be removed. Note overgrown vegetation atop abandoned driveway.



Photo 9- View south along Wetland area A2 (excavated drainage ditch) from old driveway.



Photo 10- Closeup (looking south) of old driveway (built 2003, to be removed). Wetland area A3 (estuarine intertidal marsh with common reed) in foreground.



Photo 11- View north along Wetland area A3, taken standing atop old driveway.



Photo 12- View north at northern terminus of Wetland area A3.



Photo 13- View west along Wetland area A3 (estuarine intertidal marsh with common reed), taken standing atop Route 1A. Riprap and twin 36" HDPE culvert inverts clearly visible in foreground.



Photo 14- View east along Wetland area A3. Riprap and twin 36" HDPE culvert inverts clearly visible under Route 1A.



Photo 15- View east along Wetland area A4 (estuarine intertidal marsh with common reed), taken standing atop Route 1A.

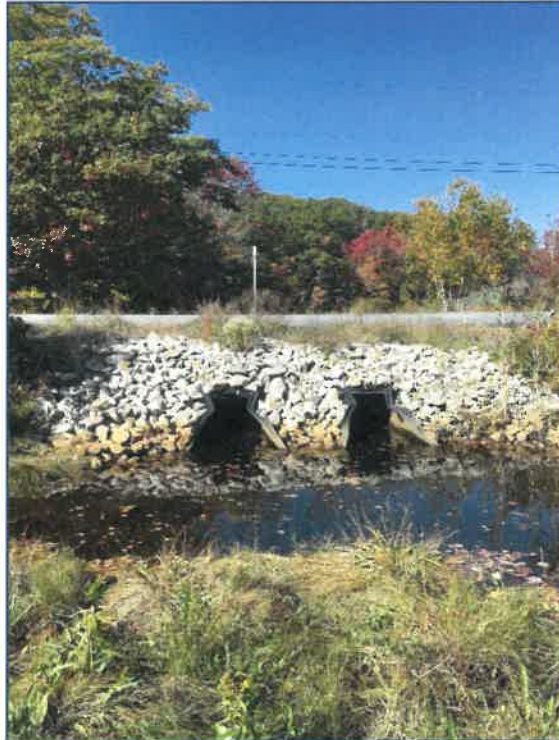


Photo 16- View west along Wetland area A4. Riprap and twin 36" HDPE culvert inverts clearly visible.

Appendix N – Construction Sequence Narrative

Construction Sequence & Narrative

The proposed culvert replacements and driveway removal consists of two phases. Phase 1 consisted of the replacement of the single 36-inch CMP culvert under Rt 1A with twin 36-inch HDPE culverts. Phase 2 consists the replacement and lowering of the twin 24-inch SPP culverts under the active driveway and the removal of abandoned driveway and the twin 21-inch PVC culverts.

Phase 1 took place under an Emergency Authorization on May 2, 2018, as recommended by NHDES. Replacement of the failing culvert with twin 36" culverts was recommended by Eben Lewis, NHDES. A month's worth of tide charts was reviewed and May 2nd was selected due to the extent of the tide on that day. Dewatering was not required due to the low tide and lack of standing or flowing water. The construction sequence that was used for Phase 1 follows.

1. Dig Safe was completed for the project area.
2. The Town of Rye and NHDES were notified of the start date.
3. Temporary cofferdams were installed upstream and downstream of the Rt 1A culvert to isolate the structure from surface waters. Dewatering was unnecessary due to low tide.
4. Temporary erosion and perimeter controls were constructed and maintained throughout the Phase 1 construction.
5. Asphalt was sawcut and removed above the failing culvert.
6. The failing 36-inch CMP culvert was excavated and removed.
7. The trench was further excavated and leveled to grade with stone.
8. Two 36-inch HDPE culverts were installed.
9. The trench was backfilled and compacted.
10. Road was repaved and striped.
11. Banks were stabilized with riprap and loam was placed where necessary and seeded.
12. Temporary erosion controls and cofferdams were removed immediately following construction and monitored for stability.

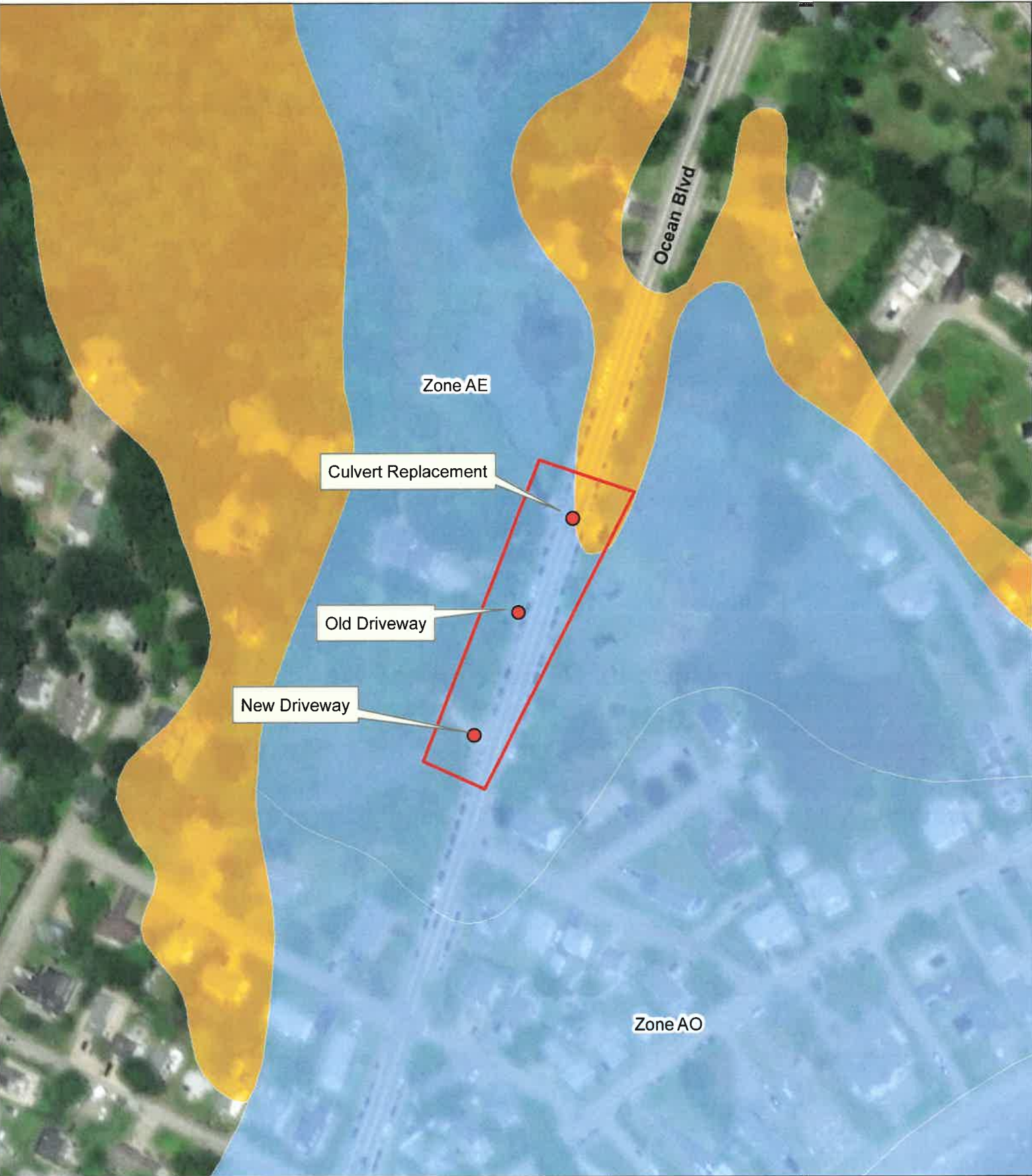
Phase 2 will consist of the replacement of the failing twin 24-inch SPP culverts under the active driveway. Additionally, the abandoned driveway and twin 21-inch PVC culverts will be removed to restore the hydrology of the drainage ditch. The construction sequence for Phase 2 follows.

1. Dig Safe the project area.
2. Review a month's worth of the tide charts and plan work accordingly. Work within the drainage ditch will take place during low tide cycles and during the fullest extent practicable.
3. Notify Town of Rye and NHDES of start date.
4. Locate staging area for construction equipment and erosion control material.
5. Have spill kit for construction equipment on site.
6. Temporary erosion and perimeter controls shall be constructed and maintained throughout the Phase 2 construction. Erosion and perimeter controls will consist of silt fence and silt


sock. In addition, haybales (two bales wide and stacked two deep) will be staked in place in two locations. Please refer to the Erosion Control Plans (Appendix R).

7. Set up dewatering equipment. Dewatering silt bags will be located on highway surface (see Appendix R). Dewatering liquid and silt bags will be disposed of at an appropriate location off site.
8. Insert balloons in twin culverts at abandoned driveway.
9. Remove twin 24-inch culverts at active driveway.
10. Excavate trench at active driveway 2-3 inches lower for replacement culverts.
11. Replace twin culverts at active driveway and backfill.
12. Remove balloons in twin culverts at abandoned driveway.
13. Remove overburden and culverts at abandoned driveway.
14. Regrade drainage ditch where abandoned driveway was located.
15. Remove temporary erosion and perimeter controls.
16. Loam and seed where required for soil stabilization.
17. If any dredged material is produced, it will be transported outside of jurisdictional wetlands to an appropriate disposal location.
18. Install recommended erosion control protection and monitor until work areas have stabilized.

