

# STATE OF NEW HAMPSHIRE INTER-DEPARTMENT COMMUNICATION

**DATE:** February 18, 2022

**FROM:** Joshua Brown  
Wetlands Program Analyst

**AT (OFFICE):** Department of  
Transportation

**SUBJECT** Dredge & Fill Application  
Hampstead, 43275

Bureau of  
Environment

**TO** Karl Benedict, Public Works Permitting Officer  
New Hampshire Wetlands Bureau  
29 Hazen Drive, P.O. Box 95  
Concord, NH 03302-0095

Forwarded herewith is the application package prepared by NH DOT Bureau of Highway Design for the subject minor impact project. The project is located along NH Route 111 in the Town of Hampstead, NH. The project will rehabilitate an existing 42" CMP, 99 ft. long, connecting two sections of Johnsons pond. The rehabilitation will remove 10 ft. of pipe at the inlet and slipline the remaining length of pipe with an HDPE liner and a headwall with an improved inlet. Incidental work is limited to matching the existing pond to the new headwall.

This project was reviewed at the Natural Resource Agency Coordination Meeting on June 16, and November 17 of 2021. 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. A copy of the application has been sent to the Army Corp of Engineers.

Mitigation was determined to not be required as the proposed work was determined to be self-mitigating.

The lead people to contact for this project are Kirk Mudgette, Bureau of Highway Design (271-1598 or [kirk.o.mudgett@dot.nh.gov](mailto:kirk.o.mudgett@dot.nh.gov)) or Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment (271-3226 or [andrew.m.osullivan@dot.nh.gov](mailto:andrew.m.osullivan@dot.nh.gov)).

A payment voucher has been processed for this application (Voucher # 673630) in the amount of \$753.60.

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.

JRB;

cc:

BOE Original

Town of Hampstead (4 copies via certified mail)

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

John Magee, NH Fish & Game (via electronic notification)

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

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

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

Kevin Nyhan, BOE (via electronic notification)



# 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:** NHDOT

**TOWN NAME:** Hampstead

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](#).

<b>SECTION 1 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05; RSA 482-A:3, I(d)(2))</b>	
Please use the <a href="#">Wetland Permit Planning Tool (WPPT)</a> , the Natural Heritage Bureau (NHB) <a href="#">DataCheck Tool</a> , the <a href="#">Aquatic Restoration Mapper</a> , or other sources to assist in identifying key features such as: <a href="#">priority resource areas (PRAs)</a> , <a href="#">protected species or habitats</a> , 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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<ul style="list-style-type: none"> <li>• Does the project qualify for an Impact Classification Adjustment (e.g. NH Fish and Game Department (NHF&amp;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.</li> </ul>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<ul style="list-style-type: none"> <li>• Protected species or habitat?                             <ul style="list-style-type: none"> <li>○ If yes, species or habitat name(s): <b>Blandings Turtle</b></li> <li>○ NHB Project ID #: <b>NHB21-1199</b></li> </ul> </li> </ul>	<input checked="" type="checkbox"/> Yes <input 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 type="checkbox"/> Yes <input checked="" 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"> <li>• Name of Local River Management Advisory Committee (LAC): <input style="width: 50px;" type="text"/></li> <li>• A copy of the application was sent to the LAC on Month: <input style="width: 20px;" type="text"/> Day: <input style="width: 20px;" type="text"/> Year: <input style="width: 20px;" type="text"/></li> </ul>	

[irm@des.nh.gov](mailto:irm@des.nh.gov) or (603) 271-2147

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For dredging projects, is the subject property contaminated? • If yes, list contaminant: <span style="background-color: #cccccc; padding: 0 20px;"> </span>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Is there potential to impact impaired waters, class A waters, or outstanding resource waters?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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For stream crossing projects, provide watershed size (see [WPPT](#) or Stream Stats):  
Streamstats 1210 acres (not used), 2<sup>nd</sup> outlet.

**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.

The project will rehabilitate an existing 42" CMP, 99 ft. long, connecting two sections of Johnsons pond. The pipe is located approximately 0.5 miles east of NH 121, and it is located approximately 1000 ft. east of a 42" RCP crossing under NH 111. The rehabilitation will remove 10 ft. of pipe at the inlet and slipline the remaining length of pipe with an HDPE liner and a headwall with an improved inlet. Incidental work is limited to matching the existing pond to the new headwall.

**SECTION 3 - PROJECT LOCATION**

Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.

ADDRESS: NH 111 0.5 miles east on NH 121

TOWN/CITY: Hampstead

TAX MAP/BLOCK/LOT/UNIT: n/a

US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: Johnsons Pond  
 N/A

(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places):     42.86634° North  
-71.16480° West

<b>SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 311.04(a))</b>		
If the applicant is a trust or a company, then complete with the trust or company information.		
NAME: NH Dept. of Transportation		
MAILING ADDRESS: PO Box 483		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03303
EMAIL ADDRESS: Kirk.O.Mudgett@dot.nh.gov		
FAX: [REDACTED]	PHONE: 603-271-1598	
ELECTRONIC COMMUNICATION: By initialing here: KOM, I hereby authorize NHDES to communicate all matters relative to this application electronically.		
<b>SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c))</b>		
<input type="checkbox"/> N/A		
LAST NAME, FIRST NAME, M.I.: [REDACTED]		
COMPANY NAME: [REDACTED]		
MAILING ADDRESS: [REDACTED]		
TOWN/CITY: [REDACTED]	STATE: [REDACTED]	ZIP CODE: [REDACTED]
EMAIL ADDRESS: [REDACTED]		
FAX: [REDACTED]	PHONE: [REDACTED]	
ELECTRONIC COMMUNICATION: By initialing here [REDACTED], I hereby authorize NHDES to communicate all matters relative to this application electronically.		
<b>SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b))</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: [REDACTED]		
MAILING ADDRESS: [REDACTED]		
TOWN/CITY: [REDACTED]	STATE: [REDACTED]	ZIP CODE: [REDACTED]
EMAIL ADDRESS: Andrew.M.OSullivan@dot.nh.gov		
FAX: [REDACTED]	PHONE: 603-271-3226	
ELECTRONIC COMMUNICATION: By initialing here AMO, 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):

In accordance w/ Env-Wt 400, the jurisdictional areas within the project limits were delineated by Gove Environmental Services, Inc. in October 2021. The jurisdictional areas are shown on the attached wetland impact plan. The project is designed in accordance w/ Env-Wt 527 and Env-Wt 900 per Karl Benedict of NHDES at November 17, 2021 NRAM to the maximum extend practicable. The application includes a technical report as well as supporting narrative to address Env-Wt 904.10 Alternative Designs. Unavoidable temporary impacts to wetlands are minimized to the maximum extent practicable. Site specific information is contained with this application.

**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: **11** Day: **17** Year: **2021**

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

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**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	34		<input type="checkbox"/>	1850		<input type="checkbox"/>
	Scrub-shrub Wetland			<input type="checkbox"/>			<input type="checkbox"/>
	Emergent Wetland			<input type="checkbox"/>			<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"/>			<input type="checkbox"/>
	Tidal Marsh			<input type="checkbox"/>			<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"/>
<b>TOTAL</b>		<b>34</b>			<b>1850</b>		

**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): 1884 SF × \$0.40 = \$ 753.6

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

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

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

Total = \$ 753.6

**The application fee for minor or major impact is the above calculated total or \$400, whichever is greater = \$ 753.6**

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**SECTION 13 - PROJECT CLASSIFICATION (Env-Wt 306.05)**

Indicate the project classification.

Minimum Impact Project

Minor Project

Major Project

**SECTION 14 - REQUIRED CERTIFICATIONS (Env-Wt 311.11)**

Initial each box below to certify:

Initials: KOM _____ _____	To the best of the signer's knowledge and belief, all required notifications have been provided.
Initials: KOM _____ _____	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: KOM _____ _____	The signer understands that: <ul style="list-style-type: none"> <li>• The submission of false, incomplete, or misleading information constitutes grounds for NHDES to:                         <ol style="list-style-type: none"> <li>1. Deny the application.</li> <li>2. Revoke any approval that is granted based on the information.</li> <li>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.</li> </ol> </li> <li>• The signer is subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641.</li> <li>• 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.</li> </ul>
Initials: KOM _____ _____	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: _____	DATE: _____
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER): <i>Kirk Mudgett</i>	PRINT NAME LEGIBLY: Kirk Mudgett	DATE: 2/11/22
SIGNATURE (AGENT, IF APPLICABLE): _____	PRINT NAME LEGIBLY: _____	DATE: _____

**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: _____	PRINT NAME LEGIBLY: State agency exempt per RSA 482-A:3 ,I(a)
TOWN/CITY: 4 copies via cert. mail	DATE: exempt per Env-311.05(a)(14)

**DIRECTIONS FOR TOWN/CITY CLERK:**

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

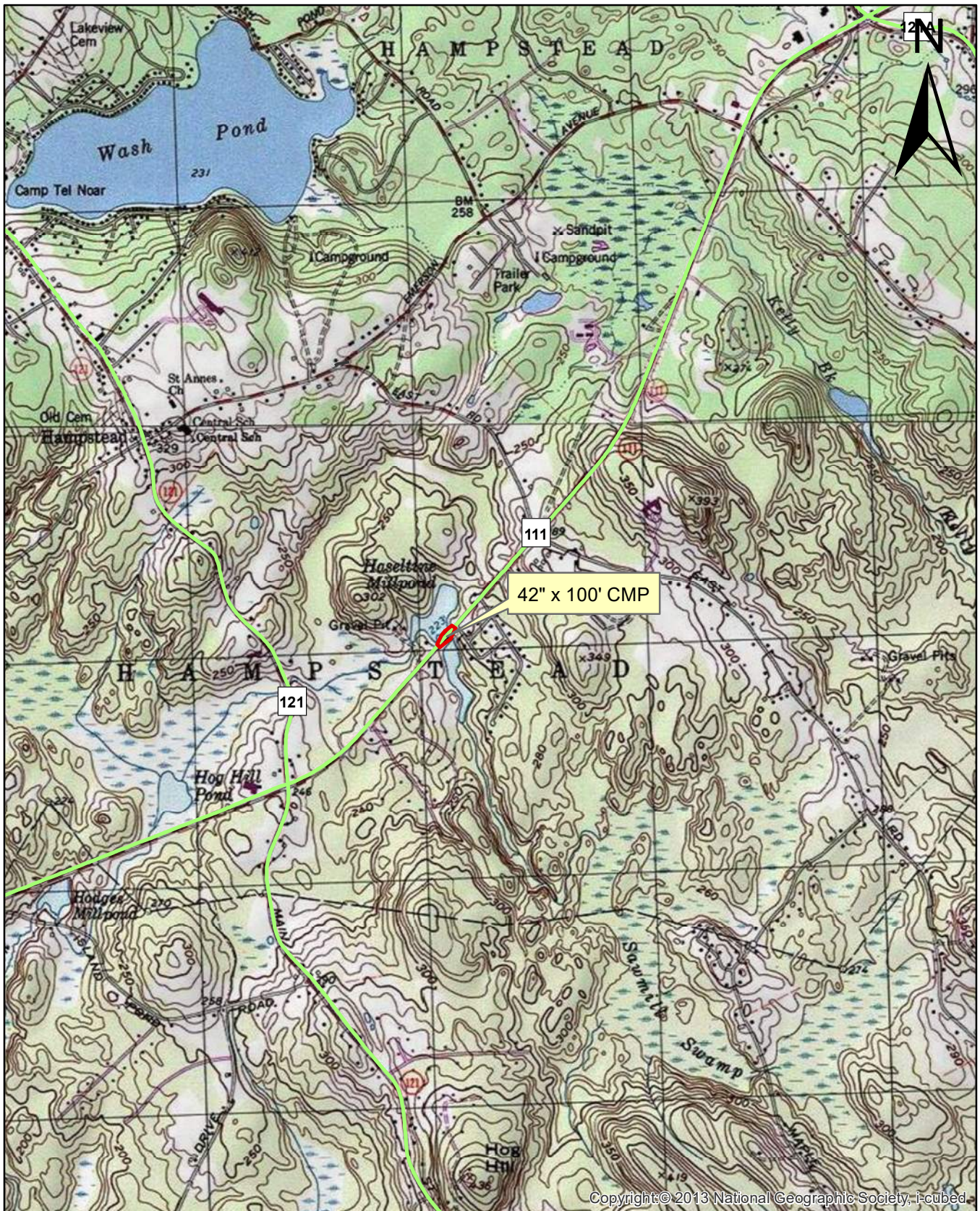
1. IMMEDIATELY sign the original application form and four copies in the signature space provided above.
2. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
3. IMMEDIATELY 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:**

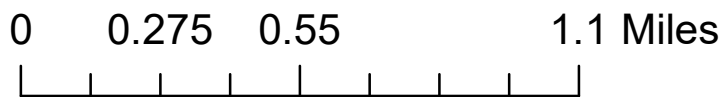
Submit the original permit application form bearing the signature of the Town/City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery at the address at the bottom of this page. Make check or money order payable to "Treasurer – State of NH".





# Hampstead 43275



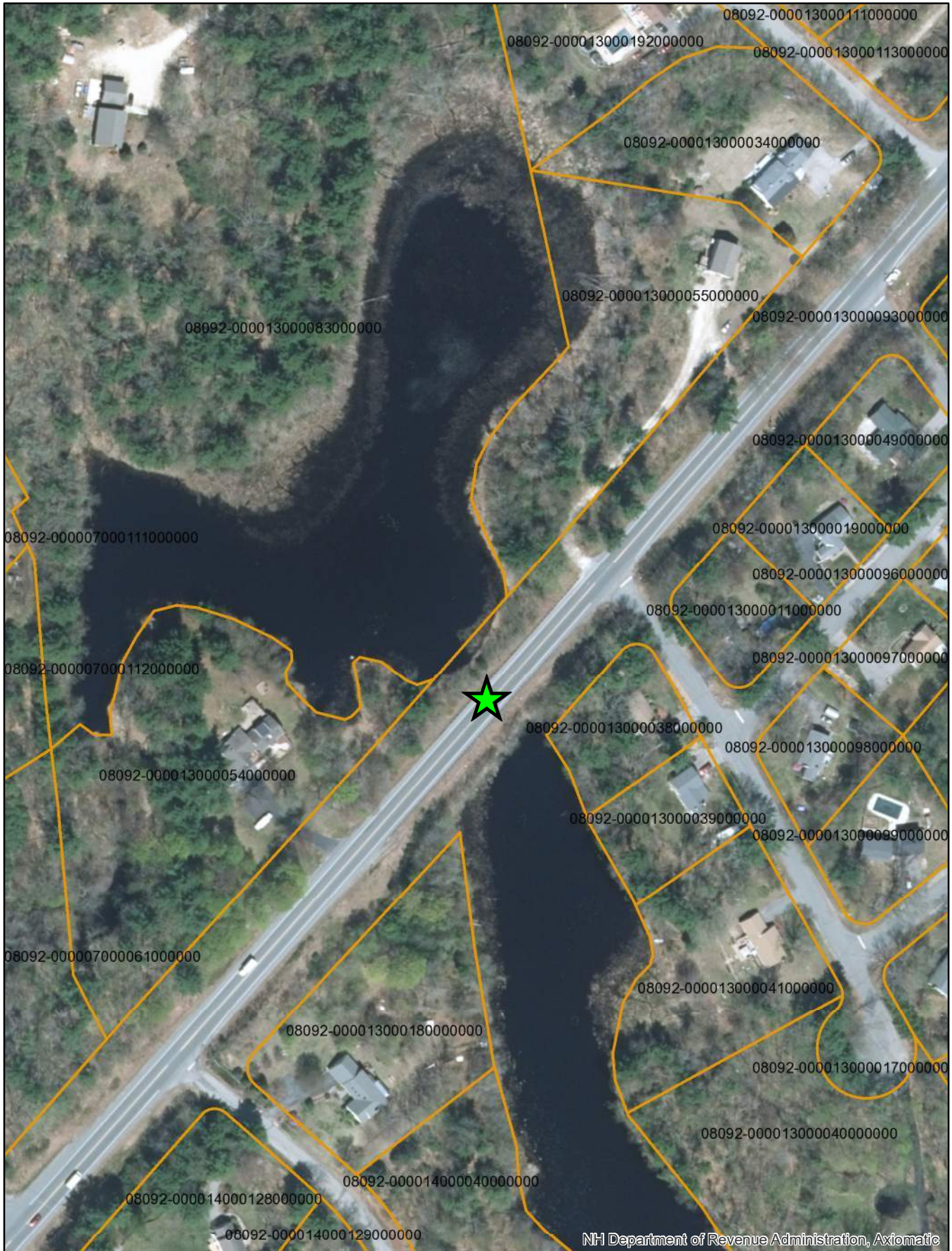
1:24,000



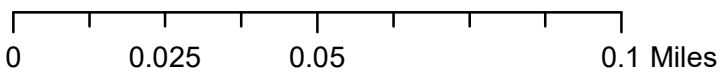
## Legend


-  Hampstead\_43275\_Project\_Area
-  State Routes

# Hampstead 43275 Tax Map




1:2,000



 Equalizer Pipe


 Parcel Polygons

 Attributes for Additional Lines

# Hampstead 43275



0 75 150 300 Feet

 Hampstead 43275 Project Area

1:1,500



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:** NH Dept. of Transportation      **TOWN NAME:** Hampstead

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.

A FULLY COMPLIANT STREAM CROSSING DESIGN WOULD INVOLVE REPLACING THE EXISTING 42" CMP CULVERT WITH AN 8' SPAN X 4' HIGH (CLEAR OPENING) EMBEDDED BOX CULVERT WITH A WILDLIFE SHELF INSIDE, OR ALTERNATIVELY A SECONDARY PIPE OF 3 FT. DIA. FOR CRITTER CROSSING THE CURRENT CONSTRUCTION COST ESTIMATE FOR THIS OPTION IS \$1.5 MILLION. SECURING FUNDING AND ADDITIONAL DESIGN TIME WOULD REQUIRE A DELAY IN THE START OF CONSTRUCTION OF 3 – 5 YEARS. A DELAY OF THIS MAGNITUDE WOULD SIGNIFICANTLY INCREASE THE RISK OF DEFORMATION OF THE EXISTING PIPE AND POTENTIAL SINKHOLES DEVELOPING IN THE DEEP EMBANKMENT FILL.

A HYDRAULIC DESIGN WAS ALSO CONSIDERED, THAT WOULD PASS THE 50 YEAR STORM WITHOUT SUBMERGING THE INLET. THE SIZE IS ALSO CONSTRAINED BY THE EXISTING 36" HDPE CULVERT UNDER WELLINGTON DRIVE. THE HYDRAULIC DESIGN WOULD BE A JACKED 36" DIAMETER PIPE. THE CURRENT CONSTRUCTION COST ESTIMATE FOR THIS OPTION IS \$1.3 MILLION. THE EXTENT OF THE IMPACTS WOULD BE LESS THAN A COMPLIANT SPAN. SECURING FUNDING AND ADDITIONAL DESIGN TIME WOULD REQUIRE A DELAY IN CONSTRUCTION.

NONE OF THE REPLACEMENT ALTERNATIVES MEETS THE PROJECT OBJECTIVE OF A TIMELY STRUCTURAL REPAIR WHILE BALANCING EFFECTS ON CAPACITY, VELOCITY, AND OTHER RESOURCES.

PERMANENT IMPACTS WERE LIMITED TO THE CONSTRUCTION OF A HEADWALL AT THE INLET WITHIN THE RIGHT-OF-WAY. ALL OTHER IMPACTS ASSOCIATED WITH PROPOSED DESIGN ARE TEMPORARY.

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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.

There are no palustrine marshes delineated within the project area.

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

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

The existing culvert provides a hydrologic connection between two parts of Johnsons Pond. The inverts of the proposed liner will be set as close as practical to the existing inverts (estimated 2" rise). There is no existing perch at the inlet or outlet. Watersurfaces for the proposed liner should match the pond elevations which are controlled by the downstream non-menace dam and beaver activity. The Pond will equalize to accomodate the small rise and maintain a similar depth as the existiing culvert. Temporary disturbances at inlet and outlet area will be restored to natural pond conditions. The proposed liner will maintain the existing hydrologic connection and match the in-kind flow conditions to the maximum extent practicable. The hydrologic connection between the forested wetland pond will remain the same post construction.

**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.

The project has been designed in accordance with ENV-Wt 400, 500, and 900 per Karl Benedict of NHDES. Unavoidable impacts to wetlands have been minimized to the maximum extent practicable; the Department has addressed Env-Wt 311.07 Avoidance and Minimization through the checklist document included with this application.

The resources present within the project area are: Johnsons Pond, aka Hasiltine Mill Pond, which extends along the toe of the NH 111 road embankment on both sides of the culvert.

There are no vernal pools or exemplary natural communities know to occur in the project area. The NH Natural Heritage Bureau (NHNHB) reviewed the project area for records of protected species and exemplary natural communities near the project area. The review found records of Blandings turtle (state endangered), in their database. Exemplary natural communities were not identified in the NHNHB review.

The project area is within the range of the northern long eared bat (NLEB) which is listed as a threatened species under the Federal Endangered Species Act. The US Fish and Wildlife Service (USFWS) Information for Planning and Conservation webtool was used to determine that the project qualifies for the December 15, 2016 FHWA Range-wide Programmatic Biological Opinion for NLEB and the USFWS has concurred that the project has a May Affect, Likely to Adversely Affect determination due to the need to clear trees during the NLEB active season. All appropriate Avoidance and Minimization Measures will be included in the contract document and no further consultation is necessary.

**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 design/ construction work will allow traffic use to continue along NH 111, a major East-West corridor, minimizing the impact to local and regional commuting and commerce. The area is used for recreational fishing and kayaking by residents adjacent to Johnsons Pond and to some degree by those who are able to find access. The site access is behind the guardrail on the south side on NH 111. Impact to recreation will be minimal to none.