Appendix O – Floodplain Map



LOCUS MAP

 Approximate Project Limits

 0.2% Annual Chance Flood Hazard

 1% Annual Chance Flood Hazard



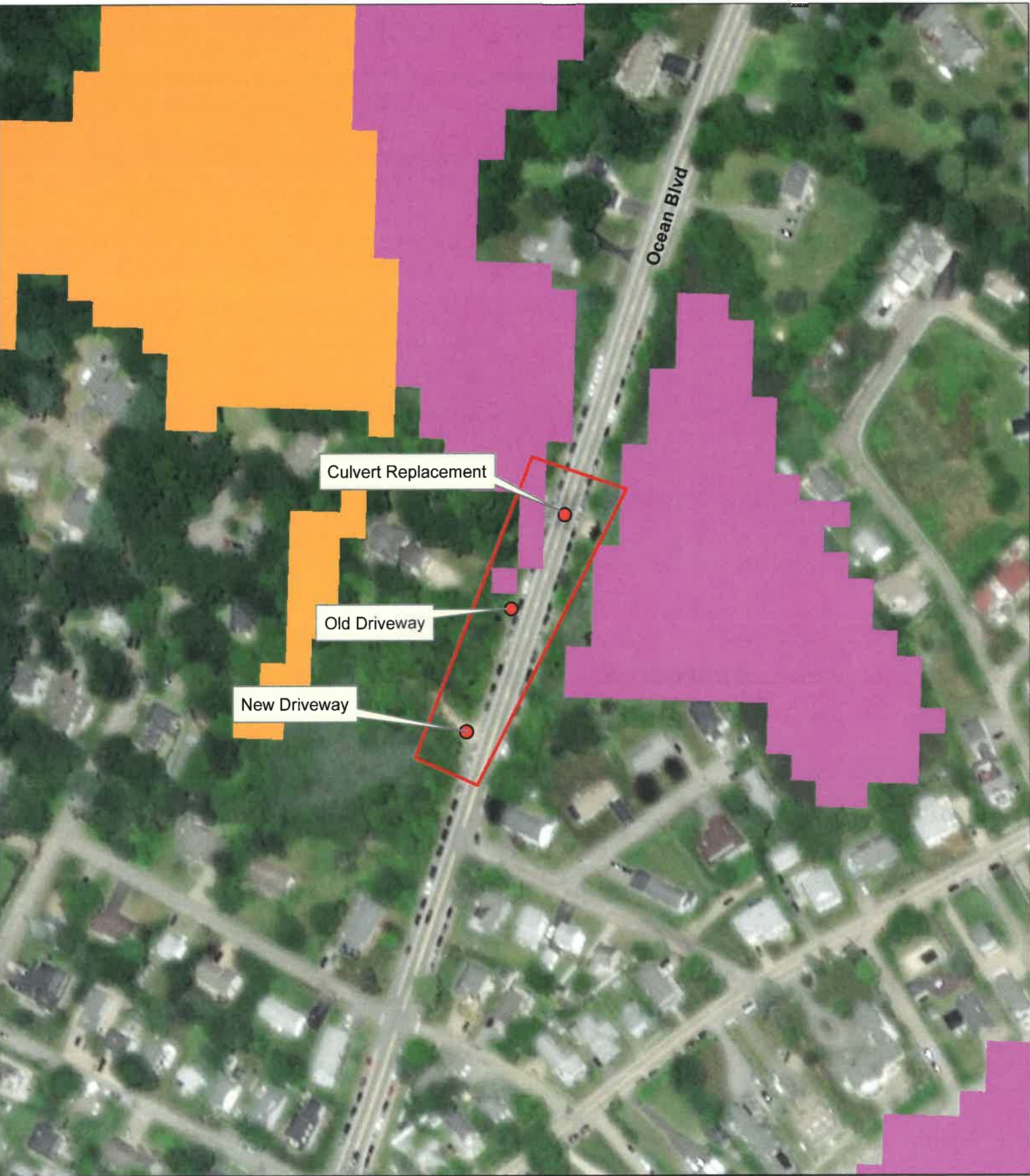
Project Location



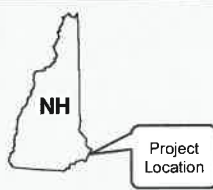
**NHDOT
Rye, NH
Floodplain Map**

Data Sources: ESRI, NHGRANIT
Map created by FBE in January, 2021

Appendix P – Ranked Habitat Map



LOCUS MAP



- Approximate Project Limits
- Wildlife Action Plan Tiers**
- 1 Highest Ranked Habitat in NH
- 3 Supporting Landscapes



NHDOT
Rye, NH
Wildlife Action Plan
Ranked Habitat

Data Sources: ESRI,
 NHF&G 2020 WAP
 Map created by FBE in January, 2021

Appendix Q – Coastal Resource Worksheet and Supporting Documents

Included in this appendix:

- *Coastal Resources Worksheet*
- *Tidal Datum Worksheet*



COASTAL RESOURCE WORKSHEET
Water Division/Land Resources Management
Wetlands Bureau
[Check the Status of your Application](#)



RSA/Rule: RSA 482-A/ Env-Wt 600

APPLICANT LAST NAME, FIRST NAME, M.I.: O'Sullivan, Andrew M.

This worksheet may be used to present the information required for projects in coastal areas, in addition to the information required for Lower-Scrutiny Approvals, Expedited Permits, and Standard Permits under Env-Wt 603.01.

Please refer to Env-Wt 605.03 for impacts requiring compensatory mitigation.

SECTION 1 - REQUIRED INFORMATION (Env-Wt 603.02; Env-Wt 603.06; Env-Wt 603.09)

The following information is required for projects in coastal areas.

Describe the purpose of the proposed project, including the overall goal of the project, the core project purpose consisting of a concise description of the facilities and work that could impact jurisdictional areas, and the intended project outcome. Specifically identify all natural resource assets in the area proposed to be impacted and include maps created through a data screening in accordance with Env-Wt 603.03 (refer to Section 2) and Env-Wt 603.04 (refer to Section 3) as attachments.

NHDOT District 6 proposes a culvert replacement and removal to improve hydrologic connection and decrease erosion along the west side of Ocean Blvd/Rt 1A in Rye. Three work areas involve impacts to tidally influenced wetlands: 1) driveway serving 2125 Ocean Blvd with twin 24" culverts over an excavated drainage ditch in the ROW; these culverts are proposed to be replaced and lowered 2-3". 2) abandoned drive and twin 21" culverts over same ditch; these culverts are to be removed. 3) Replacement of failing 36" CMP culvert with twin 36" HDPE culverts under Rt 1A that was completed in 2018 under an Emergency Authorization by NHDES. Impacts associated with work areas 1 and 2 are temporary. Work area 3 involved temporary impacts during construction as well as permanent impacts. NHDOT is requesting to retain permanent impacts associated with work area 3, which are self-mitigating with the increased hydrologic connectivity to the marsh to the east of Rt 1A allowed by the additional 36" pipe.

Refer to Section 10 of the attached Supplemental Narrative for more information on the project's data screening, natural resource delineation, functional assessment methodology and results, and vulnerability assessment.

For standard permit projects, provide:

- A Coastal Functional Assessment (CFA) report in accordance with Env-Wt 603.04 (refer to Section 3).
- A vulnerability assessment in accordance with Env-Wt 603.05 (refer to Section 4).

Explain all recommended methods and other considerations to protect the natural resource assets during and as a result of project construction in accordance with Env-Wt 311.07, Env-Wt 313, and Env-Wt 603.04.

Sections 4 and 5 of the attached Supplemental Narrative describe the natural resource assessments conducted and the recommended methods to avoid and minimize impacts.

Provide a narrative showing how the project meets the standard conditions in Env-Wt 307 and the approval criteria in Env-Wt 313.01.

The project's accordance with relevant standard conditions is contained in section 10-6 of the attached Supplemental Narrative.

Provide a project design narrative that includes the following:

- A discussion of how the proposed project:
 - Uses best management practices and standard conditions in Env-Wt 307;
 - Meets all avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;
 - Meets approval criteria in Env-Wt 313.01;
 - Meets evaluation criteria in Env-Wt 313.01(c);
 - Meets CFA requirements in Env-Wt 603.04; and
 - Considers sea-level rise and potential flooding evaluated pursuant to Env-Wt 603.05;
- A construction sequence, erosion/siltation control methods to be used, and a dewatering plan; and
- A discussion of how the completed project will be maintained and managed.

The project design narrative is contained within Section 10.7 of the attached Supplemental Narrative as part of this Standard Dredge and Fill application.

The Construction Sequence Narrative is included as Appendix N and includes dewatering notes.

Erosion control measures and dewatering details are included in the Erosion Control Plans as Appendix S.

After construction, BMPs for Routine Roadway Maintenance will be followed for maintenance and management of the driveway and highway culverts.

- Provide design plans that meet the requirements of Env-Wt 603.07 (refer to Section 5);
- Provide water depth supporting information required by Env-Wt 603.08 (refer to Section 6); and
- For any major project that proposes to construct a structure in tidal waters/wetlands or to extend an existing structure seaward, provide a statement from the Pease Development Authority Division of Ports and Harbors (DP&H) chief harbormaster, or designee, for the subject location relative to the proposed structure's impact on navigation. If the proposed structure might impede existing public passage along the subject shoreline on foot or by non-motorized watercraft, the applicant shall explain how the impediments have been minimized to the greatest extent practicable.

The proposed project is a minor project that does not propose to construct structures.

SECTION 2 - DATA SCREENING (Env-Wt 603.03, in addition to Env-Wt 306.05)

Please use the Wetland Permit Planning Tool, or any other database or source, to indicate the presence of:

- Existing salt marsh and salt marsh migration pathways;
- Eelgrass beds;
- Documented shellfish sites;
- Projected sea-level rise; and
- 100-year floodplain.

Conduct data screening as described to identify documented essential fish habitat, and tides and currents that may be impacted by the proposed project, by using the following links:

- [National Oceanic and Atmospheric Administration \(NOAA\) Tides & Currents](#); and
- [NOAA Essential Fish Habitat Mapper](#).
- Verify or correct the information collected from the data screenings by conducting an on-site assessment of the subject property in accordance with Env-Wt 406 and Env-Wt 603.04.

SECTION 3 - COASTAL FUNCTIONAL ASSESSMENT/ AVOIDANCE AND MINIMIZATION (Env-Wt 603.04; Env-Wt 605.01; Env-Wt 605.02; Env-Wt 605.03)

Projects in coastal areas shall:

- Not impair the navigation, recreation, or commerce of the general public; and
- Minimize alterations in prevailing currents.

An applicant for a permit for work in or adjacent to tidal waters/wetlands or the tidal buffer zone shall demonstrate that the following have been avoided or minimized as required by Env-Wt 313.04:

- Adverse impacts to beach or tidal flat sediment replenishment;
- Adverse impacts to the movement of sediments along a shore;
- Adverse impacts on a tidal wetland's ability to dissipate wave energy and storm surge; and
- Adverse impacts of project runoff on salinity levels in tidal environments.

For standard permit applications submitted for minor or major projects:

- Attach a CFA based on the data screening information and on-site evaluation required by Env-Wt 603.03. The CFA for tidal wetlands or tidal waters shall be:
 - Performed by a qualified coastal professional; and
 - Completed using one of the following methods:
 - a. The US Army Corps of Engineers (USACE) Highway Methodology Workbook, dated 1993, together with the USACE New England District *Highway Methodology Workbook Supplement*, dated 1999; or
 - b. An alternative scientifically-supported method with cited reference and the reasons for the alternative method substantiated.

For any project that would impact tidal wetlands, tidal waters, or associated sand dunes, the applicant shall:

- Use the results of the CFA to select the location of the proposed project having the least impact to tidal wetlands, tidal waters, or associated sand dunes;
- Design the proposed project to have the least impact to tidal wetlands, tidal waters, or associated sand dunes;
- Where impact to wetland and other coastal resource functions is unavoidable, limit the project impacts to the least valuable functions, avoiding and minimizing impact to the highest and most valuable functions; and
- Include on-site minimization measures and construction management practices to protect coastal resource areas.

Projects in coastal areas shall use results of this CFA to:

- Minimize adverse impacts to finfish, shellfish, crustacean, and wildlife;
- Minimize disturbances to groundwater and surface water flow;
- Avoid impacts that could adversely affect fish habitat, wildlife habitat, or both; and
- Avoid impacts that might cause erosion to shoreline properties.

SECTION 4 - VULNERABILITY ASSESSMENT (Env-Wt 603.05)

Refer to the New Hampshire Coastal Flood Risk Summary Part 1: Science and New Hampshire Coastal Flood Risk Summary Part II: Guidance for Using Scientific Projections or other best available science to:

Determine the time period over which the project is designed to serve.

The project is designed to serve a minimum of 25 years.

Identify the project's relative risk tolerance to flooding and potential damage or loss likely to result from flooding to buildings, infrastructure, salt marshes, sand dunes and other valuable coastal resource areas.

The project has a high risk tolerance to flooding. The project will have low value and replacement costs, will have the capacity to be adapted, and will not be sensitive to inundation. The project will increase the risk tolerance to flooding of the surrounding area and the structures and resources within it, by improving hydrologic conveyance and decreasing erosion.

Reference the projected sea-level rise (SLR) scenario that most closely matches the end of the project design life and the project's tolerance to risk or loss.

The projected Relative Sea-Level Rise (RSLR) scenario that most closely matches the end of the project design life and the project's tolerance to risk is 1.15 feet above sea level in the year 2000. Based on the projects tolerance for flood, the project's RSLR-adjusted Design Flood Elevation (DFE) is 10 feet.

Identify areas of the proposed project site subject to flooding from SLR.

A small portion of the survey area (northern) that is designated as wetland and stream, will have a mean higher high water (MHHW) level of 0-2 feet in the 1.15 ft SLR scenario. The project will help mitigate the effects of sea-level rise on nearby landscape features and infrastructure by improving hydrologic conveyance along the west side of Ocean Blvd in Rye, NH.

Identify areas currently located within the 100-year floodplain and subject to coastal flood risk.