**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.

Johnsons Pond is not within a mapped 100-year floodplain or floodway. The pond does provide flood storage function, and flooding of private property and town roads has occurred along a second outlet from the pond in recent years. Inter-Agency study and implementation of a partial dam removal downstream from the project area has restored existing culvert performance to the original design intent. The proposed rehabilitation method selected most closely matches in-kind conditions and it will not have a significant effect on flood storage, flood elevations, or the adjacent wetland flood storage function.

Impacts within the pond are associated with accessign the inlet and outlet of the culvert and for installing the liner and inlet header. Temporary impacts to the forested lucustrain wetland in the vicinity of the culvert are associated with water diversion and erosion controls. All temporary impacts will be restored to their original condition post construction per Env-Wt 307.12.

**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.

Avoidance of all impacts is not practicable due to the fair/poor structural condition of the existing culvert originally constructed in 1959. The proposed design has the least impact to wetlands of any practicable alternative.

There are not impacts to riverine wetlands. Impacts will not have a permanent effect on the function and value of the lucustrain wetland.

**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 project will have no effect on wetlands that would be detrimental to adjacent drinking water supply and 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.

The project avoids and minimizes impact to the pond. No difinitive channels exist at the inlet and outlet. The pond will continue to capture, contain, and convey stormwater runoff in the same manner as it has since early settlers to the area. The surrounding landscape/topography will not be changed as a result of this project. Stormwater runoff will enter and exit that pond as it currently does.



**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.

n/a - The project does not involve shoreline structures.

**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.

n/a

**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.

n/a

**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.

n/a

**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.

n/a

**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.

n/a

<b>PART II: FUNCTIONAL ASSESSMENT</b>	
<b>REQUIREMENTS</b>	Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).
<b>FUNCTIONAL ASSESSMENT METHOD USED:</b>	Wetlands were delineated and classified using the US Army Corps of Engineers Highway Methodology
<b>NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT:</b>	BRENDAN QUIGLEY
<b>DELINEATION PER ENV-WT406</b>	
<b>DATE OF ASSESSMENT:</b>	10-01-21 & 10-08-21
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"/>
<p>Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.</p>	

DES. NO.	DATE	BY	SCALE	SHEET NO.	TOTAL SHEETS
1	12-11-50	S. C. WYMAN	1" = 200'	1	1

### INDEX OF SHEETS

SHEET NO.	TITLE PAGE
1	TITLE PAGE
2	TYPICAL SECTION OF IMPROVEMENT
3	SUMMARY
4-13	PLAN AND PROFILE
14-65	CROSS SECTIONS
66	STANDARD SHEET NO. 1, DATED JUNE 12, 1951
67	STANDARD SHEET NO. 2, DATED DECEMBER 22, 1954
68	STANDARD SHEET NO. 3, DATED DECEMBER 22, 1954
69	STANDARD SHEET NO. 4, DATED SEPTEMBER 21, 1956
70	STANDARD SHEET NO. 5, DATED DECEMBER 22, 1954
71	STANDARD SHEET NO. 6, DATED SEPTEMBER 21, 1956

STATE OF NEW HAMPSHIRE  
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

## PLANS OF PROPOSED FEDERAL AID SECONDARY PROJECT NO. S-28 (4)

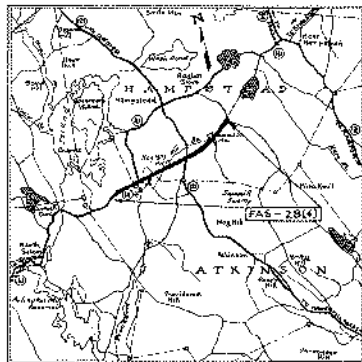
N. H. PROJECT NO. S-3187...

ROUTE NO. 111

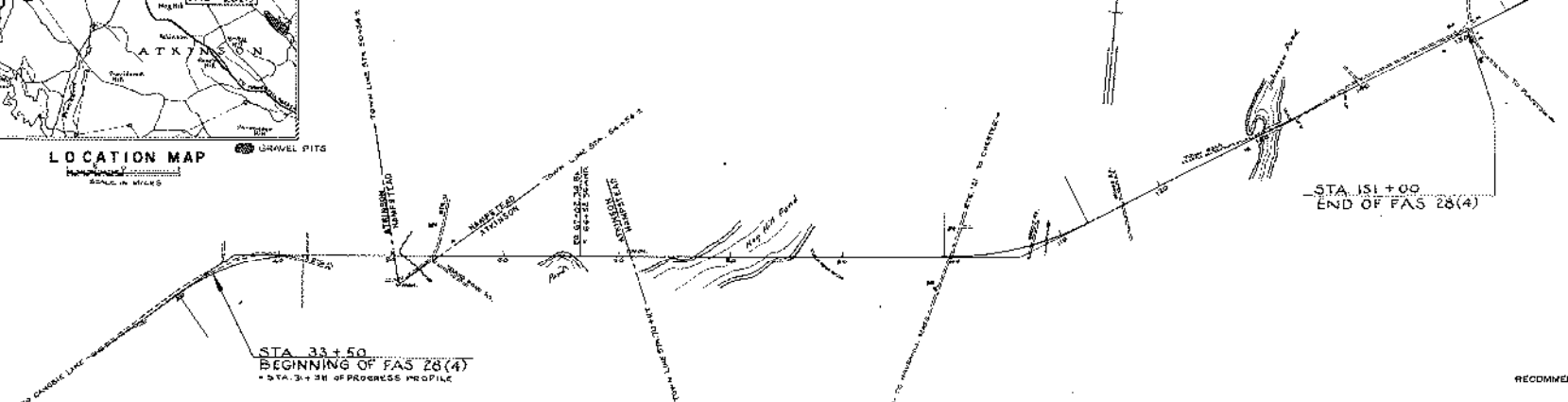
PLAN 1" = 50'-0"  
PROFILE VERT. 1" = 10'-0" HOR. 1" = 50'-0"  
CROSS SECTION VERT. 1" = 5'-0" HOR. 1" = 5'-0"

THIS PROJECT TO BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS DATED JULY 1, 1950 AND STANDARD SHEETS LISTED IN THE INDEX ON FILE WITH THE BUREAU OF PUBLIC ROADS AND SPECIAL PROVISIONS ATTACHED TO PROPOSAL.

DESIGN DATA	
AVERAGE DAILY TRAFFIC	FR 50
AVERAGE DAILY TRAFFIC	1979
TRAFFIC CLASSIFICATION	M...
DESIGN SPEED	50 M.P.H.
MAXIMUM CURVATURE	5 DEGREES
MAXIMUM GRADIENT	6.25 %
NON-PASSING SIGHT DISTANCE	392 FEET
LENGTH OF PROJECT	2.235 MILES



LOCATION MAP



LAYOUT  
SCALE 1" = 500 FEET

### CONVENTIONAL SIGNS

STATE LINE	ROW LINE
.....	.....
TOWN LINE	SURVEY LINE
.....	.....
FENCE	CULVERT
.....	.....
WINDY WALL	POWER POLE
.....	.....
UNPAVED SHOULDER	TRAPSPRING POLE
.....	.....
TRAVELED WAY	GROUND ELEVATION
.....	.....
RAILROADS	GRADE ELEVATION
.....	.....
RETAINING WALL	SLOPE LINE
.....	.....
HYDRANT	CUTTER MARK
.....	.....
LEDGE	DRAIN SHAFT
.....	.....
CONCRETE BOUNDS	BROWN LINE
.....	.....

TOWNS OF ATKINSON AND HAMPSTEAD  
COUNTY OF ROCKINGHAM

RECOMMENDED FOR APPROVAL: DATE APR. 12, 1957

APPROVED: *John O. Morton*  
COMMISSIONER

DEPARTMENT OF COMMERCE  
BUREAU OF PUBLIC ROADS  
APPROVED: \_\_\_\_\_  
DISTRICT ENGINEER DATE \_\_\_\_\_

DRAWN BY: W. B. PIERCE DATE: 12-11-50  
CHECKED BY: S. C. WYMAN DATE: 12-18-50

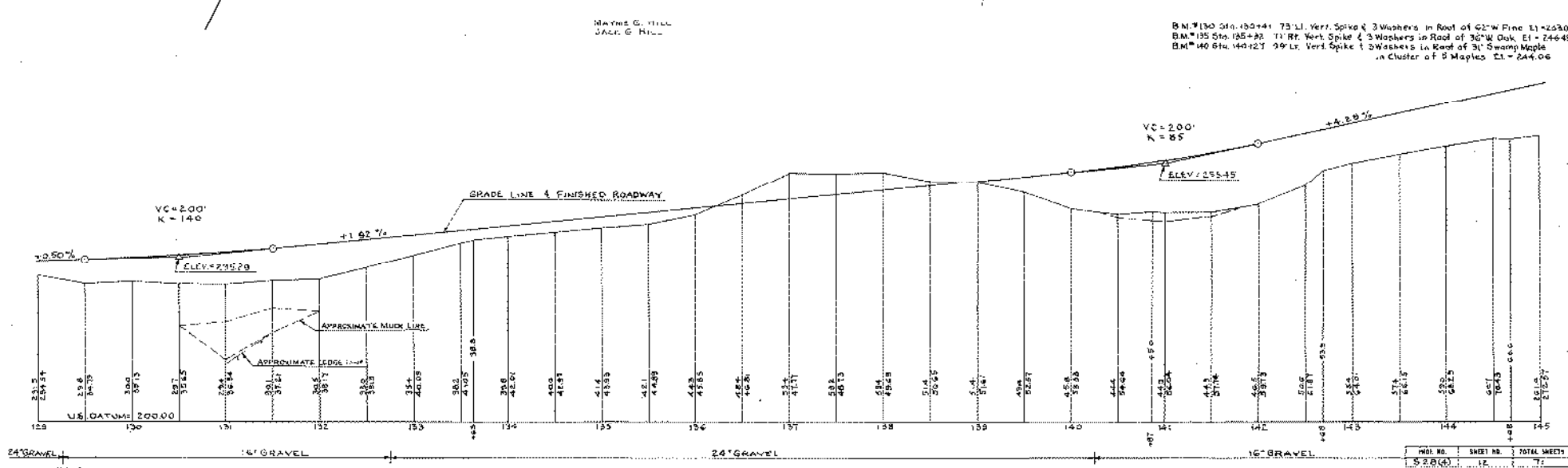
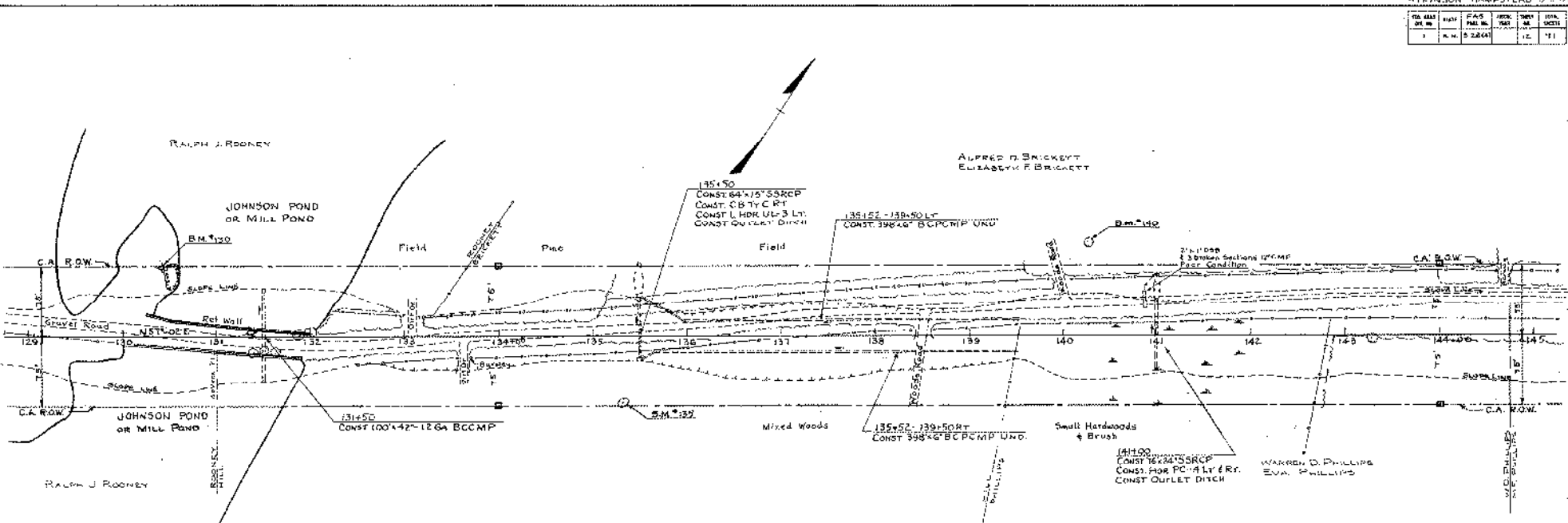
PLATE NO.	SHEET NO.	TOTAL SHEETS
S-28(4)	1	1

NO.	DATE	BY	FOR	BY	DATE
1	11-11-57	W. J. ...	...	...	...

BOOK NO.	SHEET NO.	TOTAL SHEETS
...	...	...

DATE	DESCRIPTION
...	...

DATE	BY	FOR
...	...	...



B.M. #130 Sta. 134+44 73" L. Vert. Spike & 3 Washers in Roof of 32" W Pine E1 = 243.00  
 B.M. #135 Sta. 135+32 71" R. Vert. Spike & 3 Washers in Roof of 32" W Oak. E1 = 246.45  
 B.M. #40 Sta. 140+27 29" L. Vert. Spike & 3 Washers in Roof of 31" Swamp Maple  
 a Cluster of 5 Maples E1 = 244.06

NO.	DATE	BY	FOR
...	...	...	...



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



[Check the Status of your Application](#)

**RSA/Rule:** RSA 482-A/ Env-Wt 311.07(c)

This checklist can be used in lieu of the written narrative required by Env-Wt 311.07(a) to demonstrate compliance with requirements for Avoidance and Minimization (A/M), pursuant to RSA 482-A:1 and Env-Wt 311.07(c).

For the construction or modification of non-tidal shoreline structures over areas of surface waters without wetland vegetation, complete only Sections 1, 2, and 4 (or the applicable sections in [Attachment A: Minor and Major Projects \(NHDES-W-06-013\)](#)).

The following definitions and abbreviations apply to this worksheet:

- “A/M BMPs” stands for [Wetlands Best Management Practice Techniques for Avoidance and Minimization](#) dated 2019, published by the New England Interstate Water Pollution Control Commission (Env-Wt 102.18).
- “Practicable” means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes (Env-Wt 103.62).

SECTION 1 - CONTACT/LOCATION INFORMATION		
APPLICANT LAST NAME, FIRST NAME, M.I.: NH Dept. of Transportation		
PROJECT STREET ADDRESS: NH 111, one half mile east of NH Route 21		PROJECT TOWN: Hampstead
TAX MAP/LOT NUMBER: n/a, NHDOT ROW		
SECTION 2 - PRIMARY PURPOSE OF THE PROJECT		
Env-Wt 311.07(b)(1)	Indicate whether the primary purpose of the project is to construct a water-access structure or requires access through wetlands to reach a buildable lot or the buildable portion thereof.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>If you answered “no” to this question, describe the purpose of the “non-access” project type you have proposed:</p> <p>The purpose of this project is to rehabilitate a 63 year old 99' long 42" diameter corrugated metal culvert, a valuable state asset, in order to support long term and safe use of the State's public transportation network.</p>		

[irm@des.nh.gov](mailto:irm@des.nh.gov) or (603) 271-2147

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

[www.des.nh.gov](http://www.des.nh.gov)

<b>SECTION 3 - A/M PROJECT DESIGN TECHNIQUES</b>		
Check the appropriate boxes below in order to demonstrate that these items have been considered in the planning of the project. Use N/A (not applicable) for each technique that is not applicable to your project.		
Env-Wt 311.07(b)(2)	For any project that proposes new permanent impacts of more than one acre or that proposes new permanent impacts to a Priority Resource Area (PRA), or both, whether any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, 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.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 311.07(b)(3)	Whether alternative designs or techniques, such as different layouts, construction sequencing, or alternative technologies could be used to avoid impacts to jurisdictional areas or their functions and values.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(1) Env-Wt 311.10(c)(2)	The results of the functional assessment required by Env-Wt 311.03(b)(10) were used to select the location and design for the proposed project that has the least impact to wetland functions.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(3)	Where impacts to wetland functions are unavoidable, the proposed impacts are limited to the wetlands with the least valuable functions on the site while avoiding and minimizing impacts to the wetlands with the highest and most valuable functions.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 313.01(c)(1) Env-Wt 313.01(c)(2) Env-Wt 313.03(b)(1)	No practicable alternative would reduce adverse impact on the area and environments under the department's jurisdiction and the project will not cause random or unnecessary destruction of wetlands.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 313.01(c)(3)	The project would not cause or contribute to the significant degradation of waters of the state or the loss of any PRAs.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 313.03(b)(3) Env-Wt 904.07(c)(8)	The project maintains hydrologic connectivity between adjacent wetlands or stream systems.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 311.10 A/M BMPs	Buildings and/or access are positioned away from high function wetlands or surface waters to avoid impact.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 311.10 A/M BMPs	The project clusters structures to avoid wetland impacts.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 311.10 A/M BMPs	The placement of roads and utility corridors avoids wetlands and their associated streams.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
A/M BMPs	The width of access roads or driveways is reduced to avoid and minimize impacts. Pullouts are incorporated in the design as needed.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
A/M BMPs	The project proposes bridges or spans instead of roads/driveways/trails with culverts.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A

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[www.des.nh.gov](http://www.des.nh.gov)



A/M BMPs	The project is designed to minimize the number and size of crossings, and crossings cross wetlands and/or streams at the narrowest point.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 500 Env-Wt 600 Env-Wt 900	Wetland and stream crossings include features that accommodate aquatic organism and wildlife passage.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 900	Stream crossings are sized to address hydraulic capacity and geomorphic compatibility.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
A/M BMPs	Disturbed areas are used for crossings wherever practicable, including existing roadways, paths, or trails upgraded with new culverts or bridges.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
<b>SECTION 4 - NON-TIDAL SHORELINE STRUCTURES</b>		
Env-Wt 313.03(c)(1)	The non-tidal shoreline structure has been designed to use the minimum construction surface area over surfaces waters necessary to meet the stated purpose of the structure.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 313.03(c)(2)	The type of construction proposed for the non-tidal shoreline structure is the least intrusive upon the public trust that will ensure safe navigation and docking on the frontage.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 313.03(c)(3)	The non-tidal shoreline structure has been designed to avoid and minimize impacts on the ability of abutting owners to use and enjoy their properties.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 313.03(c)(4)	The non-tidal shoreline structure has been designed to avoid and minimize impacts to the public's right to navigation, passage, and use of the resource for commerce and recreation.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 313.03(c)(5)	The non-tidal shoreline structure has been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 313.03(c)(6)	The non-tidal shoreline structure has 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.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A

# BUREAU OF ENVIRONMENT CONFERENCE REPORT

**SUBJECT:** NHDOT Monthly Natural Resource Agency Coordination Meeting

**DATE OF CONFERENCE:** June 16, 2021

**LOCATION OF CONFERENCE:** Virtual meeting held via Zoom

## ATTENDED BY:

### NHDOT

Sarah Large  
Andrew O'Sullivan  
Matt Urban  
Mark Hemmerlein  
Rebecca Martin  
Arin Mills  
Samantha Fifield  
Maggie Baldwin  
Cassandra Burns  
Jason Abdulla  
Meli Dube  
Tim Mallette  
Georgie Ravelli  
Marc Laurin  
Tobey Reynolds  
Kathy Corliss  
Abraham DeMaio  
Jennifer Reczek

Kerry Ryan  
Alan Hanscom

### EPA

Jeanie Brochi

### NHDES

Lori Sommer  
Karl Benedict  
Cheryl Bondi  
Ted Diers  
Ann Pelonzi

### NHB

Jessica Bouchard

### Federal Highway

Jaimie Sikora

### The Nature Conservancy

Pete Steckler

### LCHIP

Paula Bellemore

### Consultants/ Public

#### Participants

Christine Perron  
Steve Halloran  
Matthew Lundsted  
Alec Mann

## PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH: *(minutes on subsequent pages)*

Finalize Meeting Minutes.....	<b>Error! Bookmark not defined.</b>
Dummer-Cambridge-Errol, #16304B (X-A004(699)).....	<b>Error! Bookmark not defined.</b>
Thornton, #2020-M325-1 .....	<b>Error! Bookmark not defined.</b>
Tilton, #2021-M313-1 .....	<b>Error! Bookmark not defined.</b>
Troy, #40370 .....	<b>Error! Bookmark not defined.</b>
Hampstead, #43275 (X-A005(067)I) .....	2
Exeter, #43275 (X-A005(063)) .....	<b>Error! Bookmark not defined.</b>
Ossipee, #41251 (X-A004(573)).....	<b>Error! Bookmark not defined.</b>

*(When viewing these minutes online, click on a project to zoom to the minutes for that project.)*

**NOTES ON CONFERENCE:****Hampstead, #43275 (X-A005(067)I)**

Tim Mallette gave a brief history on prior inter-agency collaboration involving dam removal and culvert projects completed by the Town of Hampstead and private property owners. He provided a quick overview of FEMA studies, and a Department Bridge project under NH 121. The site constraints include: deep embankment, high traffic counts, pond environment, and the need to find harmony w/ beaver activity. The design constraints point to the advantages of the preferred alternative which will match performance 1:1 with the culvert constructed under Wellington Drive by the Town of Hampstead. Increasing capacity will likely cause flooding of one property downstream adjacent to the Wellington Drive culvert. The structural advantages and extended service life in a pond environment were cited as driving the preferred alternative. Georgie Ravelli explained the hydraulic modelling of the flow split in Upper Johnsons Pond. Her modelling depicts the importance of finding a balance that is less likely to cause flooding along both flow paths (through Johnsons Pond and toward Sherry Lane and ultimately the 42" RCP under NH 111). She also provided an overview of access and staging area needed at the inlet. More detail on safe access points and the significance of the hydraulic flow split is anticipated in the follow-up meeting.

**Discussion / Agency Comments:**

Discussion occurred regarding the stream crossing Tier classification based on the watershed characteristics, flow split and pond environment. Concurrence was that the stream crossing is a Tier 3. However, the flow split upstream of the crossing diverts a percent of the runoff toward different crossings.

Karl Benedict, NHDES, opined that stream crossing rules for rehabilitation might not be met which would lead to alternative design. Meli Dube, NHDOT, noted that a formal delineation is pending field work. Based on her site visit the water does flow through the pipe in one direction under the current conditions. However, situations when backwater occurs causes the pipe to equalize water surfaces in Upper & Lower Johnsons Pond. She also mentioned it is a ponded setting and there is no apparent channelized stream. Meli asked Karl if stream crossing rules apply for this situation. She assumed stream crossing rules do not apply for the pond setting, therefore, bankfull width and entrenchment ratio would be difficult to define. Karl, asked if this culvert showed up on USGS as an identified stream. Tim commented that blue lines through the pond should not be relied on for this crossing because the watershed has been regulated and controlled by dams since colonial times.

Karl's initial impression was that this site is a stream crossing and that alternative design would be appropriate. Until the official environmental field review is complete, he recommended a detailed description of the reference reach situation and the site history within the narrative. Lori Summer, NHDES, stated that mitigation should not be required since a slip line repair of the pipe should not change the existing hydraulics. Karl inquired about impacts to priority resource area. Lori noted that the turtles could kick it into a PRA and then mitigation would be need to be considered.

Pete Steckler, TNC, noted that this crossing falls within a Connect The Coast corridor. He mentioned signage to indicate a wildlife crossing/corridor.

Jean Brochi, USEPA, had no additional comments.

Jessica Bouchard, NHDNCR, noted that the NHB data check has expired. Meli clarified that there was a new one done; however, the new number did not make it into the AIR form. She will put the new NHB number here... The only hit was Blanding's turtle.

Jamie Sikora, had no comments at this stage in project development.

**BUREAU OF ENVIRONMENT  
CONFERENCE REPORT**

**SUBJECT:** NHDOT Monthly Natural Resource Agency Coordination Meeting

**DATE OF CONFERENCE:** November 17, 2021

**LOCATION OF CONFERENCE:** Virtual meeting held via Zoom

**ATTENDED BY:**

**NHDOT**

Andrew O’Sullivan  
Joshua Brown  
Matt Urban  
Mark Hemmerlein  
Marc Lauren  
Jonathan Evans  
Tom Jameson  
Kirk Mudgett  
Dillan Schmidt  
Meli Dube  
Timothy Mallette  
Georgie Ravelli  
David Scott  
Tim Dunn  
Cassandra Burns  
Corey Spetelunas  
Carol Niewola  
Kerry Ryan  
Bill Saffian

**ACOE**

Mike Hicks

**EPA**

Jeanie Brochi

**NHDES**

Lori Sommer  
Karl Benedict  
Cheryl Bondi

**NHB**

Absent

**NH Fish & Game**

Carol Henderson

**Federal Highway**

Jamie Sikora

**The Nature Conservancy**

Pete Steckler

**Consultants/ Public  
Participants**

Jennifer Zorn  
Brian Colburn  
Peter Rice  
Tyler Reece  
Anna Giraldi  
Jim Bouchard  
Sam Cheney  
Guy Rouelle  
Mark Goodrich  
Jennifer Doyle-Breen  
Richard Devanna  
Christine Perron  
David Hickling  
Paula Bellemore  
Susan Francher  
Todd Dwyer

**PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:** *(minutes on subsequent pages)*

Finalize Meeting Minutes.....	<b>Error! Bookmark not defined.</b>
Portsmouth (20258, X-002(061) .....	<b>Error! Bookmark not defined.</b>
Antrim #14942 .....	<b>Error! Bookmark not defined.</b>
Hampstead, #43275 (X-A005(067)I) .....	2
Keene Dillant-Hopkins Airport, #TBD .....	<b>Error! Bookmark not defined.</b>
Woodstock-Lincoln #42534 (X-A004(896)).....	9
Dummer-Cambridge-Errol #16304B(XA004(699)).....	13
Exeter #43275 (XA005(063)).....	18

**NOTES ON CONFERENCE:****Hampstead, #43275 (X-A005(067)I)**

Tim Mallette, NHDOT, provided an introduction to the project, describing the 42” corrugated pipe and the importance of how it serves as an equalizer pipe between the Upper and Lower portions of Johnsons Pond as well as operates in harmony with a Beaver colony. He noted information from previous Natural Resource Agency Coordination meetings (NR meeting) where alternatives and the significance of other culverts influenced by this connecting pipe were discussed, including an inter-agency study which he completed with a Dam Safety Engineer between 2011 and 2012. The study evaluated the causes of flooding in the area. Downstream conditions are stable due to the work financed by a private dam owner. There appears to be significant supporting landscape for habitat independent of the Upper Johnsons Pond Watershed. Peak hydraulic design flow is on the order of 130-150 cfs, splitting near the upper section of the pond, effectively distributing flows in both outlet directions. Condition of the pipe is fair with significant voids in some areas. The preferred alternative will match the downstream town culvert 1:1 in capacity and type with a smooth surface slip-liner which will provide a longer service life. Wetland delineation was performed by Gove Environmental in Oct. 2021. In order to avoid dealing with a dent and to provide a larger work area with less impacts to the pond, 10 ft. of pipe at the inlet will be removed. Temporary impacts are to be mainly in the inlet area.

**Discussion / Agency Comments:**

Carol Henderson, NHFG, asked if the velocity will increase in the pipe after sliplining. Tim Mallette responded that the velocity will be influenced by the downstream water surface elevation and that under normal flows, the velocity is anticipated to be similar to existing conditions due to the pond level except during storm events when it will increase. Carol asked if the proposed pipe would follow the existing pipe’s corrugations. Tim replied that the proposed pipe liner is smooth but baffles can be welded to the invert. Carol stated that baffles are not recommended as debris often gets trapped. Andrew O’Sullivan, NHDOT, asked if the invert will need to be rough even though the pipe is continuously submerged to which Carol replied yes, to accommodate the turtles the pipe would still need to be rough. Tim stated that there has been at least 1-foot of water in the pipe over the last 10-years, even during drought conditions. Carol asked if the bottom of the culvert can be roughened to which Tim replied that to the best of his knowledge, there is no product that can be applied to an HDPE pipe to provide a rough/textured invert.

Karl Benedict, NHDES, indicated that the wetland impact plans will need to be stamped by a Certified Wetland Scientist. Karl stated that according to the 900 rules, the culvert should be classified as a stream crossing due to the presence of a watershed and would like to see impacts to the pond identified, such as due to temporary matting. Meli Dube, NHDOT, stated that a full stream crossing assessment was requested, however, the consultant (Gove Environmental) stated in their report that there is no “defined channel” or “continuous channel” as stated in the definition of a watercourse (Env-Wt 104.48). Meli inquired how this discrepancy should be handled in the application because several pieces of information required for stream crossings are not available for inclusion. Karl responded that including the report by Gove will suffice to cover any other missing data in the application and that an alternative design form should be

included. Tim Mallette emphasized the importance of public safety and flood hazards and suggested a holistic approach to address flooding safety factor as well as using temporary matting in the pond. The Gove Environmental Services, Inc. wetland report, dated November 1, 2021, with the associated CWS certification is contained herein.

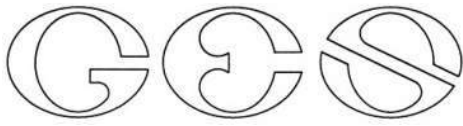
**Comments:**

Lori Sommer (NHDES): She would need to see the summary which is to be sent to Karl before she can make any conclusive decisions on mitigation. Summary detailed on wetland impact plans attached herewith.

Pete Steckler (TNC): No comment at this time

Carol Henderson (NHFG): No further comment at this time

Jamie Sikora (FHWA): No comment at this time.



GOVE ENVIRONMENTAL SERVICES, INC.

November 1, 2021

Andrew O'Sullivan  
NHDOT Bureau of Environment  
7 Hazen Drive, Concord, NH 03302

**Subject: Wetland Delineation Report  
Johnson's Pond Culvert Rehabilitation  
NHDOT #43275  
Route 111  
Hampstead, NH**

Dear Mr. O'Sullivan:

This letter is to document the results of the wetland delineation performed by Gove Environmental Services, Inc. at the Johnson's Pond culvert crossing on Route 111 in Hampstead, New Hampshire. This effort also involved the mapping of invasive species.

Wetland flag locations and populations of invasive vegetation were surveyed using a Trimble Geo7X GNSS and post processed using publicly available NHDOT base data. The boundaries are depicted on the Wetland Delineation & Invasive Species figure included with this report. The digital files will be provided under separate cover for use on DOT plans. Photographs, ACOE wetland determination data forms have also been included. The results of the work are summarized below.

### **WETLAND DELINEATION**

The field work was conducted during on 10/1/21 and 10/8/21. Vegetated wetland boundaries were evaluated utilizing the following standards:

1. *US Army Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1 (Jan 1987) **AND** Regional Supplement to Corps of Engineers Wetland Delineation Manual; Northcentral and Northeast Region, Version 2.0, January 2012.
2. Field Indicators of Hydric Soils in the United States, Version 8.0, 2016 **AND (for disturbed sites)** *New England Hydric Soils Technical Committee. 2017 Version 4, Field Indicators for Identifying Hydric Soils in New England*. New England Interstate Water Pollution Control Commission, Lowell, MA.
3. *National Wetland Plant List*, Version 3.3 (2016).

All boundaries were demarcated with consecutively numbered pink "Wetland Delineation" flagging.

The following table provides the Cowardin Classification, and a brief description of each resource area.

**Table 1—Resource Area Summary**

Wetland ID	Cowardin Class	Description/Notes
A	PSS1E PEM1H PAB3/4H	Wetland A constitutes the limits of wetland directly associated with two sections of Johnsons Pond on either side of Route 111 in the project area. The two portions of the pond are connected by a deteriorating corrugated metal pipe beneath the roadway. In the vicinity of the project area the pond appears quite shallow and exhibits recognizable wetland zones beginning with floating and rooted aquatic vegetation such as water lily, pickerel weed, and bur reed (PAB3/4H). This transitions to emergent wetland (PEM1H) dominated by cattail, but including a mix of other grasses, sedges, and rushes. The emergent edge either transitions into a narrow zone of scrub shrub wetland (PSS1E) including buttonbush, silky dogwood, and winterberry, or quickly into uplands along the steep side slopes of the roadway. The dominant type of wetland along the delineated wetland boundary is a mix of emergent and scrub-shrub wetland.
B	PEM1B	The B series is essentially a vegetated swale along the east side of the roadway. The swale was delineated up to a culvert under York Road but continues further north outside the project area. The wetland is dominated by herbaceous species including Jeweled, sedges, reed-canary-grass, and purple loosestrife. The swale flows into Johnson's Pond via a scoured channel.
C	PFO1C	The C series is a portion of a forested wetland associated with Johnson's Pond at the southern edge of the project area. The area appears to have been flooded in the past under higher water levels in the pond. Vegetation consists of Red Maple, Winterberry, and highbush blueberry.

**INVASIVE SPECIES**

There are no particularly large or dense populations of invasive vegetation in the project area. Two invasive species were identified and mapped at four locations, located almost entirely within wetland areas. The species include Purple Loosestrife and Phragmites, both NHDOT “Type II” invasive plants. Phragmites is located within interior areas of the wetland that are unlikely to be disturbed by the project. The greatest potential for spreading invasive plant material and seed exists at Invasive Area #2, which extends beyond wetland and into an area



directly adjacent to the roadway that is likely to be used for staging. Table 2 provides a summary of the invasive species areas which are depicted on the Wetland & Invasive Species Figure. Photos of the invasive vegetation are included in the photos section.

**Table 2—Invasive Species**

Invasive Area ID	NHDOT Type	Species Present
1	II	Phragmites
2	II	Purple Loosestrife
3	II	Phragmites
4	II	Purple Loosestrife

## STATUS OF THE CULVERT AS A STREAM

My initial discussions with NHDOT regarding delineation work at this location included the collection of stream crossing information at the culvert. I understand the NHDES Wetland Bureau has raised the question of treating the culvert as a stream crossing, which would then be subject to additional requirements under Env-Wt 900. This section is intended to document why I believe this area does *not* constitute a stream and why it would be problematic to evaluate it as such.

Johnsons Pond is a historic dam controlled waterbody reported to have been in existence for well over 100 years. While NHDOT has indicated that the existing culvert dates back to the 1958, historic USGS mapping indicates that a road has existed in this location with same basic configuration of ponds since at least 1935<sup>1</sup>. The exact history of the area that far in the past may not be relevant except to highlight the fact that the ponds to either side of the roadway have existed for a very long time.

Although water does generally flow from south to north under the roadway through the subject culvert there is no “defined scoured channel” or “continuous channel” as stated in the definition of a *Watercourse* (Env-Wt 104.48). Stream characteristics largely do not exist at this location so it is unclear how bankfull width, channel depth, flood prone width, or other aspects of morphology would be assessed as required for a stream assessment. Pond conditions extend nearly to the headwaters of this waterbody at Sawmill Swamp and several other crossings and large wetlands exists downstream so it’s also not clear a comparable reference reach even exists.

There are of course many reasons to promote connectivity between the two sections of pond but using the stream crossing rules to do so is impractical. I also understand that there are a number of concerns related to balancing at this connection with other areas and crossings for purposes of maintaining water levels in the ponds and minimizing flooding potential. There are additional construction considerations given the length and depth of the culvert through the road profile. If NHDES requires evaluation of the crossing within the framework of the stream crossing rules,

<sup>1</sup> 1935 USGS Haverhill-Hampstead Quad, Scanned DRG, GRANIT

these constraints and consideration of the longstanding status of the area as a pond should, should make a strong case for an alternative design.

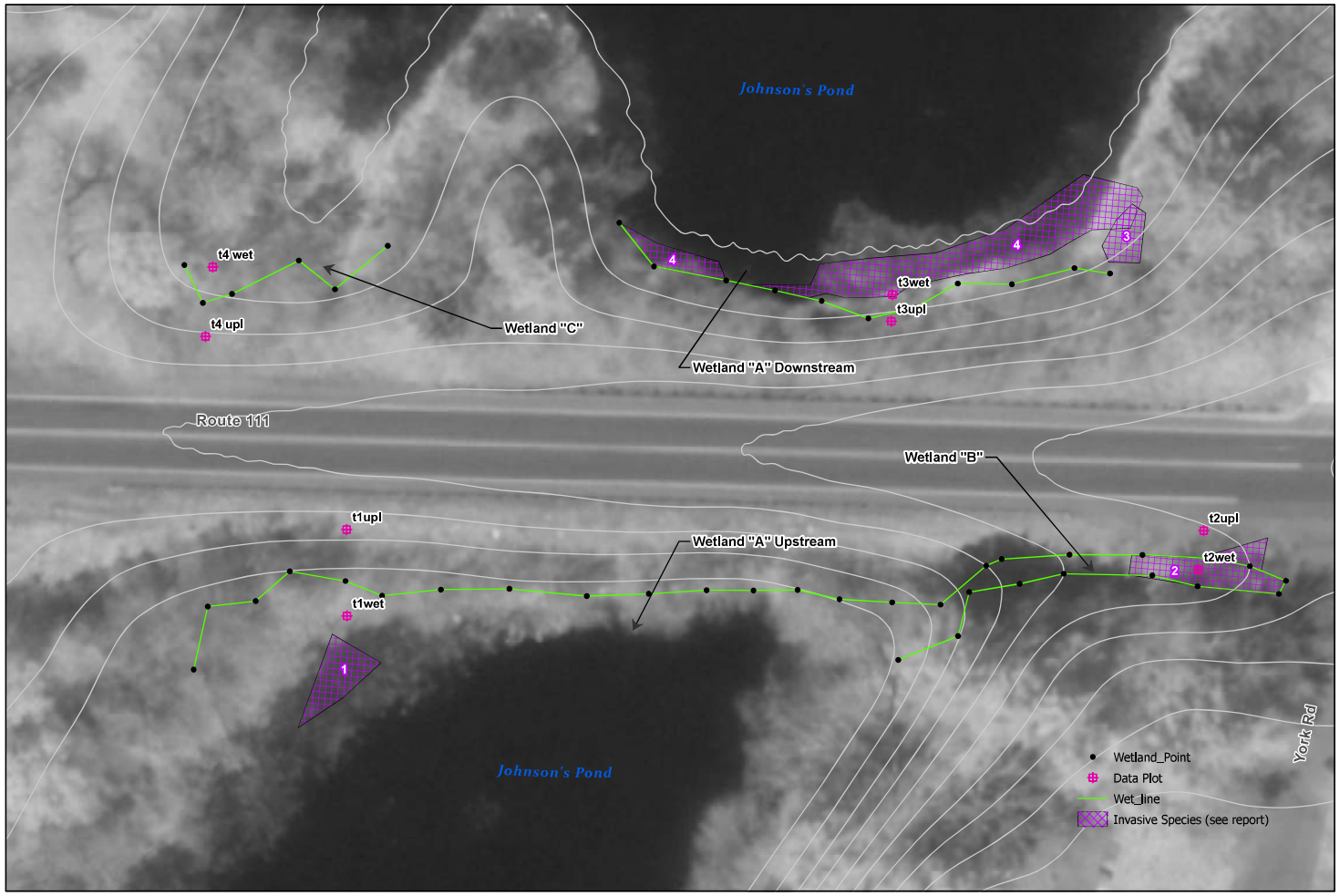
This concludes the wetland delineation report. If I can be of further assistance, please feel free to contact me at (603) 778-0644.

Sincerely,



Brendan Quigley, NHCWS #249  
Gove Environmental Services, Inc.

Enc. Wetland Delineation & Invasive Species Figure  
ACOE Wetland Delineation Data Forms  
Photographs  
Digital mapping files (under separate cover)



**Johnson's Pond Culvert Rehabilitation**  
**Route 111**  
**Hampstead, NH**

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**Wetlands Delineation & Invasive Species**

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 1" = 30'

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 Date: 10/27/21



Wetland A— upstream side of Johnson's Pond



Wetland A— upstream side of Johnson's Pond near culvert



Wetland A—Downstream side of Johnson's Pond



Wetland A—Downstream side of Johnson's Pond at culvert outlet



Wider View of Downstream side of Johnson's Pond



Wetland B-York Road in background, Rt. 111 to left



Wetland B—Bottom of scoured channel as it reached Johnsons Pond Wetland



Wetland C



Invasive Area 1—A Small Patch of Phragmites well inside the wetland boundary



Invasive Area 2—Purple Loosestrife located throughout the wetland and beyond toward Rt 111





Invasive Area 3—Phragmites intermixed with cattail (not very visible)



Invasive Area 4—Purple Loosestrife located along the waterline and extending into shallow water

## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NHDOT #43275--Johnsons Pond, Rt. 111 City/County: Hampstead Sampling Date: 10/8/21  
 Applicant/Owner: NHDOT State: NH Sampling Point: T1 WET  
 Investigator(s): Brendan Quigley NHCWS #249 Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): pond edge Local relief (concave, convex, none): concave Slope %: \_\_\_\_\_  
 Subregion (LRR or MLRA): LRR R Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: \_\_\_\_\_ NWI classification: PSS1E/PEM1H

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

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <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)
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<b>Field Observations:</b> Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>9</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION – Use scientific names of plants.**

Sampling Point: T1 WET

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Acer rubrum</i></u>	10	Yes	FAC	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	10	=Total Cover		
<u>Sapling/Shrub Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Cephalanthus occidentalis</i></u>	30	Yes	OBL	
2. <u><i>Viburnum dentatum</i></u>	15	Yes	FAC	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	45	=Total Cover		
<u>Herb Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Solidago patula</i></u>	5	Yes	OBL	
2. <u><i>Thelypteris palustris</i></u>	2	Yes	FACW	
3. <u><i>Carex crinita</i></u>	2	Yes	OBL	
4. <u><i>Scirpus cyperinus</i></u>	2	Yes	OBL	
5. <u><i>Bidens frondosa</i></u>	2	Yes	FACW	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	13	=Total Cover		
<u>Woody Vine Stratum</u> (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: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>39</u>	x 1 = <u>39</u>
FACW species <u>4</u>	x 2 = <u>8</u>
FAC species <u>25</u>	x 3 = <u>75</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>68</u> (A)	<u>122</u> (B)
Prevalence Index = B/A = <u>1.79</u>	

**Hydrophytic Vegetation Indicators:**

   1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0<sup>1</sup>

   4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

   Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators 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

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



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NHDOT #43275--Johnsons Pond, Rt. 111 City/County: Hampstead Sampling Date: 10/8/21  
 Applicant/Owner: NHDOT State: NH Sampling Point: T1 UPL  
 Investigator(s): Brendan Quigley NHCWS #249 Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): pond edge Local relief (concave, convex, none): concave Slope %: \_\_\_\_\_  
 Subregion (LRR or MLRA): LRR R Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: \_\_\_\_\_ NWI classification: PSS1E/PEM1H

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 _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) plot is located on roadway embankment	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</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)	<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)
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<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> 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: T1 UPL