A majority of the project area is within the 100-year floodplain, in Zone AE, with a Base Flood Elevation (BFE) of 9 feet. The southern portion of the project area is in Zone AO with a BFE of 1 foot.

Describe how the project design will consider and address the selected SLR scenario within the project design life, including in the design plans.

The proposed project will improve tidal connectivity and drainage in the vicinity of Ocean Blvd for the lifetime of the project. Therefore, inundation of a small portion of the project area at its northernmost extent does not conflict with the intended purpose of the project as reflected in the design plans. The selected SLR scenario will not inhibit or damage the safe operation or maintenance of the proposed project during its lifetime.

Where there are conflicts between the project's purpose and the vulnerability assessment results, schedule a pre-application meeting with the department to evaluate design alternatives, engineering approaches, and use of the best available science.

Pre-application meeting date held: 12/12/2020

SECTION 5 - DESIGN PLANS (Env-Wt 603.07, in addition to Env-Wt 311)

Submit design plans for the project in both plan and elevation views that clearly depict and identify all required elements.

The plan view shall depict the following:

- The engineering scale used, which shall be no larger than one inch equals 50 feet;
- The location of tidal datum lines depicted as lines with the associated elevation noted, based on North American Vertical Datum of 1988 (NAVD 88), derived from https://tidesandcurrents.noaa.gov/datum_options.html, as described in Section 6.
- An imaginary extension of property boundary lines into the waterbody and a 20-foot setback from those property line extensions;
- The location of all special aquatic sites at or within 100 feet of the subject property;
- Existing bank contours;
- The name and license number, if applicable, of each individual responsible for the plan, including:
 - a. The agent for tidal docking structures who determined elevations represented on plans; and
 - b. The qualified coastal professional who completed the CFA report and located the identified resources on the plan;
- The location and dimensions of all existing and proposed structures and landscape features on the property;
- Tidal datum(s) with associated elevations noted, based on NAVD 88; and
- Location of all special aquatic sites within 100-feet of the property.

The elevation view shall depict the following:

- The nature and slope of the shoreline;
- The location and dimensions of all proposed structures, including permanent piers, pilings, float stop structures, ramps, floats, and dolphins; and
- Water depths depicted as a line with associated elevation at highest observable tide, mean high tide, and mean low tide, and the date and tide height when the depths were measured. Refer to Section 6 for more instructions regarding water depth supporting information.

See specific design and plan requirements for certain types of coastal projects:

- Overwater structures (Env-Wt 606).
- Tidal shoreline stabilization (Env-Wt 609).
- Dredging activities (Env-Wt 607).
- Protected tidal zone (Env-Wt 610).
- Tidal beach maintenance (Env-Wt 608).
- Sand Dunes (Env-Wt 611).

SECTION 6 - WATER DEPTH SUPPORTING INFORMATION REQUIRED (Env-Wt 603.08)

Using current predicted NOAA tidal datum for the location, and tying field measurements to NAVD 88, field observations of at least three tide events, including at least one minus tide event, shall be located to document the range of the tide in the proposed location showing the following levels:

- Mean lower low water;
- Mean low water;
- Mean high water;
- Mean tide level;
- Mean higher high water;
- Highest observable tide line; and
- Predicted sea-level rise as identified in the vulnerability assessment in Env-Wt 603.05.

The following data shall be presented in the application project narrative to support how water depths were determined:

- The date, time of day, and weather conditions when water depths were recorded; and
- The name and license number of the licensed land surveyor who conducted the field measurements.

For tidal stream crossing projects, provide:

- Water depth information to show how the tier 4 stream crossing is designed to meet Env-Wt 904.07(c) and (d).

For repair, rehabilitation or replacement of tier 4 stream crossings:

- Demonstrate how the requirements of Env-Wt 904.09 are met.

SECTION 7 - GENERAL CRITERIA FOR TIDAL BEACHES, TIDAL SHORELINE, AND SAND DUNES (Env-Wt 604.01)

Any person proposing a project in or on a tidal beach, tidal shoreline, or sand dune, or any combination thereof, shall evaluate the proposed project based on:

- The standard conditions in Env-Wt 307;
- The avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;
- The approval criteria in Env-Wt 313.01;
- The evaluation criteria in Env-Wt 313.05;
- The project specific criteria in Env-Wt 600;
- The CFA required by Env-Wt 603.04; and
- The vulnerability assessment required by Env-Wt 603.05.

New permanent impacts to sand dunes that provide coastal storm surge protection for protected species or habitat shall not be allowed except:

- To protect public safety; and
- Only if constructed by a state agency, coastal resiliency project, or for a federal homeland security project.

Projects in or on a tidal beach, tidal shoreline, or sand dune shall support integrated shoreline management that:

- Optimizes the natural function of the shoreline, including protection or restoration of habitat, water quality, and self-sustaining stability to flooding and storm surge; and
- Protects upland infrastructure from coastal hazards with a preference for living shorelines over hardened shoreline practices.

SECTION 8 - GENERAL CRITERIA FOR TIDAL BUFFER ZONES (Env-Wt 604.02)

The 100-foot statutory limit on the extent of the tidal buffer zone shall be measured horizontally. Any person proposing a project in or on an undeveloped tidal buffer zone shall evaluate the proposed project based on:

- The standard conditions in Env-Wt 307;
- The avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;
- The approval criteria in Env-Wt 313.01;
- The evaluation criteria in Env-Wt 313.05;
- The project specific criteria in Env-Wt 600;
- The CFA required by Env-Wt 603.04; and
- The vulnerability assessment required by Env-Wt 603.05.

Projects in or on a tidal buffer zone shall preserve the self-sustaining ability of the buffer area to:

- Provide habitat values;
- Protect tidal environments from potential sources of pollution;
- Provide stability of the coastal shoreline; and
- Maintain existing buffers intact where the lot has disturbed area defined under RSA 483-B:4, IV.

SECTION 9 - GENERAL CRITERIA FOR TIDAL WATERS/WETLANDS (Env-Wt 604.03)

Except as allowed under Env-Wt 606, permanent new impacts to tidal wetlands shall be allowed only to protect public safety or homeland security. Evaluation of impacts to tidal wetlands and tidal waters shall be based on:

- The standard conditions in Env-Wt 307;
- The avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;
- The approval criteria in Env-Wt 313.01;
- The evaluation criteria in Env-Wt 313.05;
- The project specific criteria in Env-Wt 600;
- The CFA required by Env-Wt 603.04; and
- The vulnerability assessment required by Env-Wt 603.05.

Projects in tidal surface waters or tidal wetlands shall:

- Optimize the natural function of the tidal wetland, including protection or restoration of habitat, water quality, and self-sustaining stability to storm surge;
- Be designed with a preference for living shorelines over hardened stabilization practices; and
- Be limited to public infrastructure or restoration projects that are in the interest of the general public, including a road, a bridge, energy infrastructure, or a project that addresses predicted sea-level rise and coastal flood risk.

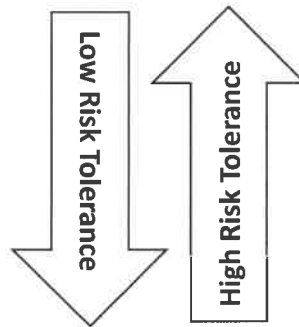
SECTION 10 – GUIDANCE

Your application must follow the New Hampshire Coastal Risk and Hazards Commission’s Guiding Principles or other best available science. Below are some of these guidance principles:

- Incorporate science-based coastal flood risk projections into planning;
- Apply risk tolerance* to assessment, planning, design, and construction;
- Protect natural resources and public access;
- Create a bold vision, start immediately, and respond incrementally and opportunistically as projected coastal flood risks increase over time; and
- Consider the full suite of actions including effectiveness and consequences of actions.

*Risk tolerance is a project’s willingness to accept a higher or lower probability of flooding impacts. The diagram below gives examples of project with lower and higher risk tolerance:

Critical infrastructures, historic sites, essential ecosystems, and high value assets typically have lower risk tolerance, and thus should be planned, designed, and constructed using higher coastal flood risk projections.



Sheds, pathways, and small docks typically have higher risk tolerance and thus may be planned, designed, and constructed using less protective coastal flood risk projections.



HEB Engineers, Inc.
hebengineers.com

NH Office (603) 356-6936
ME Office (207) 803-0265

Client FB Environmental, Inc.

Project NHDOT Rye

Calculated By SEB

Page 1 OF 1

Proj. No. 2020 - 096

Date Oct. 20, 2020

CIVIL • STRUCTURAL • SURVEY

Elevation Summary:

Computed using NGS VDatum tool, location in Rye Harbor (-70.751291, 43.000770)

MLLW = -5.10 NAVD88

MLW = -4.75

MTL = -0.39

MHW = 3.98

MHHW = 4.41

Tidal Observations: September 23, 2020

Low Tide (observed at Rye Harbor):

Pt. 1101 (GPS, on rocks), 10:27am = -4.21

Pt. 100, shot on rocks, 10:53am = -4.05

Pt. 101, shot on rocks, 10:55am = -4.08

High Tide (Rye Harbor):

Tide gauge on bridge: 3.33 on gauge = 6.02 NAVD88 (Point #170)

4:50pm: 2.0 on gauge = 4.69

High Tide (Locke Rd. Bridge):

Tide gauge at bridge: 0.30 on gauge = 1.67 NAVD88 (Point #1100)

5:03pm: 3.12 on gauge = 4.49

High Tide (project area):

Tide gauge: 4.46 on gauge = 3.90 NAVD88 (Point #141)

6:00pm: 5.01 gauge = 4.45

Highest observable staining on rocks/vegetation = 5.18 (Points #120 and #123)

Highest observable debris line on project culvert = 5.35 (Measured 0.95' above water @ high tide)

Lowest water observed at project culvert (due to impoundment) = 4.43 on gauge @ 3:56pm = 3.87

Tidal Observation: October 19, 2020

High Tide (project area):

3:30pm: 5.74 on gauge = 5.18 NAVD88

Appendix R – Wetland Impact and Erosion Control Plans

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

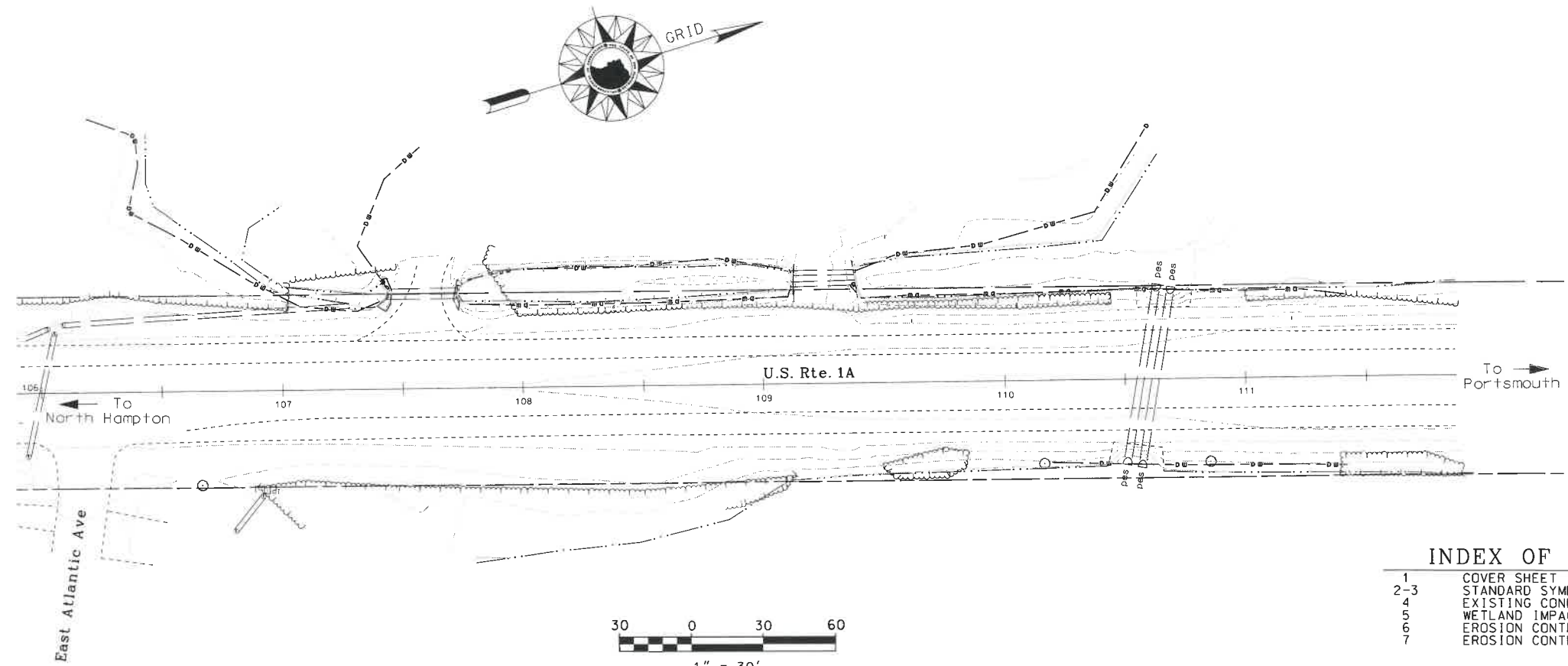
WETLAND PLANS

N.H. PROJECT NO. 42714

ROUTE 1A DRIVEWAY CULVERT REMOVAL AND
DRIVEWAY CULVERT REPLACEMENT



LOCATION MAP



INDEX OF SHEETS

1	COVER SHEET
2-3	STANDARD SYMBOLS SHEETS
4	EXISTING CONDITIONS PLAN
5	WETLAND IMPACT PLAN
6	EROSION CONTROL STRATEGIES
7	EROSION CONTROL PLAN

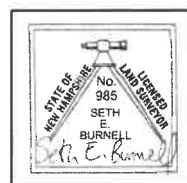
TOWN OF RYE
COUNTY OF ROCKINGHAM

SCALE: 1" = 30'

DRAWN BY: EWS / SEB
CHECKED BY: JMM
DATE: 2/4/2021
DATE: 2/4/2021



HEB Engineers, Inc.
Post Office Box 440
2605 White Mountain Hwy.
North Conway, NH 03860
www.hebengineers.com
Office (603) 356-6936
Fax (603) 356-7715



NHDOT THE STATE OF
NEW HAMPSHIRE
DEPARTMENT OF
TRANSPORTATION

RECOMMENDED FOR APPROVAL:

DIRECTOR OF PROJECT DEVELOPMENT

DATE

APPROVED:

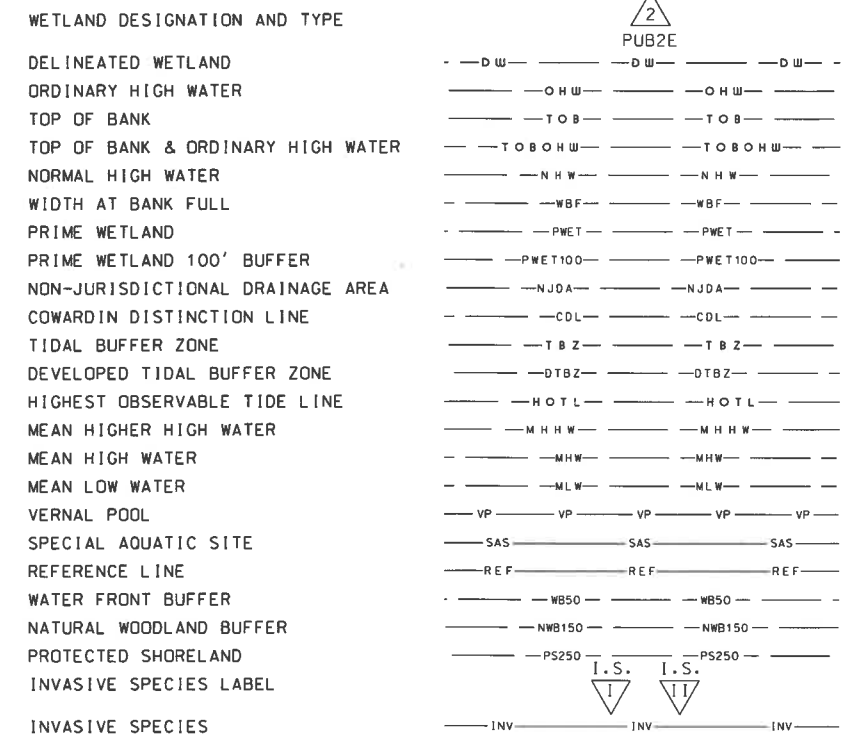
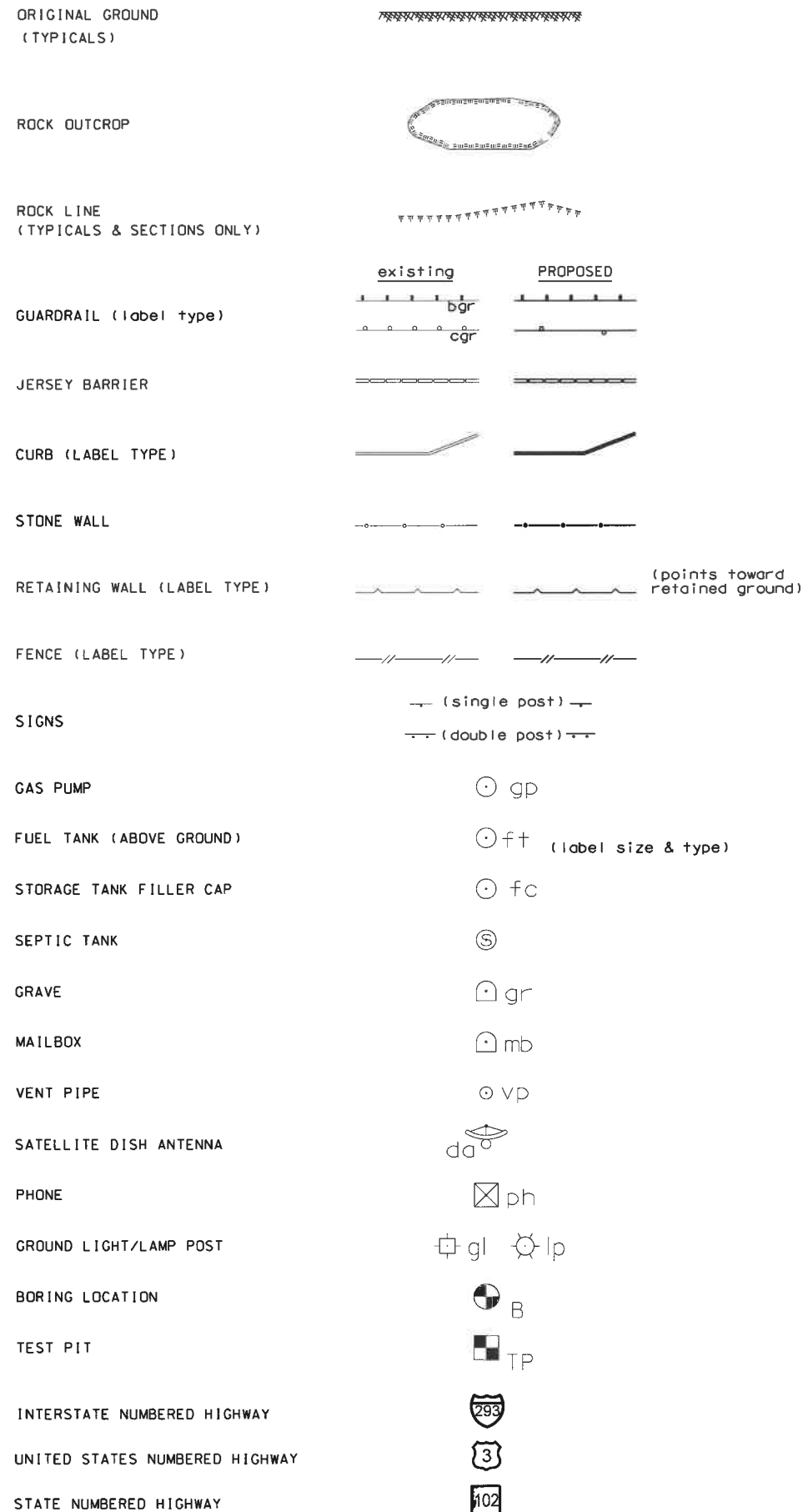
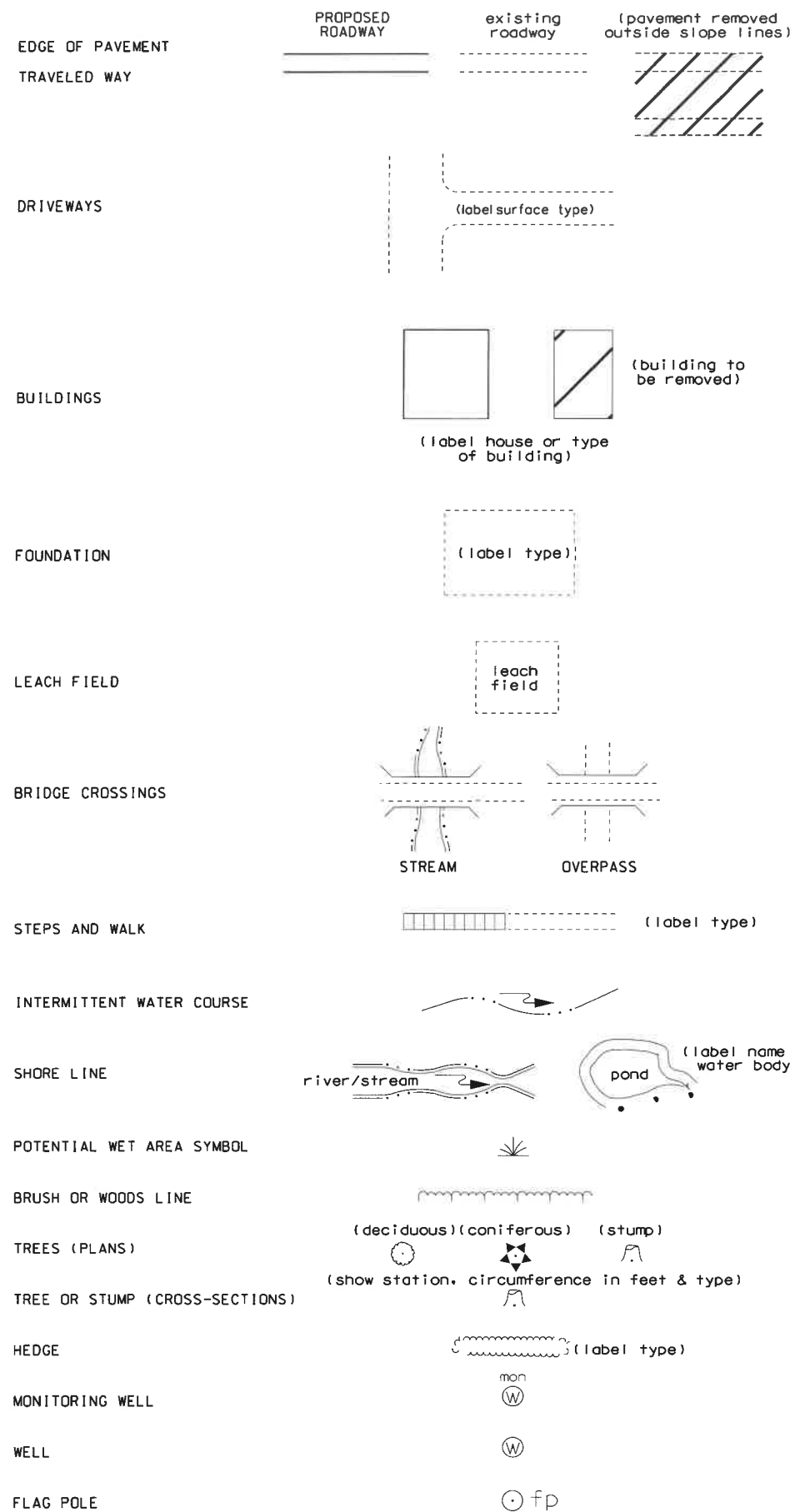
ASSISTANT COMMISSIONER AND CHIEF ENGINEER