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u><i>Acer rubrum</i></u>	50	Yes	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
	<u>50</u>	=Total Cover		<b>Prevalence Index worksheet:</b> <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align:right">Total % Cover of:</td> <td style="width:50%; text-align:left">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>25</u></td> <td>x 2 = <u>50</u></td> </tr> <tr> <td>FAC species <u>50</u></td> <td>x 3 = <u>150</u></td> </tr> <tr> <td>FACU species <u>12</u></td> <td>x 4 = <u>48</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>87</u></td> <td>(A) <u>248</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center">Prevalence Index = B/A = <u>2.85</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>25</u>	x 2 = <u>50</u>	FAC species <u>50</u>	x 3 = <u>150</u>	FACU species <u>12</u>	x 4 = <u>48</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>87</u>	(A) <u>248</u> (B)	Prevalence Index = B/A = <u>2.85</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>25</u>	x 2 = <u>50</u>																			
FAC species <u>50</u>	x 3 = <u>150</u>																			
FACU species <u>12</u>	x 4 = <u>48</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>87</u>	(A) <u>248</u> (B)																			
Prevalence Index = B/A = <u>2.85</u>																				
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u><i>Vaccinium corymbosum</i></u>	15	Yes	FACW																	
2. <u><i>Pinus strobus</i></u>	5	Yes	FACU																	
3. <u><i>Ulmus americana</i></u>	5	Yes	FACW																	
4. <u><i>Quercus rubra</i></u>	5	Yes	FACU																	
5. <u><i>Spiraea latifolia</i></u>	5	Yes	FACW																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
	<u>35</u>	=Total Cover		<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.  <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____																
<u>Herb Stratum</u> (Plot size: _____)																				
1. <u><i>Maianthemum canadense</i></u>	2	No	FACU																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
	<u>2</u>	=Total Cover																		
<u>Woody Vine Stratum</u> (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
	=Total Cover																			

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



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NHDOT #43275--Johnsons Pond, Rt. 111 City/County: Hampstead Sampling Date: 10/8/21  
 Applicant/Owner: NHDOT State: NH Sampling Point: T2 WET  
 Investigator(s): Brendan Quigley NHCWS #249 Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): \_\_\_\_\_ Slope %: \_\_\_\_\_  
 Subregion (LRR or MLRA): LRR R Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: \_\_\_\_\_ NWI classification: PEM1B

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

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <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)
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<b>Field Observations:</b> Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>5</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



**VEGETATION – Use scientific names of plants.**

Sampling Point: T2 WET

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
				=Total Cover
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
				=Total Cover
<u>Herb Stratum</u> (Plot size: _____)				
1. <u>Impatiens capensis</u>	40	Yes	FACW	
2. <u>Phalaris arundinacea</u>	10	No	FACW	
3. <u>Lythrum salicaria</u>	10	No	OBL	
4. <u>Carex crinita</u>	5	No	OBL	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
				65 =Total Cover
<u>Woody Vine Stratum</u> (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
				=Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>15</u>	x 1 = <u>15</u>
FACW species <u>50</u>	x 2 = <u>100</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>65</u> (A)	<u>115</u> (B)
Prevalence Index = B/A = <u>1.77</u>	

**Hydrophytic Vegetation Indicators:**

   1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0<sup>1</sup>

   4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

   Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators 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

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



**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: NHDOT #43275--Johnsons Pond, Rt. 111 City/County: Hampstead Sampling Date: 10/8/21  
 Applicant/Owner: NHDOT State: NH Sampling Point: T2 UPL  
 Investigator(s): Brendan Quigley NHCWS #249 Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Swale Local relief (concave, convex, none): \_\_\_\_\_ Slope %: \_\_\_\_\_  
 Subregion (LRR or MLRA): LRR R Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: \_\_\_\_\_ NWI classification: PEM1B

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 _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) plot is located in maintained area adj. to the roadway.	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</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)	<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)
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<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION – Use scientific names of plants.**

Sampling Point: T2 UPL

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
				=Total Cover
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
				=Total Cover
<u>Herb Stratum</u> (Plot size: _____)				
1. <u>Dichanthelium clandestinum</u>	10	Yes	FACW	
2. <u>Tanacetum vulgare</u>	2	No	FACU	
3. <u>Andropogon virginicus</u>	2	No	FACU	
4. <u>Lythrum salicaria</u>	2	No	OBL	
5. <u>Artemisia vulgaris</u>	2	No	UPL	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
				18 =Total Cover
<u>Woody Vine Stratum</u> (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
				=Total Cover

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>2</u>	x 1 = <u>2</u>
FACW species <u>10</u>	x 2 = <u>20</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>4</u>	x 4 = <u>16</u>
UPL species <u>2</u>	x 5 = <u>10</u>
Column Totals: <u>18</u> (A)	<u>48</u> (B)
Prevalence Index = B/A = <u>2.67</u>	

**Hydrophytic Vegetation Indicators:**

   1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

   3 - Prevalence Index is ≤3.0<sup>1</sup>

   4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

   Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators 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 X No

Remarks: (Include photo numbers here or on a separate sheet.)  
plot located in maintained roadside area



**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: NHDOT #43275--Johnsons Pond, Rt. 111 City/County: Hasmpstead Sampling Date: 10/8/21  
 Applicant/Owner: NHDOT State: NH Sampling Point: T3 WET  
 Investigator(s): Brendan Quigley NHCWS #249 Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope %: \_\_\_\_\_  
 Subregion (LRR or MLRA): LRR R Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: \_\_\_\_\_ NWI classification: PSS1E/PEM1H

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

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ 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) <u>X</u> 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)
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<b>Field Observations:</b> Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>4</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION – Use scientific names of plants.**

Sampling Point: T3 WET

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
				=Total Cover
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
				=Total Cover
<u>Herb Stratum</u> (Plot size: _____)				
1. <u>Dichanthelium clandestinum</u>	15	Yes	FACW	
2. <u>Carex crinita</u>	15	Yes	OBL	
3. <u>Lythrum salicaria</u>	10	Yes	OBL	
4. <u>Typha latifolia</u>	2	No	OBL	
5. <u>Eupatorium perfoliatum</u>	2	No	FACW	
6. <u>Lycopus americanus</u>	2	No	OBL	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
				46 =Total Cover
<u>Woody Vine Stratum</u> (Plot size: _____)				
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: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>29</u>	x 1 = <u>29</u>
FACW species <u>17</u>	x 2 = <u>34</u>
FAC species <u>0</u>	x 3 = <u>0</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>46</u>	(A) <u>63</u> (B)
Prevalence Index = B/A = <u>1.37</u>	

**Hydrophytic Vegetation Indicators:**

   1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0<sup>1</sup>

   4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

   Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators 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

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

**SOIL**

Sampling Point T3 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 <sup>1</sup>	Loc <sup>2</sup>		
0-8	10YR 2/2	98	7.5YR 3/4	2	C	M	Sandy	
8-12	2.5Y 5/2	95	10YR 5/6	5	C	M	Sandy	
12-18	10YR 2/1		7.5YR 3/4	5	C	M	Sandy	
			2.5Y 5/1	2	D	M		

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

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Sandy Redox (S5)	<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)	
<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	
<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	
<input type="checkbox"/> High Chroma Sands (S11) (LRR K, L)	
<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Marl (F10) (LRR K, L)	

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

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks:  
 plot is located at edge of pond with indicatuions of past inundataion



**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: NHDOT #43275--Johnsons Pond, Rt. 111 City/County: Hampstead Sampling Date: 10/8/21  
 Applicant/Owner: NHDOT State: NH Sampling Point: T3 UPL  
 Investigator(s): Brendan Quigley NHCWS #249 Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope %: \_\_\_\_\_  
 Subregion (LRR or MLRA): LRR R Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: \_\_\_\_\_ NWI classification: \_\_\_\_\_

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

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</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)	<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)
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<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
--	---

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

Remarks:





## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NHDOT #43275--Johnsons Pond, Rt. 111 City/County: Hasmpstead Sampling Date: 10/8/21  
 Applicant/Owner: NHDOT State: NH Sampling Point: T4 WET  
 Investigator(s): Brendan Quigley NHCWS #249 Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope %: \_\_\_\_\_  
 Subregion (LRR or MLRA): LRR R Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: \_\_\_\_\_ NWI classification: PFO1C

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

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</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) <u>X</u> 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) <u>X</u> Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) <u>?</u> 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)
--	--

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

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

Remarks:  
 plot located in a previously or intermittently flooded area adj pond

**VEGETATION – Use scientific names of plants.**

Sampling Point: T4 WET

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Acer rubrum</i></u>	40	Yes	FAC	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	40	=Total Cover		
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				
1. <u><i>Vaccinium corymbosum</i></u>	15	Yes	FACW	
2. <u><i>Ilex verticillata</i></u>	35	Yes	FACW	
3. <u><i>Sambucus nigra</i></u>				
4. _____				
5. _____				
6. _____				
7. _____				
	50	=Total Cover		
<u>Herb Stratum</u> (Plot size: _____)				
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
				=Total Cover
<u>Woody Vine Stratum</u> (Plot size: _____)				
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: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>50</u>	x 2 = <u>100</u>
FAC species <u>40</u>	x 3 = <u>120</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>90</u> (A)	<u>220</u> (B)
Prevalence Index = B/A = <u>2.44</u>	

**Hydrophytic Vegetation Indicators:**

   1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0<sup>1</sup>

   4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

   Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators 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

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



## WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NHDOT #43275--Johnsons Pond, Rt. 111 City/County: Hampstead Sampling Date: 10/8/21  
 Applicant/Owner: NHDOT State: NH Sampling Point: T4 UPL  
 Investigator(s): Brendan Quigley NHCWS #249 Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): pond edge Local relief (concave, convex, none): concave Slope %: \_\_\_\_\_  
 Subregion (LRR or MLRA): LRR R Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: \_\_\_\_\_ NWI classification: PFO1C

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 _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) plot is located on roadway embankment	

### HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</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)	<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) _____ FAC-Neutral Test (D5)
---	---

<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> 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: T4 UPL

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u><i>Acer rubrum</i></u>	20	Yes	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>8</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25.0%</u> (A/B)																
2. <u><i>Quercus rubra</i></u>	10	Yes	FACU																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	<u>30</u>	=Total Cover		<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:50%;">Total % Cover of:</th> <th style="width:50%;">Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>5</u></td> <td>x 2 = <u>10</u></td> </tr> <tr> <td>FAC species <u>20</u></td> <td>x 3 = <u>60</u></td> </tr> <tr> <td>FACU species <u>55</u></td> <td>x 4 = <u>220</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>85</u> (A)</td> <td><u>315</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align:center">Prevalence Index = B/A = <u>3.71</u></td> </tr> </tbody> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>20</u>	x 3 = <u>60</u>	FACU species <u>55</u>	x 4 = <u>220</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>85</u> (A)	<u>315</u> (B)	Prevalence Index = B/A = <u>3.71</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>5</u>	x 2 = <u>10</u>																			
FAC species <u>20</u>	x 3 = <u>60</u>																			
FACU species <u>55</u>	x 4 = <u>220</u>																			
UPL species <u>5</u>	x 5 = <u>25</u>																			
Column Totals: <u>85</u> (A)	<u>315</u> (B)																			
Prevalence Index = B/A = <u>3.71</u>																				
<u>Sapling/Shrub Stratum</u> (Plot size: _____)																				
1. <u><i>Vaccinium corymbosum</i></u>	5	Yes	FACW																	
2. <u><i>Pinus strobus</i></u>	5	Yes	FACU																	
3. <u><i>Prunus serotina</i></u>	5	Yes	FACU																	
4. <u><i>Quercus rubra</i></u>	15	Yes	FACU																	
5. _____																				
6. _____																				
7. _____																				
	<u>30</u>	=Total Cover																		
<u>Herb Stratum</u> (Plot size: _____)				<b>Hydrophytic Vegetation Indicators:</b> ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 <sup>1</sup> ___ 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  ___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
1. <u><i>Dennstaedtia punctilobula</i></u>	5	Yes	UPL																	
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	<u>5</u>	=Total Cover																		
<u>Woody Vine Stratum</u> (Plot size: _____)				<b>Definitions of Vegetation Strata:</b>  <b>Tree</b> – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/shrub</b> – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody vines</b> – All woody vines greater than 3.28 ft in height.																
1. <u><i>Vitis labrusca</i></u>	20	Yes	FACU																	
2. _____																				
3. _____																				
4. _____																				
	<u>20</u>	=Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)				<b>Hydrophytic Vegetation Present?</b> Yes <u>    </u> No <u>X</u>																





# Wetland Function-Value Evaluation Form

Total area of wetland 15 acres Human made? NO Is wetland part of a wildlife corridor? YES or a "habitat island"? \_\_\_\_\_













Adjacent land use Roadway/Residential Distance to nearest roadway or other development < 50-feet

Dominant wetland systems present PSS1E / PEM1H 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

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

Wetland I.D. A/C-Johnson's Pond Wetlands  
 Latitude \_\_\_\_\_ Longitude \_\_\_\_\_  
 Prepared by: BQ Date 11/1/21  
 Wetland Impact:  
 Type UK Area \_\_\_\_\_  
 Evaluation based on:  
 Office yes Field yes  
 Corps manual wetland delineation completed? Y x N \_\_\_\_\_

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	N			wetland lies at water level of pond
 Floodflow Alteration	N			narrow fringe wetland with minimal storage; no velocity
 Fish and Shellfish Habitat	Y	1,4,8,9,10,16	X	supports submerged habitat
 Sediment/Toxicant Retention	Y	1,4,7,8,10,13,14,15,16		Dense emergent/shallow submerged vegetation directly adj. pond
 Nutrient Removal	Y	4,2,4,5,6,8,9,13,14		Dense emergent/shallow submerged vegetation directly adj. pond
 Production Export	Y	1,2,4,5,6,7,8,10,12		wildlife food sources and organic matter export to pond
 Sediment/Shoreline Stabilization	Y	5,12,15		stabilizes bank of pond; minimal if any velocity however
 Wildlife Habitat	Y	6,7,8,9,12,19,21,	X	part of a wetland/pond/stream and stream system associated with Sawmill Swamp; wildlife corridor
 Recreation	Y	2,5,7		access is private but resource is good for fishing with permission
 Educational/Scientific Value	N			private, access is poor
 Uniqueness/Heritage	Y	3,4,6,12,14,15,16,		unique for aesthetics and history
 Visual Quality/Aesthetics	Y	1, 2, 5, 8	X	traditional shallow pond /marsh wetland aesthetics
<b>ES</b> Endangered Species Habitat	N			
Other				

Notes:

\* Refer to backup list of numbered considerations.

# Wetland Function-Value Evaluation Form

Total area of wetland ~800SF Human made? NO Is wetland part of a wildlife corridor? YES or a "habitat island"? \_\_\_\_\_













Adjacent land use Roadway/Residential Distance to nearest roadway or other development < 50-feet

Dominant wetland systems present PSS1E / PEM1H 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

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

Wetland I.D. B  
 Latitude \_\_\_\_\_ Longitude \_\_\_\_\_  
 Prepared by: BQ Date 11/1/21  
 Wetland Impact:  
 Type UK Area \_\_\_\_\_  
 Evaluation based on:  
 Office yes Field yes  
 Corps manual wetland delineation completed? Y x N \_\_\_\_\_

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	N			swale, no signs of discharge or recharge
 Floodflow Alteration	N			swale no storage
 Fish and Shellfish Habitat	N			not directly associated with water
 Sediment/Toxicant Retention	Y	1,2,3,4	x	swale feature, dense emergent vegetation, receives roadway drainage, flows into pond
 Nutrient Removal	Y	3,4,5,8,9,11	x	swale feature, dense emergent vegetation, receives roadway drainage, flows into pond
 Production Export	Y	12		flowering vegetation for insects; minimal overall
 Sediment/Shoreline Stabilization	N			no associated shoreline
 Wildlife Habitat	N			swale directly adj roadway
 Recreation	N			swale, no rec opportunity
 Educational/Scientific Value	N			roadside swale
 Uniqueness/Heritage	N			roadside swale
 Visual Quality/Aesthetics	N			roadside swale
<b>ES</b> Endangered Species Habitat	N			none identified
Other				

Notes:

\* Refer to backup list of numbered considerations.

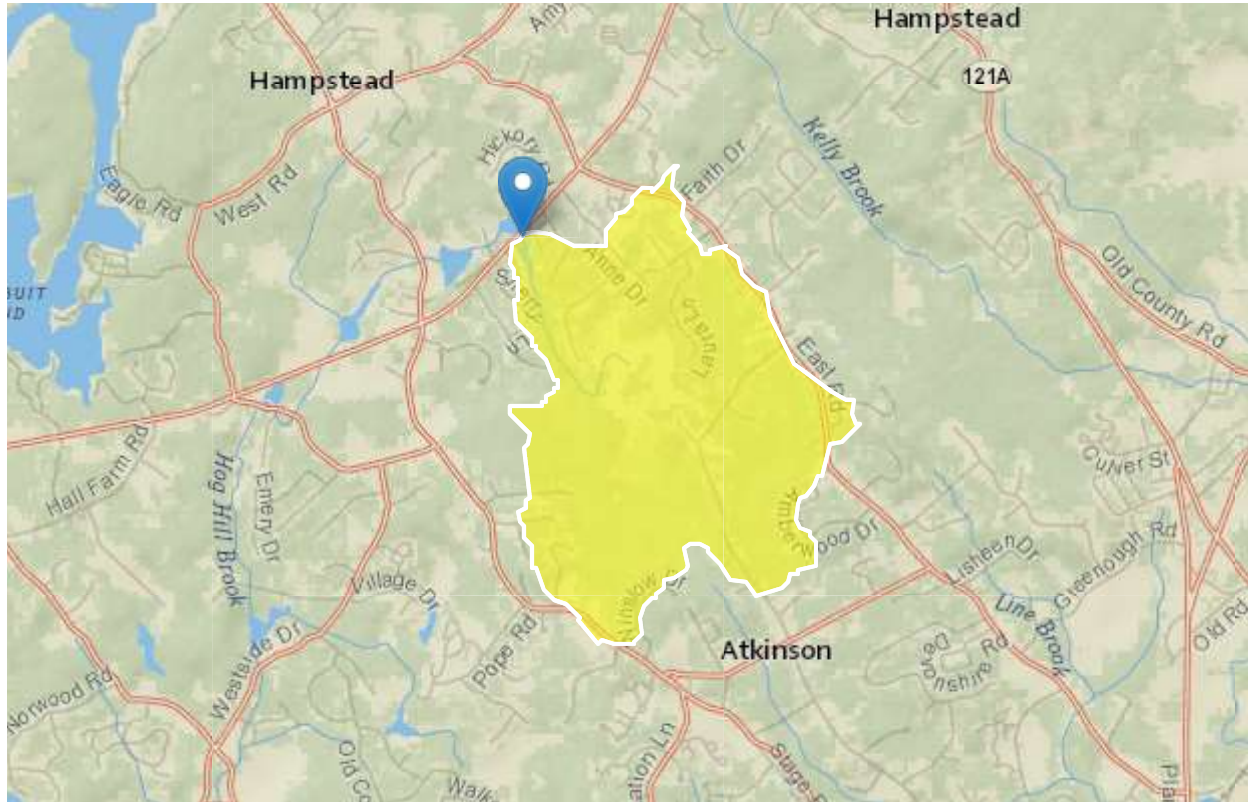
# StreamStats Report

Region ID: NH

Workspace ID: NH20201209154444501000

Clicked Point (Latitude, Longitude): 42.86634, -71.16480

Time: 2020-12-09 10:45:01 -0500



## Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.89	square miles
APRAVPRE	Mean April Precipitation		inches
WETLAND	Percentage of Wetlands		percent

**NH Department of Transportation  
Bureau of Highway Design  
Project, #43275 Hampstead  
Env-Wt 904.10 Alternative Design  
TECHNICAL REPORT  
For Rehabilitation of an Existing Tier 1 or Tier 2/Tier 3 Legal Crossing  
Prepared by: T. Mallette, PE**

*Rules effective 12-15-19 and modified to match rules amended 10-23-20*

See the Supplemental Narrative for additional information related to the responses below.

**Env-Wt 904.10(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.**

Please explain why the structure specified in the applicable rule (*a compliant structure*) is not practicable. Practicable is defined as *available and capable of being done after taking into consideration costs, existing technology, and logistics in light of overall project purposes.*)

This project was initiated and is funded under NHDOT's Federal Culvert Replacement/Rehabilitation & Drainage Repair (CRDR) Program. The Program purpose is to address major culvert and drainage needs statewide that are not being addressed through current or future Capital Improvement or other programmatic projects. The Program receives \$2,000,000 in total funding annually, which includes construction, engineering, and ROW costs. Projects are selected and scheduled based primarily on the condition of the culvert (risk of failure), Road Tier, traffic volume, depth of fill, and detour length (potential impact of failure). The Program funding is fully committed to multiple Projects for at least the next three years. This culvert is one of the highest statewide priority locations out of nearly 50 known locations eligible for the Program. Failure to address the structural deficiency of this culvert risks deformation of the culvert which would make rehabilitation impossible and/or collapse of the culvert which could cause serious impacts to public/private infrastructure and the travelling public. Alternatives that significantly exceed the Project budget are not practicable due mainly to the capacity of a downstream culvert under Wellington Ave, and local recreational use of Johnsons Pond. An open embedded box culvert alternative was considered. However, the deterrent is primarily the capacity of the downstream culvert under Wellington Drive. An open box would require funds to be identified from other sources due to the depth of excavation of 16 ft and the corresponding top width of the excavation exceeding 30 ft. Traffic management for 13,400 vehicles per day on the primary arterial exceeds the budget for the current project. Additionally, it is not clear what span would be used for full compliance with Stream Crossing Rules since there is a pond on both sides. An 8 ft. box culvert is estimated to cost between 1.3 to 1.6 million dollars depending on the foundation type and design. It would be necessary to upsize the Wellington Drive crossing to the same size or greater to avoid washing out the Town road and/or flooding the garage of the adjacent house.

Other rehabilitation options have been considered, but they don't provide the needed capacity and/or equivalent service life of the preferred alternative design. Close to the in-kind capacity is necessary to avoid overtopping of Sherry Lane upstream at or above 100 yr. events. A cured in place liner would not provide any additional hydraulic advantages or added ecological services. The chosen alternative design is the best balance for the available wetland floodplain storage given the flooding constraints both upstream and downstream.

**Env-Wt 904.10(b)(1) – Clearly explain how the proposed alternative meets the criteria for approval specified in Env-Wt 904.10(d):**

The physical limitations of the site are described in the supplemental narrative, including the deep embankment and how the proposed alternative minimizes wetland disturbance and disruption of commerce and commuter traffic (13,400 vpd). An hydraulic analysis shows how the hydrologic peak flow design values safely accommodate the potential for overtopping town roads upstream and downstream. The in-kind culvert performance appears to balance the hazards and risk well. The intended design is for the 50 yr event. However, the inter-agency study and hydraulic analysis since support the performance of existing infrastructure as adequate to accommodate large storm events provided the pond elevation remains close to existing conditions. A detailed financial comparison of the costs for a structure that complies with all design requirements can be provided should the exact size of an open span box culvert or bridge be determined for the pond location. Additional design work for culvert replacement rather than rehabilitation may not be in the best interest of the tax payer unless the only option is deemed a fully compliant structure in which case a new project will need to be programmed once funds for such are identified.

**Env-Wt 904.10(d)(1) – Demonstrate that adhering to the rules is not practicable:**

The applicable contributing watershed area appears to be different for normal sunny day flow and 100 yr. type flood events. The culvert at Johnsons Pond is a Tier 3 by area due to runoff from the upstream Saw Mill swamp wetland. However, during low frequency storm events the contributing watershed may be less than 640 acres due to the flow slit upstream as evidenced by past flooding in other areas, but not at the Johnsons Pond culvert. The first-time rehabilitation of the Tier 3 Existing Legal Crossing is as per **Env-Wt 904.09**.

**Env-Wt 904.08 (b)(1)** – The existing stream crossing does not have a history of causing or contributing to flooding that damages the crossing, other infrastructure, or protected species or habitat, or any combination thereof;

The “existing stream crossing” is located in a pond. Inter-agency study in 2012 determined the need for restoring the original design performance for the culvert, and the potential for beaver blockage at a private dam downstream was identified. Partial dam removal was implemented by a land owner, that lowered the risk of flooding on property (along Marylyn Park Drive) built after the original culvert(s) under NH 111, now appears to provide a balance with beaver activity and the existing water surfaces since the implementation work resulting from the inter-agency study that included lowering the pond in 2012. The proposed rehabilitated culvert will perform similarly. The rehabilitated culvert inlet capacity would be increased for periods when the culvert performs in inlet control, and the ability of the culvert to pass debris would be improved if the stones placed at the inlet by unknown individuals are permanently removed. There is no evidence that the damaged inlet caused or contributed to any damage. It is not clear whether the existing culvert meets the requirements of 904.08 (b)(1).

**Env-Wt 904.08 (b)(2)a** – The proposed stream crossing will meet or exceed general criteria specified (1) – (9) listed Env-Wt 904.01 to the maximum practical extent dictated by ongoing risk and physical limitations. Erosion, aggradation, and/or scouring have not been a problem and should not initiate a problem with the proposed rehabilitation. Watercourse connectivity will continue as it currently exists. Removal of stones at the inlet placed by others will reduce the potential for obstruction.

## Env-Wt 904.01 General Design Considerations

(a) All stream crossings, whether over tidal or non-tidal waters, shall be designed and constructed to:

1) Not be a barrier to sediment transport;

The proposed design has no features that would be a barrier to sediment transport once the stones placed by others at the inlet are removed. The existing culvert has been in service for 63 years, with no evidence of obstructing sediment transport. The proposed liner will have slightly higher velocities over a range of flows, even though the invert is flat, which will improve sediment transport.

2) Not restrict high flows and maintain existing low flows;

The proposed liner will maintain existing high flow and low flow hydraulic capacities with similar flow depths providing the needed balance upstream and downstream.

3) Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction;

The proposed liner will maintain the existing movement of aquatic life indigenous to the waterbody, such as accommodating beaver activity without trapping (as has been demonstrated at the Hog Hill slipline 2 miles downstream) . The areas immediately adjacent to the culvert inlet and outlet match the existing culvert inverts and the liner inverts will be set to closely match the existing cnp inverts (~0.25 ft rise). Velocities within the culvert will increase slightly due to the smaller liner diameter, but this culvert equalizes the water surface between two parts of Johnsons Pond and energy is quickly dissipated in the pond. The tailwater in the lower pond will control the culvert hydraulics most of the time. The proposed design will not significantly change low flow conditions. With all of this in mind, current passage of aquatic life is not inhibited by the existing culvert and should remain the same post construction.

4) Not cause an increase in the frequency of flooding or overtopping of banks;

The proposed liner will have approximately the same hydraulic capacity as the existing culvert. The effect of the smaller liner diameter will be offset by the liner type and constructing a more efficient headwall at the inlet for high flows. The proposed rehabilitation will not have a significant effect on flood flow or flood elevations upstream or downstream of the existing culvert.

5) Maintain or enhance geomorphic compatibility by:

a. Minimizing the potential for inlet obstruction by sediment, wood, or debris; and

The existing culvert does not have a history of debris blockage, but there are reports of blockage by beaver activity. The proposed rehabilitation will remove the damaged portion of pipe at the inlet and construct a concrete headwall with 45° wings. This type of headwall is a typical inlet structure, which is tapered to improve hydraulic efficiency and help funnel debris through the culvert. The headwall will include an improved inlet matching the town's downstream culvert under Wellington Drive. Stones at the inlet placed by others will be removed.

b. Preserving the natural alignment of the stream channel;

The proposed design will not alter the existing culvert alignment. The existing culvert is approximately perpendicular to NH 111 as constructed in the 1950s. (see Supplemental Narrative Exhibit 1 - Archive Plan). Other alignments were not considered since rehabilitating the existing structure is the proposed scope of work. This project is not making the alignment worse.

6) Preserve watercourse connectivity where it currently exists;  
The proposed design will not alter connectivity. The liner invert will be set flat and as close to the same elevation as the existing culvert invert as practical. The inlet area will be regraded such that the streambed matches the liner invert. The proposed outlet invert will match the pond depth similar to the existing condition. The culvert is not perched.

7) Restore watercourse connectivity where:  
a. Connectivity previously was disrupted as a result of human activity; and low flows and the hydrologic connection was maintained by the existing culvert. It is not practicable to restore vegetated banks, buffers, or floodplain inside of the existing culvert.  
b. Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both;  
The proposed rehabilitation will not alter existing connectivity.

8) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and  
The proposed design will have no effect on upstream hydraulics, and sediment transport through the culvert will be improved by removing stones at the inlet. Outlet velocities will increase slightly due to the smaller liner diameter, but no effect on the downstream pond is anticipated.

9) Not cause water quality degradation.  
The project will have no effect on water quality. No new pavement or changes to drainage patterns are proposed.

(b) For stream crossing over tidal waters, the stream crossing shall be designed to:

1) Match the velocity, depth, cross-sectional area, and substrate of the natural stream: and  
N/A – This is not a tidal crossing

2) Be of sufficient size to not restrict bi-directional tidal flow over the natural tide range above, below, and through the crossing.  
N/A – This is not a tidal crossing

**Env-Wt 904.08 (b)(2)b - The proposed stream crossing will maintain or enhance the hydraulic capacity of the crossing:**

Hydraulic capacity for the rehabilitated culvert will be about the same as existing conditions. The addition of a beveled edge inlet headwall will result in a slight capacity increase for the liner similar to the downstream crossing under Wellington Drive maintained by the town. The Wellington Drive culvert does have a slope thereby increasing capacity. However, the headwater rise at NH 111 which could accommodate a rise to approximately elevation 229 without overtopping Sherry Lane.

**Env-Wt 904.08 (b)(2) c - The proposed stream crossing will maintain or enhance the capacity of the crossing to accommodate aquatic organism passage, or both:**

Due to the tailwater pond elevation and the equalization function between section of Johnsons Pond, the proposed rehabilitation will maintain the existing capacity and depth of flow to



accommodate aquatic organism passage. There will be no perch at the inlet or outlet. Shortening the culvert by 3ft could be considered a slight enhancement.

**Env-Wt 904.08 (b)(2)d The proposed stream crossing will maintain or enhance the connectivity or the stream reaches upstream or downstream of the crossing, or both:**

The proposed rehabilitation will maintain the existing connectivity between the upstream and downstream ponds. The proposed liner will have about the same capacity as the existing culvert and there will be no significant change to flow conditions. There will be no perch at the inlet or outlet.

**Env-Wt 904.08 (b)(2)e The proposed stream crossing will not cause an increase in the frequency of flooding or overtopping of banks upstream or downstream of the crossing, or both:**

The proposed liner will have approximately the same hydraulic capacity as the existing culvert. The effect of the smaller liner diameter will be offset by constructing a more efficient headwall at the inlet and to a lesser degree by a minor shortening of the pipe. The proposed rehabilitation will not have a significant effect on flood flow or flood elevations upstream or downstream of the existing culvert.

**Env-Wt 904.10(d)(2) a The proposed alternative design meets the general design criteria established in Env-Wt 904.01:**

See responses above under General Conditions 1-9 above.

**Env-Wt 904.10(d)(2)b - The proposed alternative design meets the applicable design criteria established in Env-Wt 904.08 for Tier 3 stream crossings to the maximum extent practicable, as specified below.**

Crossing is a Tier 3 by area definition, but runoff could be distributed nearly equally should Sherry Lane overtop in low frequency storms believed to be more than 100 yr. annual chance events.

**Env-Wt 904.07 Design Criteria for Tier 2, Tier 3, and Tier 4 Stream Crossings**

- (a) Unless otherwise specified, all design criteria in this section shall apply to new and replacement tier 2, tier 3, and tier 4 crossings.

This is not a new or replacement crossing. The proposed rehabilitation meets all of the requirements to the maximum extent practicable.

- (b) Tier 2 and tier 3 stream crossings shall be designed in accordance with the NH Stream Crossing Guidelines.

As this is not a new or replacement crossing, there is little to no opportunity to modify the crossing to better match the NH Stream Crossing Guidelines.

- (c) Tier 2, tier 3, and tier 4 stream crossings shall be designed:

- 1) To meet the general design considerations specific in Env-Wt 904.01;

See responses above under General Conditions 1-9 above.

- 2) Of sufficient size to accommodate the greater of:
  - a. The 100-year 24-hour design storm;
  - b. Flows sufficient to:
    1. Prevent an increase in flooding on upstream and downstream properties; and
    2. Not affect flows and sediment transport characteristics in a way that would adversely affect channel stability; or
  - c. Applicable federal, state, or local requirements;

The rehabilitated crossing will accommodate the 100-year 24-hour storm flow without bypass or overtopping of NH 111.

The rehabilitated culvert will have about the same capacity as the existing culvert. There will be no change to upstream or downstream flooding because of the proposed rehabilitation.

The existing culvert has performed well for 63 years, with no evidence of obstructing sediment transport or causing channel instability. The proposed design will not significantly alter sediment transport capacity or flow conditions.

The rehabilitated culvert will meet NHDOT requirements for this type of crossing (50-year storm).

- 3) With bed forms and streambed characteristics necessary to cause water depths and velocities within the crossing structure at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the stream crossing.

It is not practicable to cause water depths and velocities within the crossing structure at a variety of flows comparable to those found in the pond upstream and downstream of the culvert since the crossing is a closed bottom structure and will remain closed bottom. The selection of the liner material provides the best available balance between capacity and velocity. The portion of pond created by shortening the culvert will match the upstream water surface.

- 4) To provide a vegetated bank on both sides of the watercourse or to provide a wildlife shelf of suitable substrate and access to allow for wildlife passage.  
It is not practicable to provide a vegetated bank on both sides of the watercourse or to provide a wildlife shelf inside the existing culvert due to capacity constraints.

- 5) To preserve the natural alignment and gradient of the stream channel, to accommodate natural flow regimes and the functioning of the natural floodplain.

It is not practicable to alter the alignment or gradient of the existing culvert to restore the natural alignment of the stream that it once was prior to the original culvert installation. The proposed rehabilitation maintains the existing alignment and gradient of the crossing.

- 6) To simulate a natural stream channel.

It is not practicable to simulate a natural stream channel inside the existing culvert. The existing culvert is a closed bottom corrugated metal culvert. The rehabilitated culvert will be a closed bottom culvert.

- 7) So as not to alter sediment transport competence.

The proposed design will not have a significant effect on sediment transport competence. Existing culvert velocities are sufficient to prevent aggregation of sediment inside the culvert. Proposed liner velocities will be slightly higher than the existing velocities during runoff events sufficient to exceed incipient motion.

- 8) To avoid and minimize impacts to the stream in accordance with Env-Wt 313.03

The project was designed to avoid and minimize wetland impacts to the maximum extent practicable. Additional details are provided in the Avoidance and Minimization checklist included elsewhere in the application.

- (d) In addition to meeting the criteria specified in (c), above, new, repaired, rehabilitated, or replaced tier 4 stream crossing shall be designed:

N/A – Crossing is not a Tier 4

**Env-Wt 904.10(d)(2)c – A hydraulic analysis shows 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:**

See the Supplemental Narrative for detailed information about hydraulic modelling and results.

The rehabilitated crossing will accommodate the 100-year 24-hour storm flow without overtopping of NH 111. The applicable design storm per NHDOT requirements is a 50-year storm, using the FHWA multi-parameter regression equations for the 50-year design flow. The rehabilitated culvert will accommodate the 50-year storm with an acceptable upstream headwater elevation and without bypass or overtopping.

# CONFIDENTIAL – NH Dept. of Environmental Services review

## Memo

NH Natural Heritage Bureau  
NHB Datacheck Results Letter

**To:** Melilotus Dube, New Hampshire Department of Transportation  
7 Hazen Drive  
Concord, NH 03301

**From:** Amy Lamb, NH Natural Heritage Bureau

**Date:** 4/14/2021 (valid until 04/14/2022)

**Re:** Review by NH Natural Heritage Bureau

**Permits:** NHDES - Wetland Standard Dredge & Fill - Major, USACE - General Permit, USCEQ - Federal: NEPA Review

NHB ID: NHB21-1199

Town: Hampstead

Location: N/A

Description: NHDOT Hampstead 43275. The proposed project will rehabilitate a 42" x 100' CMP serving as an equalizer pipe between two sections of Johnson Pond under NH Route 111 in the Town of Hampstead. The proposed work will install a corrugated plastic pipe liner or other slip-lining technique as well as remove and replace a deformed section of the pipe at the inlet.

cc: Kim Tuttle

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

**Comments** NHB: No Comments At This Time

F&G: Please consider replacing with a larger pipe at this location rather than slip-lining to provide aquatic species passage opportunities because of the excessive culvert length.

### Vertebrate species

State<sup>1</sup> Federal Notes

Blanding's Turtle (*Emydoidea blandingii*) E -- Contact the NH Fish & Game Dept (see below).

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

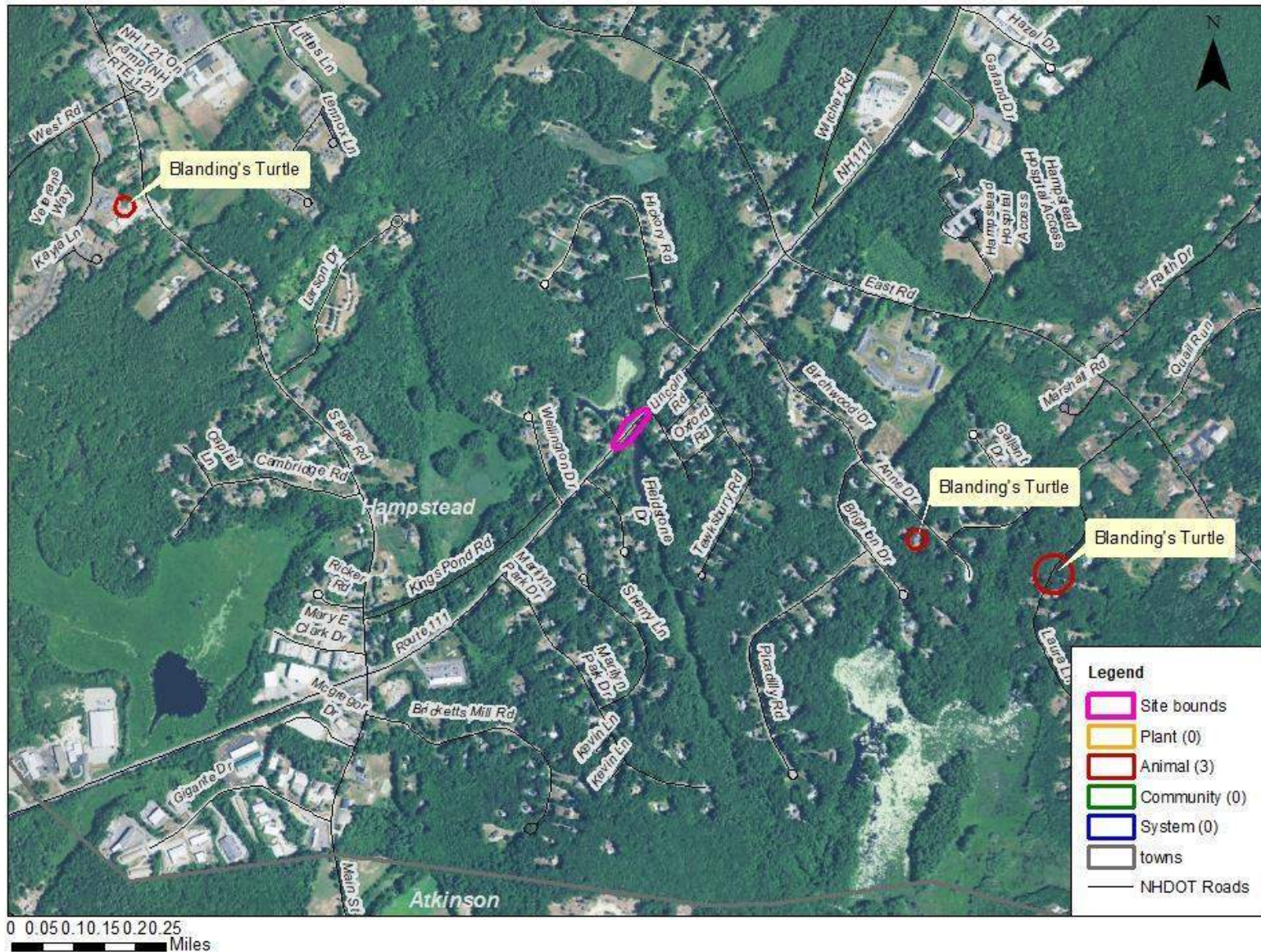
Contact for all animal reviews: Kim Tuttle, NHF&G, (603) 271-6544.

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

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB21-1199











## Schmidt, Dillan

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**From:** Tuttle, Kim  
**Sent:** Tuesday, November 2, 2021 9:56 AM  
**To:** Dube, Melilotus  
**Cc:** Schmidt, Dillan; Doperalski, Melissa  
**Subject:** RE: NHDOT Hampstead 43275 NHFG Review NHB21-1199

Hi Meli,

Given that the existing 42" diameter 100' long corrugated metal pipe is basically an equalizer pipe between the two sides of Johnson's Pond, I do not expect that the proposed sliplining will significantly impact aquatic movement under NH Route 111 as long as it remains effectively 'backwatered' throughout the year. The existing 100 ft. length may pose a psychological barrier to some species currently such as adult Blanding's turtles. Just for the record though, can you let us know what the new diameter of the culvert will be after the plastic slip-lining?

Avoid the use of welded plastic or 'biodegradable plastic' netting or thread (e.g. polypropylene) in erosion control matting. There are numerous documented cases of snakes, including northern black racer and other wildlife being trapped and killed in erosion control matting with synthetic netting and thread. The use of erosion control berm, Filtrexx Degradable Woven Silt Sock, or several 'wildlife friendly' options such as woven organic material (e.g. coco or jute matting such as North American Green SC150BN or equivalent) are readily available.

Thanks,

Kim Tuttle  
Wildlife Biologist  
NH Fish and Game  
11 Hazen Drive  
Concord, NH 03301  
603-271-6544

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**From:** Dube, Melilotus <Melilotus.M.Dube@dot.nh.gov>  
**Sent:** Monday, November 1, 2021 1:10 PM  
**To:** Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>  
**Cc:** Schmidt, Dillan <Dillan.C.Schmidt@dot.nh.gov>; Doperalski, Melissa <Melissa.J.Doperalski@wildlife.nh.gov>  
**Subject:** RE: NHDOT Hampstead 43275 NHFG Review

Hi Kim,

I have attached several photos for your reference to supplement the topo and aerial maps sent previously. The culvert is essentially an equalizer pipe between the two sides of Johnson's Pond, which is split by NH Route 111. To clarify about the "bypass flow", the quick summary is that there are other pipes that lead into/out of Johnsons pond and this pipe sees more or less water depending on the elevation of pond on either side of Route 111 and what is going on with those other pipes. Johnson's Pond seems to be a part of a larger wetland system extending to the south of NH 111 so this pipe is just a small part of that and connects to just the small northern tip. Please keep in mind that the photos are labeled as "inlet" and "outlet" but this is not a stream system, its just that water tends to flow that direction through the ponded system due to changes in elevation in the pond on either side of the road, the beaver activity, and other manmade obstructions. Because there is so much other habitat in the area and the wetland system extends so far to the south, my hope is that keeping this pipe approximately the same size and just rehabbing will not be of huge concern. Full replacement is outside of the scope of the project.