DATE

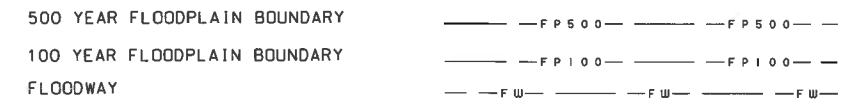
FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	42714	1	7

GENERAL

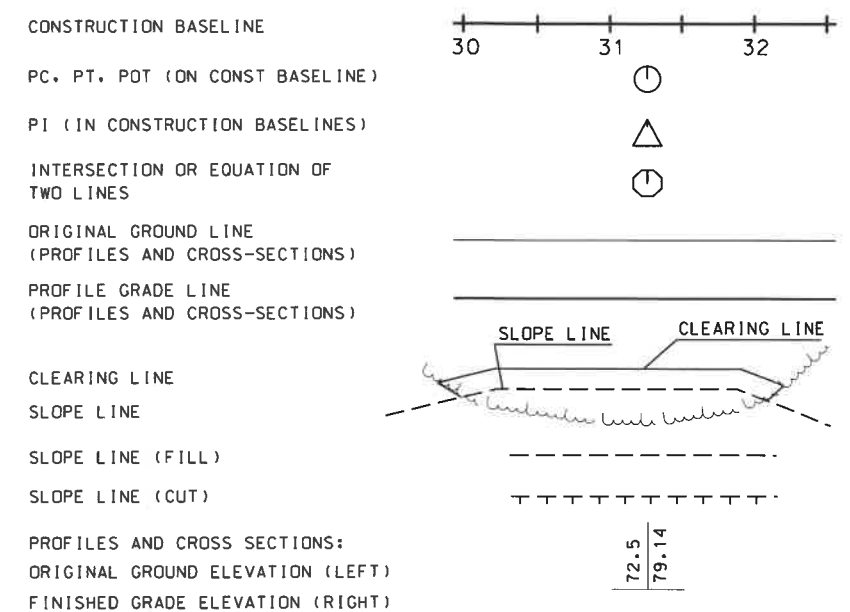
SHORELAND - WETLAND



FLOODPLAIN / FLOODWAY



ENGINEERING



STATE OF NEW HAMPSHIRE RYE DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
STANDARD SYMBOLS				

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
1-22-2021	42714syml-2	42714	2	7

DRAINAGE

MANHOLE		
CATCH BASIN		(existing) (PROPOSED)
DROP INLET		
DRAINAGE PIPE (existing)		(label size & type)
DRAINAGE PIPE (PROPOSED)		(label size & type)
UNDERDRAIN (existing) W/ FLUSHING BASIN		(label size & type)
UNDERDRAIN (PROPOSED) W/ FLUSHING BASIN		(label size & type)
HEADER (existing & PROPOSED)		(with stone outlet protection)
		METAL or PLASTIC
		RCP
END SECTION (existing & PROPOSED)		
OPEN DITCH (PROPOSED)		
EROSION CONTROL/ STONE SLOPE PROTECTION		

BOUNDARIES / RIGHT-OF-WAY

RIGHT-OF-WAY LINE		(label type)
RR RIGHT-OF-WAY LINE		
PROPERTY LINE		
PROPERTY LINE (COMMON OWNER)		
TOWN LINE		BOW CONCORD
COUNTY LINE		COOS
STATE LINE		GRAF TON MAINE NEW HAMPSHIRE
NATIONAL FOREST		
CONSERVATION LAND		
BENCH MARK / SURVEY DISK		
BOUND		(PROPOSED)
STATE LINE/ TOWN LINE MONUMENT		S/L
		T/L
NHDOT PROJECT MARKER		
IRON PIPE OR PIN		ip
DRILL HOLE IN ROCK		dh
TAX MAP AND LOT NUMBER		156 14 1642/341 6.80 Ac.±
PROPERTY PARCEL NUMBER		12
HISTORIC PROPERTY		H

UTILITIES

TELEPHONE POLE		
POWER POLE		
JOINT OCCUPANCY		
MISCELLANEOUS/UNKNOWN POLE		
GUY POLE OR PUSH BRACE		
LIGHT POLE		
LIGHT ON POWER POLE		
LIGHT ON JOINT POLE		
POLE STATUS: REMOVE, LEAVE, PROPOSED, OR TEMPORARY AS APPLICABLE e.g.:		
RAILROAD		
RAILROAD SIGN		
RAILROAD SIGNAL		
UTILITY JUNCTION BOX		
OVERHEAD WIRE		
UNDERGROUND UTILITIES (on existing lines label size, type and note if abandoned)		
WATER		
SEWER		
TELEPHONE		
ELECTRIC		
GAS		
LIGHTING		
INTELLIGENT TRANSPORTATION SYSTEM		
FIBER OPTIC		
WATER SHUT OFF		
GAS SHUT OFF		
HYDRANT		
MANHOLES		
SEWER		MHS
TELEPHONE		MHT
ELECTRICAL		MHE
GAS		MHG
UNKNOWN		

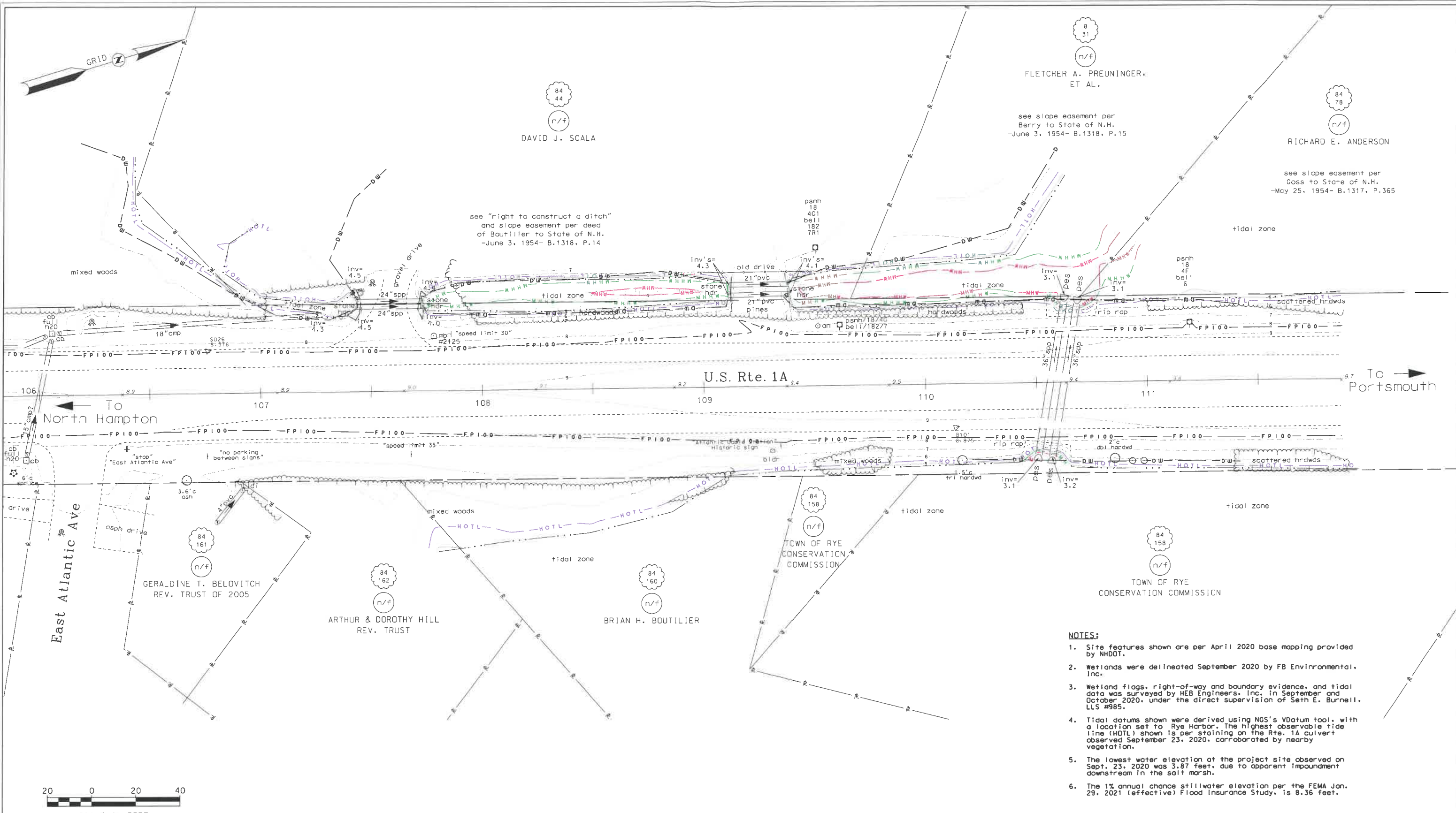
TRAFFIC SIGNALS / ITS

MAST ARM (existing)		
OPTICOM RECEIVER		
OPTICOM STROBE		
TRAFFIC SIGNAL		
PEDESTAL WITH PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON UNIT		
SIGNAL CONDUIT		
CONTROLLER CABINET		
METER PEDESTAL		
PULL BOX		
LOOP DETECTOR (QUADRUPOLE)		
LOOP DETECTOR (RECTANGULAR)		
CAMERA POLE (CCTV)		
FIBER OPTIC DELINEATOR		
FIBER OPTIC SPLICE VAULT		
ITS EQUIPMENT CABINET		
VARIABLE SPEED LIMIT SIGN		
DYNAMIC MESSAGE SIGN		
ROAD AND WEATHER INFO SYSTEM		

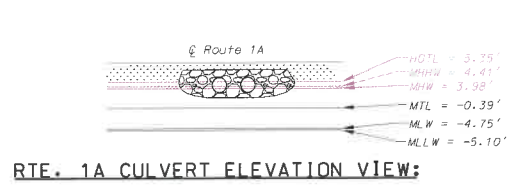
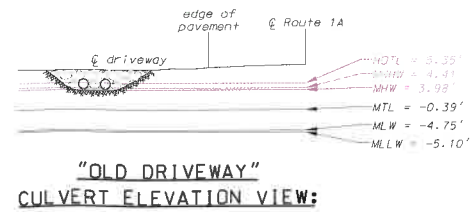
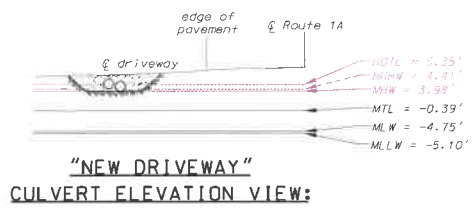
CONSTRUCTION NOTES

CURB MARK NUMBER - BITUMINOUS	B-1
CURB MARK NUMBER - GRANITE	G-1
CLEARING AND GRUBBING AREA	
DRAINAGE NOTE	
EROSION CONTROL NOTE	
FENCING NOTE	
GUARDRAIL NOTE	
ITS NOTE	
LIGHTING NOTE	
TRAFFIC SIGNAL NOTE	

STATE OF NEW HAMPSHIRE RYE				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
STANDARD SYMBOLS				
REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9-1-2016	42714 symb1-2	42714	3	7



- NOTES:**
1. Site features shown are per April 2020 base mapping provided by NHDOT.
 2. Wetlands were delineated September 2020 by FB Environmental, Inc.
 3. Wetland flags, right-of-way and boundary evidence, and tidal data was surveyed by HEB Engineers, Inc. in September and October 2020, under the direct supervision of Seth E. Burnell, LLS #985.
 4. Tidal datums shown were derived using NGS's VDatum tool, with a location set to Rye Harbor. The highest observable tide line (HOTL) shown is per staining on the Rte. 1A culvert observed September 23, 2020, corroborated by nearby vegetation.
 5. The lowest water elevation at the project site observed on Sept. 23, 2020 was 3.87 feet, due to apparent impoundment downstream in the salt marsh.
 6. The 1% annual chance stillwater elevation per the FEMA Jan. 29, 2021 (effective) Flood Insurance Study, is 8.36 feet.