I hope that is helpful.

Meli

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**From:** Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>

**Sent:** Monday, November 01, 2021 12:35 PM

**To:** Dube, Melilotus <Melilotus.M.Dube@dot.nh.gov>

**Cc:** Schmidt, Dillan <Dillan.C.Schmidt@dot.nh.gov>; Doperalski, Melissa <Melissa.J.Doperalski@wildlife.nh.gov>

**Subject:** RE: NHDOT Hampstead 43275 NHFG Review

Hi Meli

Do you have any photos of the inlet and outlet that we can look at? Can't really say I understand the situation with the bypass flow, etc.

Kim

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**From:** Dube, Melilotus <[Melilotus.M.Dube@dot.nh.gov](mailto:Melilotus.M.Dube@dot.nh.gov)>

**Sent:** Friday, October 29, 2021 8:47 AM

**To:** Tuttle, Kim <[Kim.A.Tuttle@wildlife.nh.gov](mailto:Kim.A.Tuttle@wildlife.nh.gov)>

**Cc:** Schmidt, Dillan <[Dillan.C.Schmidt@dot.nh.gov](mailto:Dillan.C.Schmidt@dot.nh.gov)>

**Subject:** FW: NHDOT Hampstead 43275 NHFG Review

Good morning Kim,

I am hoping to check in with you about any potential concerns for the subject project. We are hoping to move forward with the NEPA document and wetland permit application quickly now to meet a Spring 2022 advertising date, and are working towards attending the November NRACM. I also wanted to let you know that this project is shifting to our new Environmental Analyst, Dillan Shmidt, I am CCing him on this email. Please include both of us on future correspondence.

Thanks,

Meli

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**From:** Dube, Melilotus

**Sent:** Thursday, May 27, 2021 10:23 AM

**To:** Tuttle, Kim <[Kim.A.Tuttle@wildlife.nh.gov](mailto:Kim.A.Tuttle@wildlife.nh.gov)>

**Subject:** FW: NHDOT Hampstead 43275 NHFG Review

Kim,

Just wondering if you had a chance to review this information. FYI, we will be bringing this project to the June NRACM.

Meli

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**From:** Dube, Melilotus

**Sent:** Wednesday, May 19, 2021 10:46 AM

**To:** Tuttle, Kim <[Kim.A.Tuttle@wildlife.nh.gov](mailto:Kim.A.Tuttle@wildlife.nh.gov)>

**Subject:** NHDOT Hampstead 43275 NHFG Review

Good morning Kim,

The NH Department of Transportation is planning the subject drainage project on NH Route 111 in Hampstead. The work would involve rehabilitation of an existing 42" diameter 100' long corrugated metal pipe. The pipe connects two sides of Johnson's Pond, which is split by NH 111 in the project area. The Department is investigating various alternatives, however, rehabilitation with a corrugated plastic liner and replacement of deteriorated end sections is preferred at this time.

I asked if this location would be considered an “equalizer” pipe and the response from the hydraulic engineer was: “No, not really. The backwater begins at the breached dam discharging lower Johnsons Pond and extends gradually up to the point where a bypass flow develops upstream of upper Johnsons pond. By lowering the pond to its current level I believe we have successfully mitigated the flooding at Sherry Lane & Marlyn Park Drive properties.” He did say that the pipe is backwatered most of the year, if not all year.

Similar to other culvert projects of this kind, sliplining with the corrugated plastic liner is the preferred alternative because it allows the department to make these urgently needed repairs as quickly and cost efficiently as possible, which allows us address safety concerns for the traveling public, keep the road open and make the most of the limited funds in the culvert program over more costly and time consuming options such as full replacement. We plan to present this project at the June NRACM and more detail will be provided at that time.

I am reaching out to you now because the NHB report came back with hits for Blanding’s turtle, and I wanted to get a head start on our coordination with NHFG for this species. Any thoughts you might have, or suggestions for additional people to attend the NRACM would be helpful.

Thanks!  
Meli



## 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: 05E1NE00-2021-SLI-2335  
Event Code: 05E1NE00-2022-E-01377  
Project Name: Hampstead 43275

November 05, 2021

Subject: Updated list of threatened and endangered species that may occur in your proposed project location 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](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](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

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## Project Summary

Consultation Code: 05E1NE00-2021-SLI-2335

Event Code: Some(05E1NE00-2022-E-01377)

Project Name: Hampstead 43275

Project Type: TRANSPORTATION

Project Description: The proposed project will rehabilitate a 42" x 100' CMP serving as an equalizer pipe conveying Johnson Pond under NH Route 111 in the Town of Hampstead. The work will involve installing a corrugated plastic pipe liner or other slip-lining technique, as well as replacing a deformed section of the pipe at the inlet.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@42.86658365,-71.16490325035986,14z>



Counties: Rockingham County, New Hampshire

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## 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 Fisheries<sup>1</sup>, 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: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Threatened

### Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

### Critical habitats

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

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## 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:

November 24, 2021

Consultation code: 05E1NE00-2021-I-2335

Event Code: 05E1NE00-2022-E-01964

Project Name: Hampstead 43275

Subject: Concurrence verification letter for the 'Hampstead 43275' project under the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request to verify that the **Hampstead 43275** (Proposed Action) may rely on the concurrence provided in the February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures, and may affect, but is not likely to adversely affect (NLAA) the endangered Indiana bat (*Myotis sodalis*) and/or the threatened Northern long-eared bat (*Myotis septentrionalis*).

The Service has 14 calendar days to notify the lead Federal action agency or designated non-federal representative if we determine that the Proposed Action does not meet the criteria for a NLAA determination under the PBO. If we do not notify the lead Federal action agency or designated non-federal representative within that timeframe, you may proceed with the Proposed Action under the terms of the NLAA concurrence provided in the PBO. This verification period allows Service Field Offices to apply local knowledge to implementation of the PBO, as we may identify a small subset of actions having impacts that were unanticipated. In such instances, Service Field Offices may request additional information that is necessary to verify inclusion of the proposed action under the PBO.

**For Proposed Actions that include bridge/structure removal, replacement, and/or maintenance activities:** If your initial bridge/structure assessments failed to detect Indiana bats, but you later detect bats during construction, please submit the Post Assessment Discovery of Bats at Bridge/Structure Form (User Guide Appendix E) to this Service Office. In these instances, potential incidental take of Indiana bats may be exempted provided that the take is reported to the Service.

If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or Northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA Section 7(a)(2) may be required. If the Proposed Action may affect any other federally-listed or proposed species, and/or any designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please contact this Service Office.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate
-

## **Project Description**

The following project name and description was collected in IPaC as part of the endangered species review process.

### ***Name***

Hampstead 43275

### ***Description***

The proposed project will rehabilitate a 42" x 100' CMP serving as an equalizer pipe conveying Johnson Pond under NH Route 111 in the Town of Hampstead. The work will involve installing a corrugated plastic pipe liner or other slip-lining technique, as well as replacing a deformed section of the pipe at the inlet.

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## Determination Key Result

Based on your answers provided, this project(s) may affect, but is not likely to adversely affect the endangered Indiana bat and/or the threatened Northern long-eared bat, therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the concurrence provided in the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

## Qualification Interview

1. Is the project within the range of the Indiana bat<sup>[1]</sup>?

[1] See [Indiana bat species profile](#)

**Automatically answered**

No

2. Is the project within the range of the Northern long-eared bat<sup>[1]</sup>?

[1] See [Northern long-eared bat species profile](#)

**Automatically answered**

Yes

3. Which Federal Agency is the lead for the action?

A) *Federal Highway Administration (FHWA)*

4. Are *all* project activities limited to non-construction<sup>[1]</sup> activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

[1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces<sup>[1]</sup>?

[1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum<sup>[1]</sup>?

[1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

No

7. Is the project located **within** a karst area?

No

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8. Is there *any* suitable<sup>[1]</sup> summer habitat for Indiana Bat or NLEB **within** the project action area<sup>[2]</sup>? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the [national consultation FAQs](#).

*Yes*

9. Will the project remove *any* suitable summer habitat<sup>[1]</sup> and/or remove/trim any existing trees **within** suitable summer habitat?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

*No*

10. Have presence/probable absence (P/A) summer surveys<sup>[1][2]</sup> been conducted<sup>[3][4]</sup> **within** the suitable habitat located within your project action area?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

[3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

[4] Negative presence/probable absence survey results obtained using the [summer survey guidance](#) are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

*No*

11. Does the project include activities **within documented NLEB habitat**<sup>[1][2]</sup>?

[1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry triangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

[2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

*No*

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12. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?  
*No*
13. Does the project include slash pile burning?  
*No*
14. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?  
*No*
15. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)  
*No*
16. Will the project involve the use of **temporary** lighting *during* the active season?  
*No*
17. Will the project install new or replace existing **permanent** lighting?  
*No*
18. Does the project include percussives or other activities (**not including tree removal/trimming or bridge/structure work**) that will increase noise levels above existing traffic/background levels?  
*Yes*
19. Will the activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the active season<sup>[1]</sup>?  
  
[1] Coordinate with the local Service Field Office for appropriate dates.  
*Yes*
20. Will *any* activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season<sup>[1]</sup>?  
  
[1] Coordinate with the local Service Field Office for appropriate dates.  
*Yes*
21. Are *all* project activities that are **not associated with** habitat removal, tree removal/trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

Examples: lining roadways, unlighted signage , rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

*Yes*

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22. Will the project raise the road profile **above the tree canopy**?

No

23. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) consistent with a Not Likely to Adversely Affect determination in this key?

**Automatically answered**

*Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the active season within undocumented habitat.*

24. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) and/or increase noise levels above existing traffic/background levels consistent with a No Effect determination in this key?

**Automatically answered**

*Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the inactive season*

25. **General AMM 1**

Will the project ensure *all* operators, employees, and contractors working in areas of known or presumed bat habitat are aware of *all* FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?

Yes

## Project Questionnaire

1. Have you made a No Effect determination for *all* other species indicated on the FWS IPaC generated species list?

N/A

2. Have you made a May Affect determination for *any* other species on the FWS IPaC generated species list?

N/A

## Avoidance And Minimization Measures (AMMs)

This determination key result includes the commitment to implement the following Avoidance and Minimization Measures (AMMs):

### GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

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## **Determination Key Description: FHWA, FRA, FTA Programmatic Consultation For Transportation Projects Affecting NLEB Or Indiana Bat**

This key was last updated in IPaC on April 22, 2021. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the threatened **Northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's [February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects](#). The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

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**Appendix B Certification – Activities with Minimal Potential to Cause Effects**

**Date Reviewed:** 11/3/2021  
(Desktop or Field Review Date)

**Project Name:** Hampstead

**State Number:** 43275

**FHWA Number:** X-A005(067)I

**Environmental Contact:** Dillan Schmidt

**DOT**

**Email Address:** Dillan.c.schmidt@dot.nh.gov

**Project Manager:** Kirk Mudgett, PE

**Project Description:** Proposed culvert rehabilitation project on NH Route 111 in Hampstead. The culvert carries Johnsons Pond under NH 111 (between York Rd and Fieldstone Dr). The existing pipe is a 42” diameter, 100’ long circular corrugated metal pipe that serves as an equalizer pipe for Johnson’s Pond, which is split by NH 111. The condition of the 1957 metal corrugated pipe is severely deteriorated and the several alternatives are being considered, through slip lining with a corrugated plastic circular pipe, or other lining technology and replacing the deformed end section (approximately 10 ft in) at the inlet is considered the preferred alternative. All work is anticipated to stay within the existing State ROW, and mainly behind the guard rail.

Please select the applicable activity/activities:

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

**Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding**

**Appendix B Certification – Activities with Minimal Potential to Cause Effects**

<input type="checkbox"/>	14. Construction of bicycle lanes and shared use paths and facilities within the existing right-of-way
<b>Railroad Improvements</b>	
<input type="checkbox"/>	15. Modernization, maintenance, and safety improvements of railroad facilities within the existing railroad or highway right-of-way, <b>provided no historic railroad features are impacted</b> , 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
<b>Other Improvements</b>	
<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.


The project is a culvert rehabilitation as the culvert is extremely deteriorated and the need for repair is apparent. There should be minimal to no effects from construction activities associated with the project. Access should be limited to the state ROW however it is likely that a small portion of access will have to take place beyond the guardrails.

*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.*

Coordination Efforts:

Has an RPR been submitted to NHDOT for this project?	No	NHDHR R&C # assigned?	<u>N/A</u>
Please identify public outreach effort contacts; method of outreach and date:	Initial contact letters sent to Hampstead town officials on: 06-08-2021		

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

<input checked="" type="checkbox"/>	<b>No Potential to Cause Effects</b>	<input type="checkbox"/>	<b>No Historic Properties Affected</b>
This finding serves as the Section 106 Memorandum of Effect. No further coordination is necessary.			
<input type="checkbox"/>	<b>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.</b>		
NHDOT comments:			
		<u>11/9/2021</u>	
NHDOT Cultural Resources Staff		Date	

## Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

### **Appendix B Certification – Activities with Minimal Potential to Cause Effects**

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.

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.**

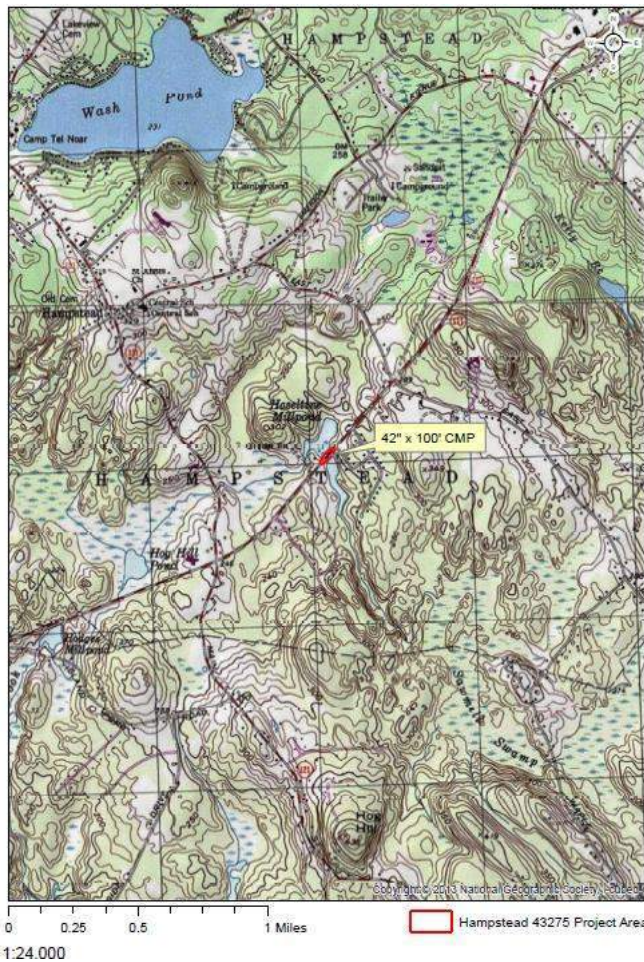
Should project plans change, please inform the NHDOT Cultural Resources staff in accordance with Stipulation VII of the Programmatic Agreement.

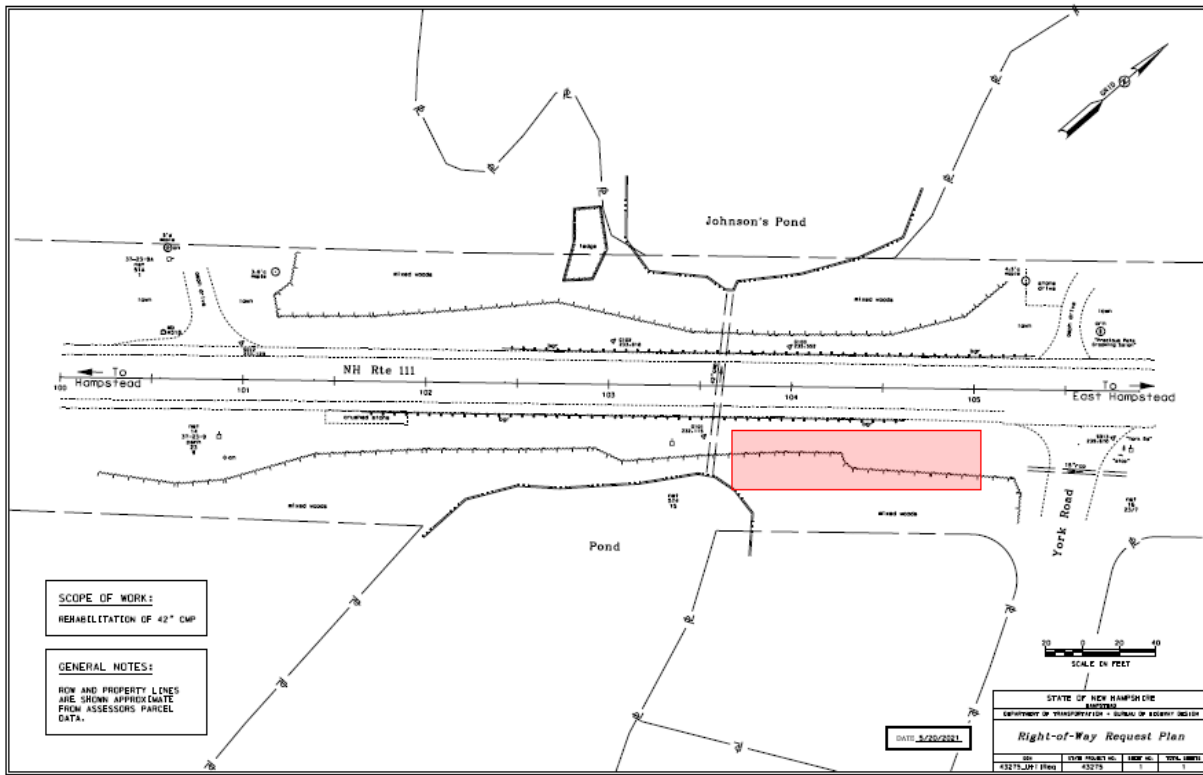
For the purpose of compliance with regulations of the National Historic Preservation Act, the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), the US Army Corps of Engineers' *Appendix C*, and/or state regulation RSA 227-C:9, *Directive for Cooperation in the Protection of Historic Resources*, the NHDOT Cultural Resources Program has reviewed the proposed project for potential impacts to historic properties.

**Proposed Project:** Proposed culvert rehabilitation project on NH Route 111 in Hampstead. The culvert carries Johnsons Pond under NH 111 (between York Rd and Fieldstone Dr). The existing pipe is a 42" diameter, 100' long circular corrugated metal pipe that serves as an equalizer pipe for Johnson's Pond, which is split by NH 111. The condition of the 1957 metal corrugated pipe is severely deteriorated and the several alternatives are being considered, though slip lining with a corrugated plastic circular pipe, or other lining technology and replacing the deformed end section (approximately 10 ft in) at the inlet is considered the preferred alternative. All work is anticipated to stay within the existing State ROW, and mainly behind the guard rail.

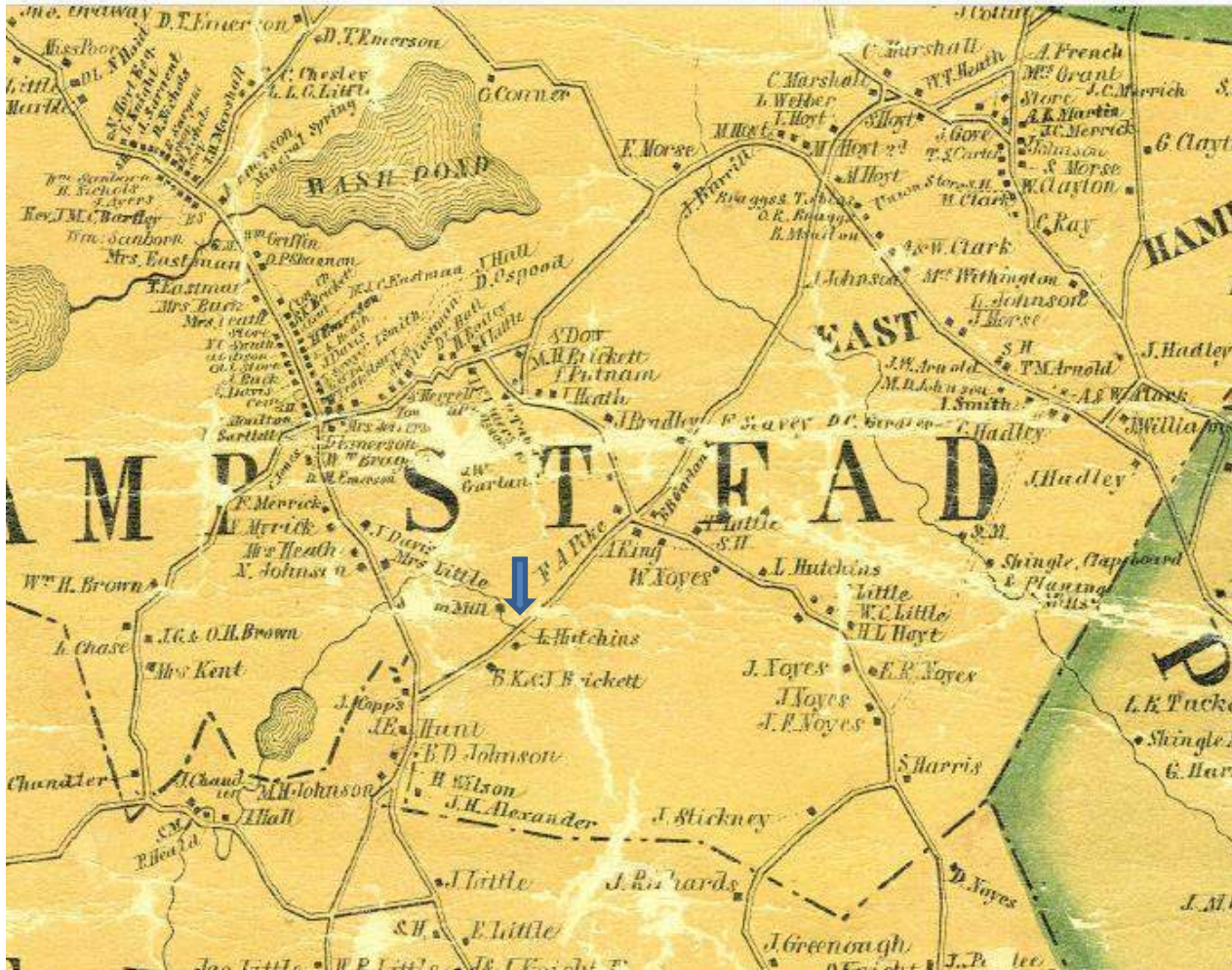
Georgie R. Ravelli, E.I.T. in the NHDOT Bureau of Highway Design indicated:

*Due to deformation in the first CMP section at the inlet, excavation will need to occur as part of the rehabilitation work for Hampstead 43275. The extents of the excavation should only be approximately 10 feet into the embankment to remove and replace one section of the CMP. Removing this section of pipe will allow more area to work and less disturbance to the pond. Access on the inlet side will be from the east (near York Rd) to accomplish the proposed inlet section replacement. I marked the approximate location for the temporary access road with a red box on the attached PDF [below]. If the preferred liner alternative is selected, a temporary access road will only need to be constructed on the inlet side.*





1892 Hurd Map



**Above Ground Review**

Known/approximate age of structure:

Based on the as built plans for project S-3187 (Fed No. S-28(4)) the existing culvert was constructed in 1957.