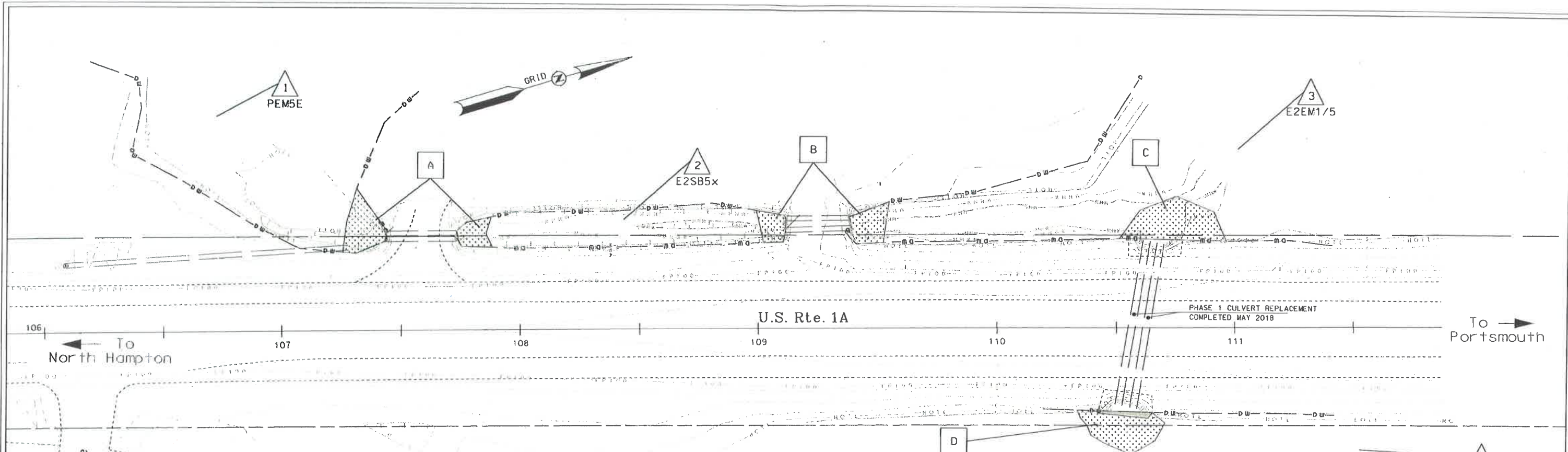


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STATE OF NEW HAMPSHIRE			
RYE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF ENVIRONMENT			
EXISTING CONDITIONS PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
42714ExCond	42714	4	7



East Atlantic Ave

To North Hampton

To Portsmouth

U.S. Rte. 1A

PHASE 2 CONSTRUCTION SEQUENCE

PHASE 2 WILL CONSIST OF THE REPLACEMENT OF THE FAILING TWIN 24-INCH SPP CULVERTS UNDER THE ACTIVE DRIVEWAY. ADDITIONALLY, THE ABANDONED DRIVEWAY AND TWIN 21-INCH PVC CULVERTS WILL BE REMOVED TO RESTORE THE HYDROLOGY OF THE DRAINAGE DITCH. THE CONSTRUCTION SEQUENCE FOR PHASE 2 FOLLOWS.

1. DIG SAFE THE PROJECT AREA.
2. REVIEW A MONTH'S WORTH OF THE TIDE CHARTS AND PLAN WORK ACCORDINGLY. WORK WITHIN THE DRAINAGE DITCH WILL TAKE PLACE DURING LOW TIDE CYCLES AND DURING THE FULLEST EXTENT PRACTICABLE.
3. NOTIFY TOWN OF RYE AND THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES) OF START DATE.
4. LOCATE STAGING AREA FOR CONSTRUCTION EQUIPMENT AND EROSION CONTROL MATERIAL.
5. HAVE SPILL KIT FOR CONSTRUCTION EQUIPMENT ON SITE.
6. TEMPORARY EROSION AND PERIMETER CONTROLS SHALL BE CONSTRUCTED AND MAINTAINED THROUGHOUT THE PHASE 2 CONSTRUCTION. EROSION AND PERIMETER CONTROLS WILL CONSIST OF SILT FENCE AND EITHER HAYBALES OR SILT SOCK, AS SHOWN ON THE EROSION CONTROL PLAN.
7. SET UP DEWATERING EQUIPMENT. DEWATERING SILT BAGS WILL BE LOCATED ON HIGHWAY SURFACE. DEWATERING LIQUID AND SILT BAGS WILL BE DISPOSED OF AT AN APPROPRIATE LOCATION OFF SITE.
8. INSERT BALLOONS IN TWIN CULVERTS AT ABANDONED DRIVE.
9. REMOVE TWIN 24-INCH CULVERTS AT ACTIVE DRIVEWAY.
10. EXCAVATE TRENCH AT ACTIVE DRIVE 2-3 INCHES LOWER FOR REPLACEMENT CULVERTS.
11. REPLACE TWIN CULVERTS AT ACTIVE DRIVEWAY AND BACKFILL.
12. REMOVE BALLOONS IN TWIN CULVERTS AT ABANDONED DRIVE.
13. REMOVE OVERBURDEN AND CULVERTS AT ABANDONED DRIVE.
14. REGRADE DRAINAGE DITCH WHERE ABANDONED DRIVE WAS LOCATED.
15. REMOVE TEMPORARY EROSION AND PERIMETER CONTROLS.
16. LOAM AND SEED WHERE REQUIRED FOR SOIL STABILIZATION.
17. IF ANY DREGGED MATERIAL IS PRODUCED, IT WILL BE TRANSPORTED OUTSIDE OF JURISDICTIONAL WETLANDS TO AN APPROPRIATE DISPOSAL LOCATION.
18. INSTALL RECOMMENDED EROSION CONTROL PROTECTION AND MONITOR UNTIL WORK AREAS HAVE STABILIZED.

For ACOE Use:

Original impact of pipe installation at new driveway when installed:

Approximately 96 Sq. ft.

WETLAND CLASSIFICATION CODES		
PEMSE	1	PALUSTRINE EMERGENT WETLAND
E2SB5x	2	ESTUARINE INTERTIDAL STREAMBED WITH MUD SUBSTRATE
E2EM1/5	3	ESTUARINE INTERTIDAL EMERGENT MARSH WITH PERSISTENT VEGETATION AND COMMON REED

WETLAND IMPACT SUMMARY												
WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA IMPACTS						LINEAR STREAM IMPACTS FOR MITIGATION			
			PERMANENT		TEMPORARY		BANK LEFT	BANK RIGHT	CHANNEL			
			N.H.W.B. (NON-WETLAND)	N.H.W.B. & A.C.O.E. (WETLAND)	SF	LF				LF	LF	
1	PEMSE	A										
2	E2SB5x	A										
2	E2SB5x	B										
3	E2EM1/5	B										
3	E2EM1/5	C										
3	E2EM1/5	D			50							
TOTAL			0 SF	0 LF	50 SF	0 LF	1,735 SF	0 LF	0 LF	0 LF	0 LF	0 LF

PERMANENT IMPACTS: 50 SF
 TEMPORARY IMPACTS: 1,735 SF
 TOTAL IMPACTS: 1,785 SF



LEGEND

TYPE OF WETLAND IMPACT	SHADING/HATCHING	#	WETLAND DESIGNATION NUMBER
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	[Diagonal Hatching]	#	WETLAND IMPACT LOCATION
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	[Solid Grey]	#	WETLAND MITIGATION AREA
TEMPORARY IMPACTS	[Dotted Pattern]	[Diagonal Hatching]	MITIGATION



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STATE OF NEW HAMPSHIRE RYE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF ENVIRONMENT			
WETLAND IMPACT PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
42714Wet1	42714	5	7

EROSION CONTROL STRATEGIES

1. ENVIRONMENTAL COMMITMENTS:
 - 1.1. THESE GUIDELINES DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH ANY CONTRACT PROVISIONS, OR APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
 - 1.2. THIS PROJECT WILL BE SUBJECT TO THE US EPA'S NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER CONSTRUCTION GENERAL PERMIT AS ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THIS PROJECT IS SUBJECT TO REQUIREMENTS IN THE MOST RECENT CONSTRUCTION GENERAL PERMIT (CGP).
 - 1.3. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NHDES WETLAND PERMIT, THE US ARMY CORPS OF ENGINEERS PERMIT, WATER QUALITY CERTIFICATION AND THE SPECIAL ATTENTION ITEMS INCLUDED IN THE CONTRACT DOCUMENTS.
 - 1.4. ALL STORM WATER, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION (DECEMBER 2008) (BMP MANUAL) AVAILABLE FROM THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES).
 - 1.5. THE CONTRACTOR SHALL COMPLY WITH RSA 485-A:17, AND ALL, PUBLISHED NHDES ALTERATION OF TERRAIN ENV-WO 1500 REQUIREMENTS ([HTTP://DES.NH.GOV/ORGANIZATION/COMMISSIONER/LEGAL/RULES/INDEX.HTM](http://DES.NH.GOV/ORGANIZATION/COMMISSIONER/LEGAL/RULES/INDEX.HTM))
 - 1.6. THE CONTRACTOR IS DIRECTED TO REVIEW AND COMPLY WITH SECTION 107.1 OF THE CONTRACT AS IT REFERS TO SPILLAGE, AND ALSO WITH REGARDS TO EROSION, POLLUTION, AND TURBIDITY PRECAUTIONS.
2. STANDARD EROSION CONTROL SEQUENCING APPLICABLE TO ALL CONSTRUCTION PROJECTS:
 - 2.1. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH DISTURBING ACTIVITIES. PERIMETER CONTROLS AND STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AS SHOWN IN THE BMP MANUAL AND AS DIRECTED BY THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARER.
 - 2.2. EROSION, SEDIMENTATION CONTROL MEASURES AND INFILTRATION BASINS SHALL BE CLEANED, REPLACED AND AUGMENTED AS NECESSARY TO PREVENT SEDIMENTATION BEYOND PROJECT LIMITS THROUGHOUT THE PROJECT DURATION.
 - 2.3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT AND SECTION 645 OF THE NHDOT SPECIFICATIONS FOR ROAD AND BRIDGES CONSTRUCTION.
 - 2.4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
 - (A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
 - (B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
 - (C) A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED;
 - (D) TEMPORARY SLOPE STABILIZATION CONFORMING TO TABLE 1 HAS BEEN PROPERLY INSTALLED
 - 2.5. ALL STOCKPILES SHALL BE CONTAINED WITH A PERIMETER CONTROL. IF THE STOCKPILE IS TO REMAIN UNDISTURBED FOR MORE THAN 14 DAYS, MULCHING WILL BE REQUIRED.
 - 2.6. A WATER TRUCK SHALL BE AVAILABLE TO CONTROL EXCESSIVE DUST AT THE DIRECTION OF THE CONTRACT ADMINISTRATOR.
 - 2.7. TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL REMAIN UNTIL THE AREA HAS BEEN PERMANENTLY STABILIZED.
 - 2.8. CONSTRUCTION PERFORMED ANY TIME BETWEEN NOVEMBER 30th AND MAY 1st OF ANY YEAR SHALL BE CONSIDERED WINTER CONSTRUCTION AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS.
 - (A) ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED IN ACCORDANCE WITH TABLE 1.
 - (B) ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
 - (C) AFTER NOVEMBER 30th INCOMPLETE ROAD SURFACES, WHERE WORK HAS STOPPED FOR THE SEASON, SHALL BE PROTECTED IN ACCORDANCE WITH TABLE 1.
 - (D) WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE PROJECT IS WITHOUT STABILIZATION AT ONE TIME, UNLESS A WINTER CONSTRUCTION PLAN HAS BEEN APPROVED BY NHDOT THAT MEETS THE REQUIREMENTS OF ENV-WO 1505.02 AND ENV-WO 1505.05.
 - (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WO 1505.05) AND INCLUDING THE REQUIREMENTS OF NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30th.

GENERAL CONSTRUCTION PLANNING AND SELECTION OF STRATEGIES TO CONTROL EROSION AND SEDIMENT ON HIGHWAY CONSTRUCTION PROJECTS

3. PLAN ACTIVITIES TO ACCOUNT FOR SENSITIVE SITE CONDITIONS:
 - 3.1. CLEARLY FLAG AREAS TO BE PROTECTED IN THE FIELD AND PROVIDE CONSTRUCTION BARRIERS TO PREVENT TRAFFICKING OUTSIDE OF WORK AREAS.
 - 3.2. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS.
 - 3.3. PROTECT AND MAXIMIZE EXISTING NATIVE VEGETATION AND NATURAL FOREST BUFFERS BETWEEN CONSTRUCTION ACTIVITY AND SENSITIVE AREAS.
 - 3.4. WHEN WORK IS PERFORMED IN AND NEAR WATER COURSES, STREAM FLOW DIVERSION METHODS SHALL BE IMPLEMENTED PRIOR TO ANY EXCAVATION OR FILLING.
 - 3.5. WHEN WORK IS PERFORMED WITHIN 50 FEET OF SURFACE WATERS (WETLAND, OPEN WATER OR FLOWING WATER), PERIMETER CONTROL SHALL BE ENHANCED CONSISTENT WITH SECTION 2.1.2.1. OF THE 2012 NPDES CONSTRUCTION GENERAL PERMIT.
4. MINIMIZE THE AMOUNT OF EXPOSED SOIL:
 - 4.1. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS. MINIMIZE THE AREA OF EXPOSED SOIL AT ANY ONE TIME. PHASING SHALL BE USED TO REDUCE THE AMOUNT AND DURATION OF SOIL EXPOSED TO THE ELEMENTS AND VEHICLE TRACKING.
 - 4.2. UTILIZE TEMPORARY MULCHING OR PROVIDE ALTERNATE TEMPORARY STABILIZATION ON EXPOSED SOILS IN ACCORDANCE WITH TABLE 1.
 - 4.3. THE MAXIMUM AMOUNT OF DISTURBED EARTH SHALL NOT EXCEED A TOTAL OF 5 ACRES FROM MAY 1st THROUGH NOVEMBER 30th, OR EXCEED ONE ACRE DURING WINTER MONTHS, UNLESS THE CONTRACTOR DEMONSTRATES TO THE DEPARTMENT THAT THE ADDITIONAL AREA OF DISTURBANCE IS NECESSARY TO MEET THE CONTRACTORS CRITICAL PATH METHOD SCHEDULE (CPM), AND THE CONTRACTOR HAS ADEQUATE RESOURCES AVAILABLE TO ENSURE THAT ENVIRONMENTAL COMMITMENTS WILL BE MET.
5. CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT:
 - 5.1. DIVERT OFF SITE RUNOFF OR CLEAN WATER AWAY FROM THE CONSTRUCTION ACTIVITY TO REDUCE THE VOLUME THAT NEEDS TO BE TREATED ON SITE.
 - 5.2. DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM DISTURBED AREAS, SLOPES, AND AROUND ACTIVE WORK AREAS AND TO A STABILIZED OUTLET LOCATION.
 - 5.3. CONSTRUCT IMPERMEABLE BARRIERS AS NECESSARY TO COLLECT OR DIVERT CONCENTRATED FLOWS FROM WORK OR DISTURBED AREAS.
 - 5.4. STABILIZE, TO APPROPRIATE ANTICIPATED VELOCITIES, CONVEYANCE CHANNELS OR PUMPING SYSTEMS NEEDED TO CONVEY CONSTRUCTION STORMWATER TO BASINS AND DISCHARGE LOCATIONS PRIOR TO USE.
 - 5.5. DIVERT OFF-SITE WATER THROUGH THE PROJECT IN AN APPROPRIATE MANNER SO NOT TO DISTURB THE UPSTREAM OR DOWNSTREAM SOILS, VEGETATION OR HYDROLOGY BEYOND THE PERMITTED AREA.
6. PROTECT SLOPES:
 - 6.1. INTERCEPT AND DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM UNPROTECTED AND NEWLY ESTABLISHED AREAS AND SLOPES TO A STABILIZED OUTLET OR CONVEYANCE.
 - 6.2. CONSIDER HOW GROUNDWATER SEEPAGE ON CUT SLOPES MAY IMPACT SLOPE STABILITY AND INCORPORATE APPROPRIATE MEASURES TO MINIMIZE EROSION.
 - 6.3. CONVEY STORMWATER DOWN THE SLOPE IN A STABILIZED CHANNEL OR SLOPE DRAIN.
 - 6.4. THE OUTER FACE OF THE FILL SLOPE SHOULD BE IN A LOOSE RUFFLED CONDITION PRIOR TO TURF ESTABLISHMENT. TOPSOIL OR HUMUS LAYERS SHALL BE TRACKED UP AND DOWN THE SLOPE, DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE-RAKED, OR HAND-WORKED TO PRODUCE A RUFFLED SURFACE.
7. ESTABLISH STABILIZED CONSTRUCTION EXITS:
 - 7.1. INSTALL AND MAINTAIN CONSTRUCTION EXITS, ANYWHERE TRAFFIC LEAVES A CONSTRUCTION SITE ONTO A PUBLIC RIGHT-OF-WAY.
 - 7.2. SWEEP ALL CONSTRUCTION RELATED DEBRIS AND SOIL FROM THE ADJACENT PAVED ROADWAYS AS NECESSARY.
8. PROTECT STORM DRAIN INLETS:
 - 8.1. DIVERT SEDIMENT LADEN WATER AWAY FROM INLET STRUCTURES TO THE EXTENT POSSIBLE.
 - 8.2. INSTALL SEDIMENT BARRIERS AND SEDIMENT TRAPS AT INLETS TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.
 - 8.3. CLEAN CATCH BASINS, DRAINAGE PIPES, AND CULVERTS IF SIGNIFICANT SEDIMENT IS DEPOSITED.
 - 8.4. DROP INLET SEDIMENT BARRIERS SHOULD NEVER BE USED AS THE PRIMARY MEANS OF SEDIMENT CONTROL AND SHOULD ONLY BE USED TO PROVIDE AN ADDITIONAL LEVEL OF PROTECTION TO STRUCTURES AND DOWN-GRADIENT SENSITIVE RECEPTORS.
9. SOIL STABILIZATION:
 - 9.1. WITHIN THREE DAYS OF THE LAST ACTIVITY IN AN AREA, ALL EXPOSED SOIL AREAS, WHERE CONSTRUCTION ACTIVITIES ARE COMPLETE, SHALL BE STABILIZED.
 - 9.2. IN ALL AREAS, TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED IN ACCORDANCE WITH THE STABILIZATION REQUIREMENTS (SECTION 2.2) OF THE 2012 CGP. (SEE TABLE 1 FOR GUIDANCE ON THE SELECTION OF TEMPORARY SOIL STABILIZATION MEASURES.)
 - 9.3. EROSION CONTROL SEED MIX SHALL BE SOWN IN ALL INACTIVE CONSTRUCTION AREAS THAT WILL NOT BE PERMANENTLY SEEDDED WITHIN TWO WEEKS OF DISTURBANCE AND PRIOR TO SEPTEMBER 15, OF ANY GIVEN YEAR, IN ORDER TO ACHIEVE VEGETATIVE STABILIZATION PRIOR TO THE END OF THE GROWING SEASON.
 - 9.4. SOIL TACKIFIERS MAY BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND REAPPLIED AS NECESSARY TO MINIMIZE SOIL AND MULCH LOSS UNTIL PERMANENT VEGETATION IS ESTABLISHED.
10. RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES:
 - 10.1. TEMPORARY SEDIMENT BASINS (CGP-SECTION 2.1.3.2) OR SEDIMENT TRAPS (ENV-WO 1506.10) SHALL BE SIZED TO RETAIN, ON SITE, THE VOLUME OF A 2-YEAR 24-HOUR STORM EVENT FOR ANY AREA OF DISTURBANCE OR 3-600 CUBIC FEET OF STORMWATER RUNOFF PER ACRE OF DISTURBANCE, WHICHEVER IS GREATER. TEMPORARY SEDIMENT BASINS USED TO TREAT STORMWATER RUNOFF FROM AREAS GREATER THAN 5-ACRES OF DISTURBANCE SHALL BE SIZED TO ALSO CONTROL STORMWATER RUNOFF FROM A 10-YEAR 24 HOUR STORM EVENT. ON-SITE RETENTION OF THE 10-YEAR 24-HOUR EVENT IS NOT REQUIRED.
 - 10.2. CONSTRUCT AND STABILIZE DEWATERING INFILTRATION BASINS PRIOR TO ANY EXCAVATION THAT MAY REQUIRE DEWATERING.
 - 10.3. TEMPORARY SEDIMENT BASINS OR TRAPS SHALL BE PLACED AND STABILIZED AT LOCATIONS WHERE CONCENTRATED FLOW (CHANNELS AND PIPES) DISCHARGE TO THE SURROUNDING ENVIRONMENT FROM AREAS OF UNSTABILIZED EARTH DISTURBING ACTIVITIES.