The existing pipe is a 42" diameter, 100' long CMP that serves as an equalizer pipe for Johnson's Pond, which is split by NH 111. The condition of the pipe is severely deteriorated and the several alternatives are being considered, though slip lining with a corrugated plastic liner and replacing the end section at the inlet is considered the preferred alternative. All work is anticipated to stay within the existing State ROW.

EMMIT was reviewed on 6/15/2021 and no historic districts or inventoried historic properties are in the project area or in near proximity to the area.

 **No Potential to Cause Effect/No Concerns**

The culvert rehabilitation actions fall under the Program Comment and the project aligns with the Section 106 Programmatic Agreement under Appendix B, Activities with Minimal Potential to Cause Effect.

Concerns:

**Below Ground Review**

Recorded Archaeological site:  Yes  No

Nearest Recorded Archaeological Site Name & Number: 27-RK-0413 Ring-Garland Homestead Site  
 Pre-Contact  Post-Contact

Distance from Project Area:  
2,516 ft southwest of the project area

 **No Potential to Cause Effect/No Concerns**

EMMIT was reviewed for archaeological resources on 6/15/2021 and there are no known recorded archaeological sites in or immediately surrounding the project area.

The 1892 Hurd map depicted no structures immediately adjacent to the culvert crossing, although north of the road along the watercourse there was a mill depicted and off the southwest quadrant a structure associated with L. Hutchins is depicted.

Based on the actions proposed, it appears activities will be associated with previously disturbed and filled areas associated with road, shoulder, and culvert construction..

Concerns:

Reviewed by:



6/15/2021

NHDOT Cultural Resources Staff

Date:



**US Army Corps  
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New England District

## Appendix B

### **Regional General Permits (GPs) Required Information and Corps Secondary Impacts Checklist**

In order for the Corps of Engineers to properly evaluate your application, applicants must submit the following information along with the New Hampshire DES Wetlands Bureau application or permit notification forms. Some projects may require more information. For a more comprehensive checklist, go to [www.nae.usace.army.mil/regulatory](http://www.nae.usace.army.mil/regulatory), “Forms/Publications” and then “Application and Plan Guideline Checklist.” Check with the Corps at (978) 318-8832 for project-specific requirements. For your convenience, this Appendix B is also attached to the State of New Hampshire DES Wetlands Bureau application and Permit by Notification forms.

#### **All Projects:**

- Corps application form ([ENG Form 4345](#)) as appropriate.
- Photographs of wetland/waterway to be impacted.
- Purpose of the project.
- Legible, reproducible black and white (no color) plans no larger than 11”x17” with bar scale. Provide locus map and plan views of the entire property.
- Typical cross-section views of all wetland and waterway fill areas and wetland replication areas.
- In navigable waters, show mean low water (MLW) and mean high water (MHW) elevations. Show the high tide line (HTL) elevations when fill is involved. In other waters, show ordinary high water (OHW) elevation.
- On each plan, show the following for the project:
- Vertical datum and the NAVD 1988 equivalent with the vertical units as U.S. feet. Don’t use local datum. In coastal waters this may be mean higher high water (MHHW), mean high water (MHW), mean low water (MLW), mean lower low water (MLLW) or other tidal datum with the vertical units as U.S. feet. MLLW and MHHW are preferred. Provide the correction factor detailing how the vertical datum (e.g., MLLW) was derived using the latest National Tidal Datum Epoch for that area, typically 1983-2001.
- Horizontal state plane coordinates in U.S. survey feet based on the Traverse Mercator Grid system for the State of New Hampshire (Zone 2800) NAD 83.
- Show project limits with existing and proposed conditions.
- Limits of any Federal Navigation Project in the vicinity of the project area and horizontal State Plane Coordinates in U.S. survey feet for the limits of the proposed work closest to the Federal Navigation Project;
- Volume, type, and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below the ordinary high water in inland waters and below the high tide line in coastal waters.
- Delineation of all waterways and wetlands on the project site,;
- Use Federal delineation methods and include Corps wetland delineation data sheets. See GC 2 and [www.nero.noaa.gov/hcd](http://www.nero.noaa.gov/hcd) for eelgrass survey guidance.
- GP 3, Moorings, contains eelgrass survey requirements for the placement of moorings.
- For activities involving discharges of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized, and either a statement describing how impacts to waters of the U.S. are to be compensated for (or a conceptual or detailed mitigation plan) or a statement explaining why compensatory mitigation should not be required for the proposed impacts. Please contact the Corps for guidance.



**US Army Corps  
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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 <a href="http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm">http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm</a> 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 <a href="https://www2.des.state.nh.us/nhb_datacheck/">https://www2.des.state.nh.us/nhb_datacheck/</a> . The book <a href="#">Natural Community Systems of New Hampshire</a> 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?	Unknown	
2.7 What is the area of the proposed fill in wetlands?	None	
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?	Unknown	
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: <a href="https://www2.des.state.nh.us/nhb_datacheck/">https://www2.des.state.nh.us/nhb_datacheck/</a> USFWS IPAC website: <a href="https://ecos.fws.gov/ipac/location/index">https://ecos.fws.gov/ipac/location/index</a>	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"> <li>• PDF: <a href="http://www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm">www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm</a>.</li> <li>• Data Mapper: <a href="http://www.granit.unh.edu">www.granit.unh.edu</a>.</li> <li>• GIS: <a href="http://www.granit.unh.edu/data/downloadfreedata/category/databycategory.html">www.granit.unh.edu/data/downloadfreedata/category/databycategory.html</a>.</li> </ul>		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?		
<b>4. Flooding/Floodplain Values</b>	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?		
<b>5. Historic/Archaeological Resources</b>		
For a minimum, minor or major impact project - a copy of the Request for Project Review (RPR) Form ( <a href="http://www.nh.gov/nhdhr/review">www.nh.gov/nhdhr/review</a> ) 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.

Photos, Highway Design 4/29/2021



Photos, Highway Design 6/4/2021







By NHDOT Highway Design 4/29/2021

**Culvert inlet**

Impact Area A & B, Wetland # 1(Pond)  
Temporary PSS1E/PEM1H, Permanent PSS1E/PEM1H for proposed headwall



By NHDOT Highway Design 6/04/2021

**Culvert inlet**

Showing voids and undermining 5 ft. into culvert



By NHDOT Bureau of Highway Design 4/09/2021

**Culvert inlet side, looking east.**

Shows both access points behind guardrail & Wetland #2, Impact Area C (PEM1B) far right



By NHDOT Bureau of Highway Design 4/09/2021

**Culvert inlet, looking upstream**



By NHDOT Bureau of Highway Design 6/04/2021

**Culvert inlet, looking upstream**



By NHDOT Bureau of Highway Design 6/04/2021

**Culvert looking upstream from outlet**



By NHDOT Bureau of Highway Design 6/04/2021

**Culvert inlet**

(stones placed/moved in recent years by unknown entity)

Impact Area D, Wetland # 3(Pond)

Temporary PSS1E/PEM1H



By NHDOT Bureau of Highway Design 6/04/2021

**Temporary Access Road to outlet**





By NHDOT Bureau of Highway Design 6/04/2021

**Culvert outlet, looking downstream**



By NHDOT Bureau of Highway Design 6/04/2021

**Beaver hut at culvert outlet, looking east**

## Hampstead 43275

### CONSTRUCTION SEQUENCE

**Dewatering basins, water diversion structures, and other temporary measures shown on the Erosion Control Plans are approximate. Type, size, and location will be as per the Contractor's approved SWPPP.**

1. District 6 to aid contractor in lowering the pond level approximately 1 – 2 ft., in half a foot intervals per/day. by removing beaver dam located on top of privately owned non-menace dam.
2. Perform any necessary clearing operations for access and staging.
3. Install perimeter sediment controls and install necessary temporary erosion controls as specified on the strategies sheet. Include all staging areas. Set up dewatering basin.
4. Stabilize construction entrances at access points from York Road / NH 111 intersection using stone over geotextile or other approved method.
5. Install water diversion at inlet and other sedimentation controls/BMP's as needed.
6. Clean water bypass shall be through the existing pipe, unless otherwise approved as part of the Contractor's SWPPP.
7. Clean and inspect existing pipe.
8. Remove approximately 10' of the existing pipe at the inlet end.
9. Construct inlet headwall and the section of pond up to subgrade.
10. Prepare existing pipe for lining, grout any voids around outside of pipe.
11. Insert pipe liner, grout annular space between liner and existing pipe.
12. Fill any sinkholes on inlet and outlet embankment slopes.
13. Construct backfill and final grading around inlet headwall, place humus and stabilize slope around headwall.
14. Place seed, mulch, and erosion control matting (where steeper than 4:1) on newly graded areas.
15. Remove water diversion, and re-establish flow through the culvert.
16. Repair any rutting on embankment slopes, remove temporary construction entrances.
17. Stabilize any remaining disturbed areas with seed, mulch, and temporary slope matting (where steeper than 4:1). Seed placed in jurisdictional wetland areas shall be a wetland seed mix.
18. Remove erosion and sediment controls once the site is stabilized.

02-08-2022

**CULVERT REHABILITATION  
NH 111 OVER JOHNSONS POND  
HAMPSTEAD, NH  
NHDOT PROJECT NO. 43275  
SUPPLEMENTAL NARRATIVE**

**Project Description**

The project will rehabilitate an existing 42" diameter corrugated pipe. The proposed design includes lining the culvert with 36" OD HDPE pipe, constructing a concrete headwall at the inlet with a fiberglass HydroBell, and constructing temporary access roads to the ends of the pipe. Approximately 10 ft. of pipe at the inlet will be removed and replaced. Access road locations will be restored to existing conditions upon completion of project. Incidental work is limited to matching the pond to the inlet headwall.

This is a federally funded culvert rehabilitation project. The proposed advertising date is April 05, 2022, with construction anticipated in summer of 2022.

This project was initiated and is funded under NHDOT's Federal Culvert Replacement/Rehabilitation & Drainage Repair (CRDR) Program. The Program purpose is to address major culvert and drainage needs statewide that are not being addressed through current or future Capital Improvement or other programmatic projects. The Program receives \$2,000,000 in total funding annually, which includes construction, engineering, and ROW costs. Projects are selected and scheduled based primarily on the condition of the culvert (risk of failure), and Road Tier, traffic volume, depth of fill, and detour length (potential impact of failure). The Program funding is fully committed for at least the next three years. This culvert is one of the highest statewide priority locations out of nearly 50 eligible for the program. Lining this culvert was attempted through Betterment in 2012 after Johnson Pond was lowered by partial removal of a stone dam by the private owner immediately downstream. Flooding of upstream neighborhoods could occur again if significant backwater develops at the inlet (more than 3 ft. submergence of inlet). Locals partially block the culvert by placing rocks and debris apparently for recreational fishing. The existing 42" CMP culvert was constructed in 1959, and it is well beyond the expected service life. Failure to address the structural deficiency and corrosion risks deformation of the culvert which would make rehabilitation impossible and/or collapse of the culvert which could cause serious impacts to public/private infrastructure and the travelling public.

**Existing Conditions**

The existing culvert is a 12 gauge 42" BCCMP as per Federal and Secondary Project S-28(4) (state S-3187). It is 99 ft. long as measured by Dept. survey in 2021. Culvert is flat. Pond elevation was approximately elevation 223.5 on 4-8-2021. There are currently no headwalls and no evidence of sink holes. The existing 42" CMP appears to have been constructed through stone retaining walls when NH 111 was widened and straightened in 1950s. Embankment fill height is about 14 ft. There are no evident sinkholes on the embankment of NH 111.

The culvert is rusted along the entire perimeter, and it has a dent at the top of the pipe near the inlet side. There may be a sag creating a slight change of slope near the center of the pipe. Based on the age and prior submergence of this culvert, related to upstream bypass flow, the culvert requires rehabilitation to avoid structural failure and long-term avoidance of upstream flooding.

The existing ROW is bounded and shown on the plans for state project S-3187. Total ROW is 150 ft, and the existing culvert is 99 ft. long.

This crossing is classified as Tier 3 based on drainage area. The Streamstats boundary delineation reports an area of 1.89 square miles (1210 acres). However, there is a second outlet for the Johnsons Pond that carries a significant percentage of the flow depending on the depth of the pond. An hydraulic analysis using 2d hydraulic methods was used to better determine the flow split. LIDAR and on the ground inspection was used for the contributing watershed area.

The culvert is in fair/poor condition with heavy rust along the entire perimeter. Sections of the invert along the “haunches” have corroded through.

NH 111 is classified as a Tier 2 Principle Arterial highway with average daily traffic volume in 2019 of 13,401 vehicles per day. NH 111 provides access for commuters to and from residential properties, industry, and retail developments as well as functioning as a major east-west corridor.

The NH 111 embankment has moderate 3:1 slopes (2.5:1 in some areas) with guard rails on both sides. The slopes are stabilized with grass and woodland and no evident sink holes. Stones of various size have been placed at the inlet and outlet by others to partially block flow. The Department has not placed stones in the pond at the inlet or outlet or anywhere else. There is aquatic vegetation along the bottom of the embankment slopes.

The culvert has been in the pond since before 1955. See Exhibit 1 archive plans for state project S-3187, Sht. 12 of 71 attached a few pages prior to this text. Note the stone retaining wall shown as existing conditions in 1955.

NHDOT Maintenance District 6 reports no history of flooding at Johnsons Pond. However, an inter-agency study, initiated after flooding occurred along the path of a second discharge from the pond, identified beaver activity and a private dam that had increased water surfaces in Johnsons Pond. Partial dam removal was carried out in 2011-2012, and the private owner has frequently removed beaver dam material as part of ongoing maintenance. The existing conditions allow the pond to be maintained at the current elevation (approximately 223.5 ft.) that appears to be in harmony with the beaver colony.

FEMA completed a study by detailed methods along the second outlet. The second outlet leads to a channel that conveys flows through town culverts, including a recently constructed (2010) eight-foot diameter half embedded concrete culvert with headwalls at Marylyn Park Drive. It is possible that engineers who completed the isolated detailed methods hydraulic study may not have been aware of the 42” CMP culvert under NH 111. The culvert may have been submerged at the time of the study.

## **Natural and Cultural Resources**

### **Threatened and Endangered Species:**

There is one Federal and State listed endangered or threatened species in the project area: the Northern Long Eared Bat (NLEB). USFWS has verified that this project may rely on the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat. The project has a may affect but is not likely to adversely affect the NLEB and no further consultation is needed.

### **NHFG Coordination**

NHFG does not anticipate the proposed sliplining will significantly impact aquatic movement under NH Route 111 as long as it remains effectively 'backwatered' throughout the year.

NHFG states that the existing 100 ft. length may pose a psychological barrier to some species currently such as adult Blanding's turtles.

NHFG recommends that the use of welded plastic or 'biodegradable plastic' netting or thread (e.g. polypropylene) in erosion control matting are avoided.

**Cultural Resources:** The proposed work was reviewed by the Department's Cultural Resources Program and was found to be consistent with the Section 106 Programmatic Agreement (Section 106 PA) among the FHWA, the New Hampshire State Historic Preservation Office, the Advisory Council on Historic Preservation and the Department. The existing culvert is eligible for review under the Program Comment for Post-1945 Bridges and Culverts and is therefore considered to be non-historic. As such, the proposed work has been determined to have no potential to cause effects to historical resources under Appendix B of the Section 106 PA.

**Wetlands:** All impacts to wetlands are temporary and have been minimized.

**Water Quality:** It is anticipated that the project will not result in a negative impact on water quality in the project area and therefore, no permanent stormwater treatment is proposed. A NPDES Discharge General Permit may be required if dewatering within the stream is required. Best Management practices will be utilized to prevent and reduce the likelihood of erosion or sediment entering the wetlands system. See the included erosion control plans for more details regarding BMPs.

**Prime Wetlands, Designated Rivers, Shoreland Water Quality Protection Act:** There are no prime wetlands in the vicinity of the project area and the project is not located within the protected corridor of any designated rivers. The project is not located near any waterbodies protected by the NH Shoreland Water Quality Protection Act.

**Floodplains:** Johnsons Pond is not within a FEMA floodway or floodplain detailed study.

**Invasive Species:** The Contractor will be required to perform all work activities in accordance with the Department publication "Best Management Practices for the Control of Invasive and Noxious Plant Species" in order to prevent the spread of invasive species to the site during construction.

Contamination: No point source or PFAS concerns were identified with the proposed project. Limited Reuse Soils (LRS) excavated from within the operational State right-of-way shall be addressed in accordance with applicable NHDES rules, waivers, and/or Soils Management Plans.

Wildlife Action Plan: Supporting landscape exists in the areas at the culvert inlet and outlet. The project area is identified as a wildlife corridor on Nature Conservancy's Connect the Coast map. At the June & November 2021 Natural Resource Agency Meetings, Pete Steckler of the Nature Conservancy expressed a need to evaluate the corridor through Johnsons Pond. Any substantial changes to the hydraulics of Johnson Pond need to be done simultaneously with the Wellington Drive crossing.

Conservation Land: These lands are identified within the GIS layers available from several data viewers. No conservation land is directly adjacent to the Johnsons Pond culvert. However, other parcels of significance are pertinent to any long term conservation plans.

NHDES Aquatic Restoration Mapper: There is a wealth of information available regarding conservation lands downstream of Wellington Drive (SADES ID 3,489) and upstream of Sherry Lane. Indeed, there is connectivity that bypasses Johnsons Pond Dam, and the reach between Sherry Lane – Marilyn Park Drive and NH 111 was studied by FEMA with detailed methods. There appears to be some erroneous information regarding contributing watershed area along the secondary outlet of Upper Johnsons. The significance of accurate information here is especially important for 100 yr. type events.

Conservation Commission: The Town of Hampstead Conservation Commission was contacted.

### **Hydrology/Hydraulics:**

#### Alternatives:

Replacement with a compliant span structure: Excavation of the NH 111 embankment would be 15 ft. deep and traffic management for the primary arterial would be significant in terms of interruption to commerce and commuters. The shortest length that would be proposed is 90 ft. which would shorten the culvert on both sides and grade to the existing 3:1 slopes (guard rail exists on both sides of NH 111). The compliant clear span is uncertain as it is difficult to determine a location for an appropriate reference reach. Should funds be found for a box it is more likely to be a hydraulically sized box culvert rather than a bridge. Therefore, an 8' x 4' span embedded box would first be proposed as an alternative design. Excavation of the roadway would be 18 ft. deep for footings, 20 ft. wide, and 100 ft. long. A sheet pile cofferdam would be used to support the portion of roadway open to traffic and significant temporary widening would be required on both sides of the roadway to accommodate the phased construction. Potentially historic stone retaining walls buried under NH 111 might require cultural resource coordination/study. The current construction cost estimate for this option is \$2,384,706 when considering traffic management for 13,400 vehicles per day. This estimate is more than the annual allocation for the entire CRDR program. Impacts, delay in construction, and risk would be significant. Securing funding and additional design time for this option would require a delay in the start of construction of 3 – 5 years. A delay of this magnitude would significantly increase the risk of deformation or failure of the existing pipe and potential sinkholes developing in the

deep embankment fill. Change of recreational use of the Johnsons Pond would be necessary. More importantly, the town culvert under Wellington Drive would also need to be upsized to a similar sized precast concrete rigid frame or box culvert to avoid flooding a home and overtopping the town road. Cost estimates below do not include the Wellington Drive structure or any further upgrades of structures under NH 121 or at the outlet of Hog Hill Pond.