11. ADDITIONAL EROSION AND SEDIMENT CONTROL GENERAL PRACTICES:
 - 11.1. USE TEMPORARY MULCHING, PERMANENT MULCHING, TEMPORARY VEGETATIVE COVER, AND PERMANENT VEGETATIVE COVER TO REDUCE THE NEED FOR DUST CONTROL. USE MECHANICAL SWEEPERS ON PAVED SURFACES WHERE NECESSARY TO PREVENT DUST BUILDUP. APPLY WATER, OR OTHER DUST INHIBITING AGENTS OR TACKIFIERS, AS APPROVED BY THE NHDES.
 - 11.2. ALL STOCKPILES SHALL BE CONTAINED WITH TEMPORARY PERIMETER CONTROLS. INACTIVE SOIL STOCKPILES SHOULD BE PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY EROSION CONTROL SEED MIX AND MULCH, SOIL BINDER) OR COVERED WITH ANCHORED TARPS.
 - 11.3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED IN ACCORDANCE WITH SECTION 645 OF NHDOT SPECIFICATIONS, WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.25 IN. OF RAIN PER 24-HOUR PERIOD. EROSION AND SEDIMENT CONTROL MEASURES WILL ALSO BE INSPECTED IN ACCORDANCE WITH THE GUIDANCE MEMO FROM THE NHDES CONTAINED WITHIN THE CONTRACT PROPOSAL AND THE EPA CONSTRUCTION GENERAL PERMIT.
 - 11.4. THE CONTRACTOR SHOULD UTILIZE STORM DRAIN INLET PROTECTION TO PREVENT SEDIMENT FROM ENTERING A STORM DRAINAGE SYSTEM PRIOR TO THE PERMANENT STABILIZATION OF THE CONTRIBUTING DISTURBED AREA.
 - 11.5. PERMANENT STABILIZATION MEASURES WILL BE CONSTRUCTED AND MAINTAINED IN LOCATIONS AS SHOWN ON THE CONSTRUCTION PLANS TO STABILIZE AREAS. VEGETATIVE STABILIZATION SHALL NOT BE CONSIDERED PERMANENTLY STABILIZED UNTIL VEGETATIVE GROWTH COVERS AT LEAST 85% OF THE DISTURBED AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL FOR ONE YEAR AFTER PROJECT COMPLETION.
 - 11.6. CATCH BASINS: CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT ENTER ANY EXISTING CATCH BASINS DURING CONSTRUCTION. THE CONTRACTOR SHALL PLACE TEMPORARY STONE INLET PROTECTION OVER INLETS IN AREAS OF SOIL DISTURBANCE THAT ARE SUBJECT TO SEDIMENT CONTAMINATION.
 - 11.7. TEMPORARY AND PERMANENT DITCHES SHALL BE CONSTRUCTED, STABILIZED AND MAINTAINED IN A MANNER THAT WILL MINIMIZE SCOUR. TEMPORARY AND PERMANENT DITCHES SHALL BE DIRECTED TO DRAIN TO SEDIMENT BASINS OR STORM WATER COLLECTION AREAS.
 - 11.8. WINTER EXCAVATION AND EARTHWORK ACTIVITIES NEED TO BE LIMITED IN EXTENT AND DURATION, TO MINIMIZE POTENTIAL EROSION AND SEDIMENTATION IMPACTS. THE AREA OF EXPOSED SOIL SHALL BE LIMITED TO ONE ACRE, OR THAT WHICH CAN BE STABILIZED AT THE END OF EACH DAY UNLESS A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY THE DEPARTMENT.
 - 11.9. CHANNEL PROTECTION MEASURES SHALL BE SUPPLEMENTED WITH PERIMETER CONTROL MEASURES WHEN THE DITCH LINES OCCUR AT THE BOTTOM OF LONG FILL SLOPES. THE PERIMETER CONTROLS SHALL BE INSTALLED ON THE FILL SLOPE TO MINIMIZE THE POTENTIAL FOR FILL SLOPE SEDIMENT DEPOSITS IN THE DITCH LINE.

BEST MANAGEMENT PRACTICES (BMP) BASED ON AMOUNT OF OPEN CONSTRUCTION AREA

12. STRATEGIES SPECIFIC TO OPEN AREAS LESS THAN 5 ACRES:
 - 12.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WO 1500; ALTERATION OF TERRAIN FOR CONSTRUCTION AND USE ALL CONVENTIONAL BMP STRATEGIES.
 - 12.2. SLOPES STEEPER THAN 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING.
 - 12.3. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT ALONE.
 - 12.4. AREAS WHERE HAUL ROADS ARE CONSTRUCTED AND STORMWATER CANNOT BE TREATED THE DEPARTMENT WILL CONSIDER INFILTRATION.
 - 12.5. FOR HAUL ROADS ADJACENT TO SENSITIVE ENVIRONMENTAL AREAS OR STEEPER THAN 5%, THE DEPARTMENT WILL CONSIDER USING EROSION STONE, CRUSHED GRAVEL, OR CRUSHED STONE BASE TO HELP MINIMIZE EROSION ISSUES.
 - 12.6. ALL AREAS THAT CAN BE STABILIZED SHALL BE STABILIZED PRIOR TO OPENING UP NEW TERRITORY.
 - 12.7. DETENTION BASINS SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE A 2 YEAR STORM EVENT.
13. STRATEGIES SPECIFIC TO OPEN AREAS BETWEEN 5 AND 10 ACRES:
 - 13.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WO 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES WILL BE UTILIZED.
 - 13.2. DETENTION BASINS WILL BE CONSTRUCTED TO ACCOMMODATE THE 2-YEAR 24-HOUR STORM EVENT AND CONTROL A 10-YEAR 24-HOUR STORM EVENT.
 - 13.3. SLOPES STEEPER THAN A 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS. OTHER ALTERNATIVE MEASURES, SUCH AS BONDED FIBER MATRIXES (BFMS) OR FLEXIBLE GROWTH MEDIUMS (FGMS) MAY BE UTILIZED, IF MEETING THE NHDES APPROVALS AND REGULATIONS.
 - 13.4. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS.
14. STRATEGIES SPECIFIC TO OPEN AREAS OVER 10 ACRES:
 - 14.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WO 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES AND BETWEEN 5 AND 10 ACRES WILL BE UTILIZED.
 - 14.2. THE DEPARTMENT ANTICIPATES THAT SOIL BINDERS WILL BE NEEDED ON ALL SLOPES STEEPER THAN 3:1, IN ORDER TO MINIMIZE EROSION AND REDUCE THE AMOUNT OF SEDIMENT IN THE STORMWATER TREATMENT BASINS.
 - 14.3. THE CONTRACTOR WILL BE REQUIRED TO HAVE AN APPROVED DESIGN IN ACCORDANCE WITH ENV-WO 1506.12 FOR AN ACTIVE FLOCCULANT TREATMENT SYSTEM TO TREAT AND RELEASE WATER CAPTURED IN STORM WATER BASINS. THE CONTRACTOR SHALL ALSO RETAIN THE SERVICES OF AN ENVIRONMENTAL CONSULTANT WHO HAS DEMONSTRATED EXPERIENCE IN THE DESIGN OF FLOCCULANT TREATMENT SYSTEMS. THE CONSULTANT WILL ALSO BE RESPONSIBLE FOR THE IMPLEMENTATION AND MONITORING OF THE SYSTEM.

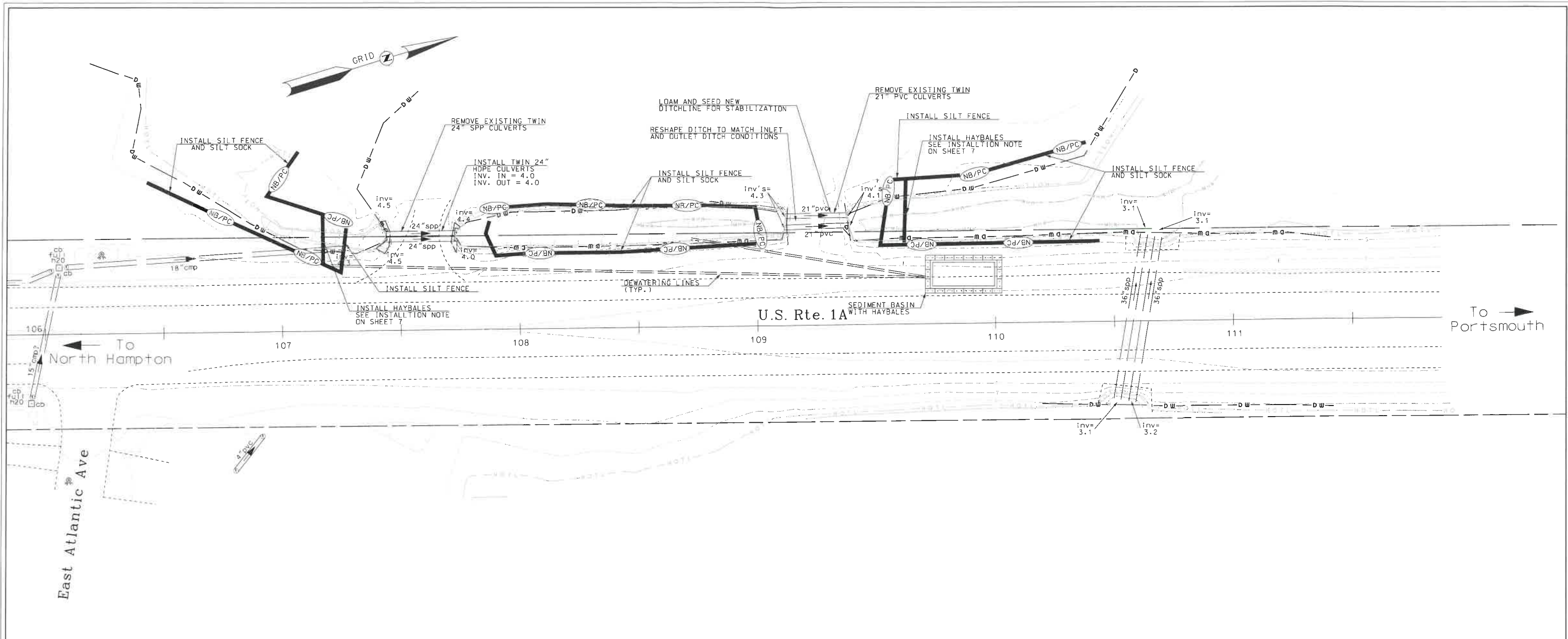
TABLE 1
GUIDANCE ON SELECTING TEMPORARY SOIL STABILIZATION MEASURES

APPLICATION AREAS	DRY MULCH METHODS				HYDRAULICALLY APPLIED MULCHES ²				ROLLED EROSION CONTROL BLANKETS ³			
	HMT	WC	SG	CB	HM	SMM	BFM	FRM	SNSB	DNSB	DNSCB	DNCB
SLOPES ¹												
STEEPER THAN 2:1	NO	NO	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES
2:1 SLOPE	YES	YES	YES	YES	NO	NO	YES	YES	NO	YES	YES	YES
3:1 SLOPE	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO
4:1 SLOPE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO
WINTER STABILIZATION	4T/AC	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES
CHANNELS												
LOW FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
HIGH FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNSCB	2 NET STRAW-COCONUT BLANKET
CB	COMPOST BLANKET	FRM	FIBER REINFORCED MEDIUM	DNCB	2 NET COCONUT BLANKET

- NOTES:
1. ALL SLOPE STABILIZATION OPTIONS ASSUME A SLOPE LENGTH ≤10 TIMES THE HORIZONTAL DISTANCE COMPONENT OF THE SLOPE, IN FEET.
 2. PRODUCTS CONTAINING POLYACRYLAMIDE (PAM) SHALL NOT BE APPLIED DIRECTLY TO OR WITHIN 100 FEET OF ANY SURFACE WATER WITHOUT PRIOR WRITTEN APPROVAL FROM THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
 3. ALL EROSION CONTROL BLANKETS SHALL BE MADE WITH WILDLIFE FRIENDLY BIODEGRADABLE NETTING.

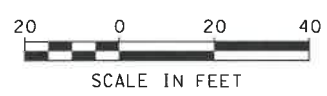
STATE OF NEW HAMPSHIRE				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
<i>EROSION CONTROL STRATEGIES</i>				
REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	erosstrat	42714	6	7



- NOTES:
1. INSTALL HAYBALES AT 2 BALES WIDE BY 2 BALES TALL. BALES SHOULD BE STAKED IN PLACE WITH GRADE STAKES.
 2. THE NEED FOR THE SEDIMENT BASIN IS THE RESPONSIBILITY OF THE CONTRACTOR DEPENDING ON THE TIDE CONDITIONS.

EROSION CONTROL PLAN LEGEND

	NATURAL BUFFER / PERIMETER CONTROL
	SILT FENCE
	EROSION CONTROL MIX BERM
	EROSION CONTROL MIX SOX
	TURBIDITY CURTAIN
	SHEET PILE
	COFFER DAM
	PERIMETER CONTROL
	SILT FENCE
	EROSION CONTROL MIX BERM
	EROSION CONTROL MIX SOX
	TURBIDITY CURTAIN
	SHEET PILE
	COFFER DAM
	CLEAN WATER BYPASS
	PUMP THROUGH PIPE
	DRAIN THROUGH PIPE OR CHANNEL



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STATE OF NEW HAMPSHIRE			
RYE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF ENVIRONMENT			
EROSION CONTROL PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
42714Eros	42714	7	7