**The cost estimate for the fully compliant option is as follows:**

Removal of existing 42" CMP & old stone retaining walls	\$ 10,000
Concrete Rigid Frame (3-sided) – 27' clear pavement width, 18' span, 0° skew Includes headwalls, wings, bridge curb & rail, excavation and backfill	\$1,133,000
Structure Incidentals (water diversion, cofferdams, simulated streambed, etc.)	\$ 193,130
<b>Structure Sub-Total</b>	<b>\$1,326,130</b>
NH 111 Reconstruction (200 LF x 28' wide)	\$ 18,088
Guardrail (including terminal units and incidentals, excluding bridge rail)	\$ 17,600
Construct and Remove Temporary Widening, Inlet and Outlet (12' wide x 400')	\$ 70,000
Temporary Concrete Barrier and temporary end units (600LF + 2 end units)	\$ 30,000
Temporary Signals, 4 Units (Including 4 side roads)	\$ 40,000
Temporary Access Road to Inlet	\$ 10,000
Temporary Access Road to Outlet	\$ 10,000
<b>Roadway Sub-Total</b>	<b>\$ 195,688</b>
Humus, Seed, Mulch (approx. 1 acre)	\$ 48,400
Invasive Species Management Plan	\$ 3,000
Project Operations Plan (for LRS)	\$ 2,500
Field Office, Type C – 1 Season	\$ 27,500
<b>Item Sub-Total</b>	<b>\$1,603,218</b>
Erosion Control (5% of Sub-Total)	\$ 80,160
Traffic Control (5% of Sub-Total)	\$ 80,160
Misc. Items and Contingency (15% of Sub-Total)	\$ 240,483
<b>Contract Sub-Total</b>	<b>\$2,004,022</b>
Mobilization (10% of Contract Sub-Total)	\$ 200,402
Fuel & Asphalt Adjustments (fixed amount based on Contract Sub-Total)	\$ 40,000
Construction Administration and Inspection (6% of Contract Sub-Total)	\$ 301,849
<b>Construction Total</b>	<b>\$2,384,706</b>

The existing 42" CMP is small and past its service life, so a few rehabilitation options are immediately off the table. These include shotcrete due to the 42" diameter & a corrugated metal pipe liner due to the loss in cross section area without reducing the roughness. There are spiral

corrugated liners, such as Contech “Ultra Flow” that incorporate lower roughness with corrugations. However, these metal products are not the best solution for culverts located in ponds, or for culverts this small.

Cured in Place (CIPP) liner: This option would reduce the open area less than HDPE rehabilitation options. However, joining an improved inlet to the pipe would not be as simple as the preferred alternative. The corrugations for such a small pipe in fair to poor condition would largely be filled-in with a CIPP liner type. Dewatering for a dry invert required for the CIPP method would be an added construction cost and risk to successful construction. The CIPP option would have less service life than the preferred alternative. It offers no significant hydraulic advantages or ecological services over the preferred alternative.

The proposed rehabilitation is intended to accomplish a timely structural repair for a culvert that is entirely rusted and over 60 years old. The proposed design balances the effects on capacity, velocity, and flooding of properties both upstream and downstream.

#### Proposed Design:

The Alternative Design will have pipe capacity and type for similar hydraulic performance as the downstream town culvert under Wellington Drive. However, unlike the town culvert, both sides of the Johnsons Pond culvert tie into ponds with average depths of 4 ft. The NH 111 culvert is flat to lower discharge velocity and equalize pond elevations whereas the Wellington Drive culvert has a slope of 0.0291 ft/ft to help avoid overtopping the road and flooding a residential garage. The invert of the liner will be flat to help reduce velocity at high flows and increase the depth of water during normal sunny day conditions. Offset vinyl welded baffles could be used to lower AOP velocity without a complete vertical barrier (baffles only extend part way across the pipe) Finally, headwater will increase slowly due to the extensive wetland floodplain storage that equalizes across both sections of Johnsons Pond. The chosen liner type and improved inlet will take advantage of higher capacity when most needed at this culvert location.

The proposed design will remove a portion of the damaged inlet end, temporarily shortening the culvert by about 10', and constructing a more hydraulically efficient headwall with wing walls at the inlet. The proposed culvert will be 97 ft. long, or 3 ft. shorter than the existing culvert. The headwall will closely match the existing embankment slopes such that only minimal re-grading will be required. Any sinkholes on the embankment slopes identified during excavation of the inlet will be filled, seeded, and mulched to reestablish the embankment and grass cover.

Hydraulic analysis for the proposed 34.784" circular liner with a headwall that incorporates an improved inlet indicates a capacity of 56 cfs at headwater elevation equal to the Department Standard of 1.5 x Dia. (EL 226.15). Although this calculated capacity is well below the peak runoff for the entire Tier 3 watershed, the culvert calculations are good predictors for performance curves and hydraulic parameters that don't include storage. HydroCAD was compared with the results of 2d hydraulic modelling to arrive at the 50 yr. design. This analysis does use the significant amount of upstream floodplain storage as well as the flow split in upper Johnsons Pond based on the best available topography and hydraulic mesh.

The flow split from Johnsons Pond will more or less equally distribute between the two outlets once the upper pond elevation reaches elevation 225. This balance will remain until the pond



reaches elevation 229.5 (above the 100 yr. event) and Sherry Lane begins to overtop. The width of overtopping is approximately 114 ft. based on LIDAR contours. An overtopping depth of 0.3 ft. at Sherry Lane would convey an additional 49 cfs toward the newer Marilyn Park Drive culvert whereas an overtopping depth of 0.5 ft. would convey an additional 105 cfs over Sherry Lane in addition to the flow through the 36” RCP under Sherry Lane.

The alternative design intent is to maximize flow capacity through the proposed HDPE liner under NH 111 without overtopping Wellington Drive or flooding the garage adjacent to the town culvert. While at the same time balancing the flow between the two outlets of upper Johnsons Pond when the upper pond water surface exceeds ~ elevation 224.61 (inlet of Sherry Lane 36” CMP). Hydraulic calculations that account for pond storage show that the headwater at the NH 111 culvert should be between 226.0 – 226.5 for the design peak flow of 127 cfs depending on the water elevation of lower Johnsons Pond. It is important to note that the culvert outlet velocity and therefore capacity depends on the elevation of both sides of the pond. Additionally, during peak runoff the upper pond elevation will rise faster than the lower pond elevation at which time the culvert will switch from outlet control (controlled by the lower pond) to inlet control when the advantage of the HydroBell is significant for the 50 yr. design event. Sherry Lane has overtopped (~ elev. 229.5) but not since the pond was lowered to ~ elev. 223 through implementation of the inter-agency study in 2011-2012.

**Hydraulic Summary Table:**

Pre & Post	Headwater	Q (cfs)	Outlet Velocity	Tailwater (pond EL)
EX	225.09	37 (2.33 yr)	7.06	223.5
PR	225.25	37	7.77	223.5
EX	226.37	127 (50 yr)	9.55	224
PR (HydroBell)	226.46		11.06	224
EX	229.4	146 (100 yr)	10.42-11.40	225
PR	229.4		11.25-12.85	225

Note: The culvert velocity is dependent on the pond elevation. During peak flows it is anticipated that the proposed culvert will perform in inlet control for periods of higher runoff. The energy will quickly dissipate in the still waters of the pond. Outlet velocities will be lower should the tailwater pond elevations be higher due to downstream beaver activity and/or capacity of the dam spillway.

**The cost estimate for the proposed alternative design is as follows:**

36” OD HDPE liner, grout, HydroBell, dam owner coordination	\$ 40,338
Includes headwall w/ wings excavation, backfill	
Structure Incidentals (water diversion, cofferdams, simulated streambed, etc.)	\$ 151,745
<b>Structure Sub-Total</b>	<b>\$ 192,083</b>
Temporary Access Road to Inlet	\$ 12,000
Temporary Access Road to Outlet	\$ 12,000
Mobilization	
<b>Roadway Sub-Total</b>	<b>\$ 216,083</b>

Invasive Species Management Plan	\$ 3,000
Project Operations Plan (for LRS)	\$ 2,500
<b>Item Sub-Total</b>	<b>\$ 221,583</b>
Erosion Control (5% of Sub-Total)	\$ 11,079
Traffic Control (5% of Sub-Total)	\$ 11,079
Misc. Items and Contingency (15% of Sub-Total)	\$ 33,237
<b>Contract Sub-Total</b>	<b>\$ 276,978</b>
Mobilization (10% of Contract Sub-Total)	\$ 27,697
Fuel & inflation adjustments	\$ 5,000
Construction Administration and Inspection (6% of Contract Sub-Total)	\$ 16,619
<b>Construction Total</b>	<b>\$ 326,294</b>

Construction and Access Considerations:

Dewatering will begin by lowering Johnson’s Pond in 0.5 ft increments / day. Lowering the pond by 1.5 – 2 ft. is anticipated. This work will be carried out by NHDOT District 6 or the contractor with land owner and Dam Bureau approval.

Access to the culvert inlet and outlet will be from the edges of NH 111 from behind the guard rails. Slopes are modest (3:1) maintained grass and smaller saplings, so no special access concerns are expected. Where necessary and as directed by the NHDOT Engineer, stone over geotextile or other temporary stabilization methods will be used for stabilized construction entrances and to avoid excessive rutting and potential erosion of the roadway embankment.

Minimal clearing of trees greater than 3” dbh will be required. No clearing at the inlet is anticipated. Approximately 144 SF of clearing at the outlet is estimated for the small trees and brush. No grubbing / removal of stumps is anticipated. The vegetation will be allowed to reestablish naturally. Any disturbed jurisdictional areas will be stabilized using wetland seed mix, mulch, and wildlife friendly temporary erosion control matting (where slopes are steeper than 4:1).

Stream flow can be allowed to flow through or be pumped through the existing pipe for most of the project duration and during storm events. In most cases, pipe liners can be installed and grouted with a small amount of flow in the culvert. The Contractor’s water diversion plan will address specific means and methods for managing water.

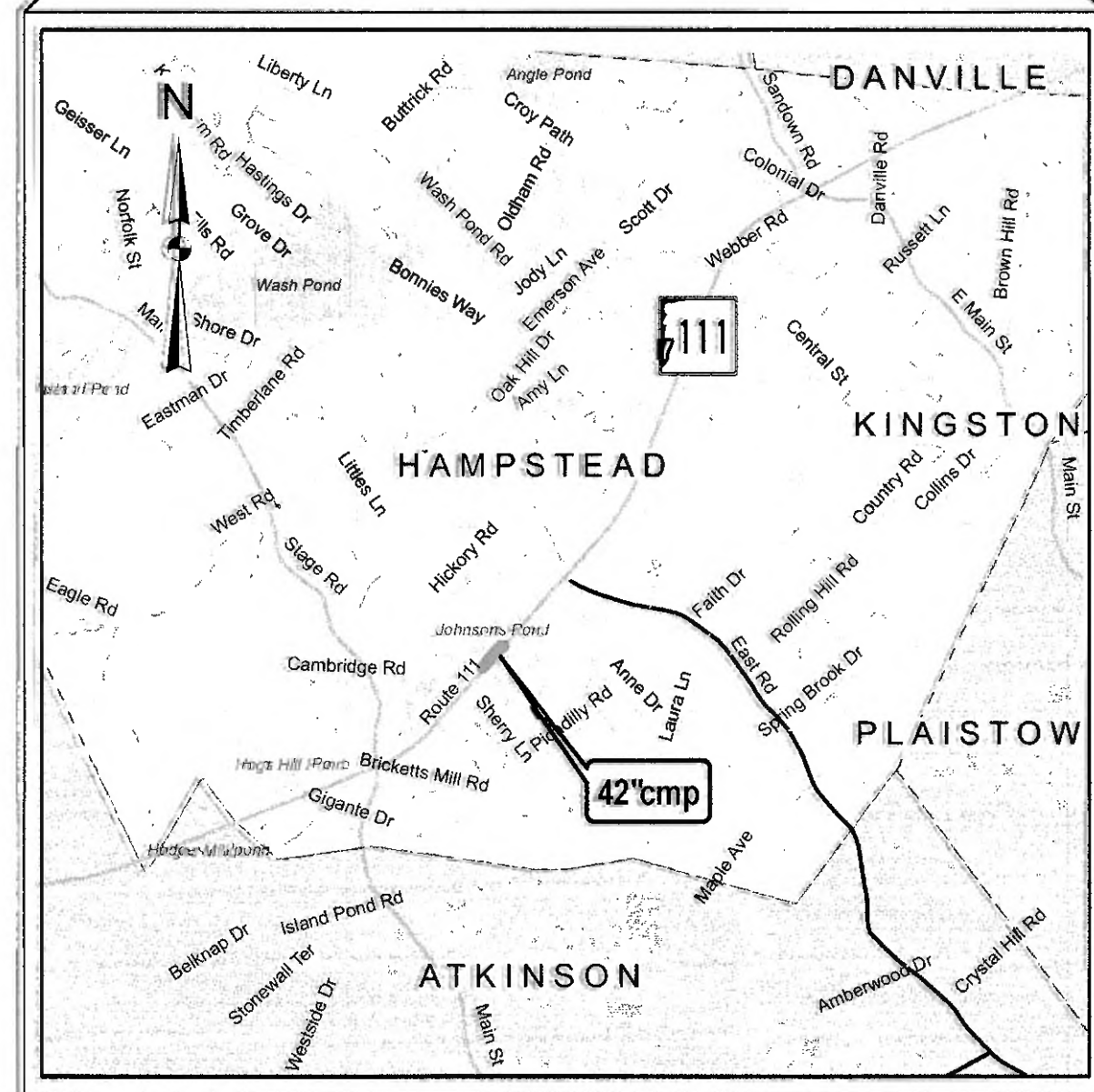
Summary:

The proposed work would meet the requirements of Env-Wt. 904.09(b) and Env-Wt. 904 Alternative Design in that no increase in flood stages on adjacent property should occur as a result this one-time repair of an existing Tier 3 crossings, under part(b) which includes sliplining. The provision of “no history of flooding” is related to this culvert in that the capacity will

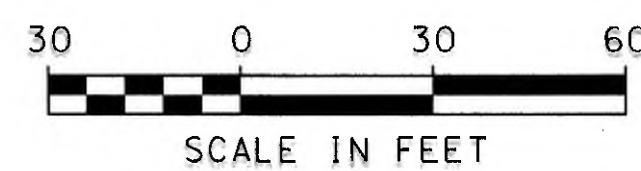
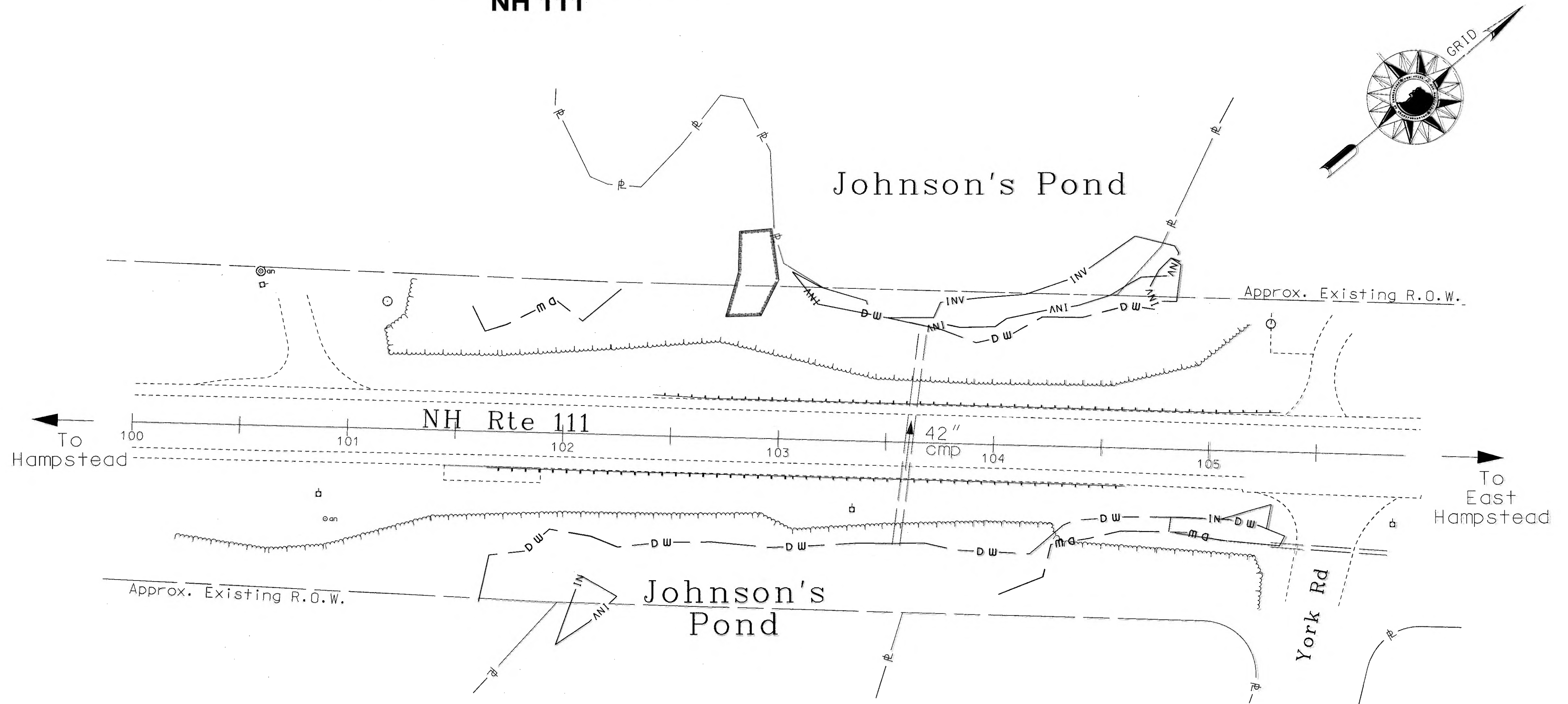
STATE OF NEW HAMPSHIRE  
 DEPARTMENT OF TRANSPORTATION  
**WETLANDS PLANS**  
**FEDERAL AID PROJECT**

X-A005(067)I  
 N.H. PROJECT NO. 43275  
 NH 111

DESIGN DATA	
AVERAGE DAILY TRAFFIC 2019	13,401
AVERAGE DAILY TRAFFIC 20N/A	N/A
PERCENT OF TRUCKS	N/A
DESIGN SPEED	N/A
LENGTH OF PROJECT	100' (culvert)



LOCATION MAP



**TOWN OF HAMPSTEAD**  
 COUNTY OF ROCKINGHAM  
 SCALE: 1" = 30'

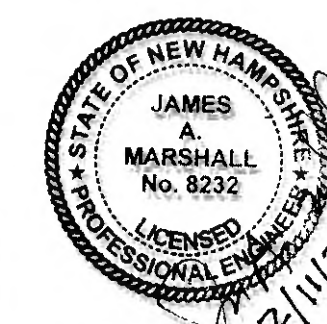
FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

INDEX OF SHEETS

- 1 FRONT SHEET
- 2-3 STANDARD SYMBOLS SHEETS
- 4 WETLAND IMPACT PLAN
- 5 PROFILES
- 6 EROSION CONTROL STRATEGIES
- 7 EROSION CONTROL PLAN
- 8 DRAINAGE DETAILS

DATE 01/05/21  
 DATE 02/11/22  
 DRAWN BY GRR  
 CHECKED BY TSM

Per Wetland Plans  
 Rule(s) Env-Wt 311.05  
 For Engineering



**NH DOT** THE STATE OF  
 NEW HAMPSHIRE  
 DEPARTMENT OF  
 TRANSPORTATION

Wetland Delineation per ENV-Wt 406 by:  
 Cove Environmental Services, Inc. (Brendan Quigley)  
 on 10/01/2021 and 10/08/2021

PLANS PREPARED BY:  
 Timothy S. Mallette, PE  
 DATE: Feb. 11, 2022

DRAWING NAME	FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
43275fsw	X-A005(067)I	43275	1	8

# GENERAL

EDGE OF PAVEMENT TRAVELED WAY			
DRIVEWAYS			
BUILDINGS			
LEACH FIELD			
BRIDGE CROSSINGS			
INTERMITTENT WATER COURSE			
POTENTIAL WET AREA SYMBOL			
BRUSH OR WOODS LINE			
TREES (PLANS)			
TREE OR STUMP (CROSS-SECTIONS)			
HEDGE			
MONITORING WELL			
WELL			
FLAG POLE			

ORIGINAL GROUND (TYPICALS)		ROCK OUTCROP	
ROCK LINE (TYPICALS & SECTIONS ONLY)		GUARDRAIL (label type)	
JERSEY BARRIER		CURB (LABEL TYPE)	
STONE WALL		RETAINING WALL (LABEL TYPE)	
FENCE (LABEL TYPE)		SIGNS	
GAS PUMP		FUEL TANK (ABOVE GROUND)	
STORAGE TANK FILLER CAP		SEPTIC TANK	
GRAVE		MAILBOX	
VENT PIPE		SATELLITE DISH ANTENNA	
PHONE		GROUND LIGHT/LAMP POST	
BORING LOCATION		TEST PIT	
INTERSTATE NUMBERED HIGHWAY		UNITED STATES NUMBERED HIGHWAY	
STATE NUMBERED HIGHWAY			

# SHORELAND - WETLAND

WETLAND DESIGNATION AND TYPE	
DELINEATED WETLAND	
ORDINARY HIGH WATER	
TOP OF BANK	
TOP OF BANK & ORDINARY HIGH WATER	
NORMAL HIGH WATER	
WIDTH AT BANK FULL	
PRIME WETLAND	
PRIME WETLAND 100' BUFFER	
NON-JURISDICTIONAL DRAINAGE AREA	
COWARDIN DISTINCTION LINE	
TIDAL BUFFER ZONE	
DEVELOPED TIDAL BUFFER ZONE	
HIGHEST OBSERVABLE TIDE LINE	
MEAN HIGH WATER	
MEAN LOW WATER	
VERNAL POOL	
SPECIAL AQUATIC SITE	
REFERENCE LINE	
WATER FRONT BUFFER	
NATURAL WOODLAND BUFFER	
PROTECTED SHORELAND	
INVASIVE SPECIES LABEL	
INVASIVE SPECIES	

# FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY	
100 YEAR FLOODPLAIN BOUNDARY	
FLOODWAY	

# ENGINEERING

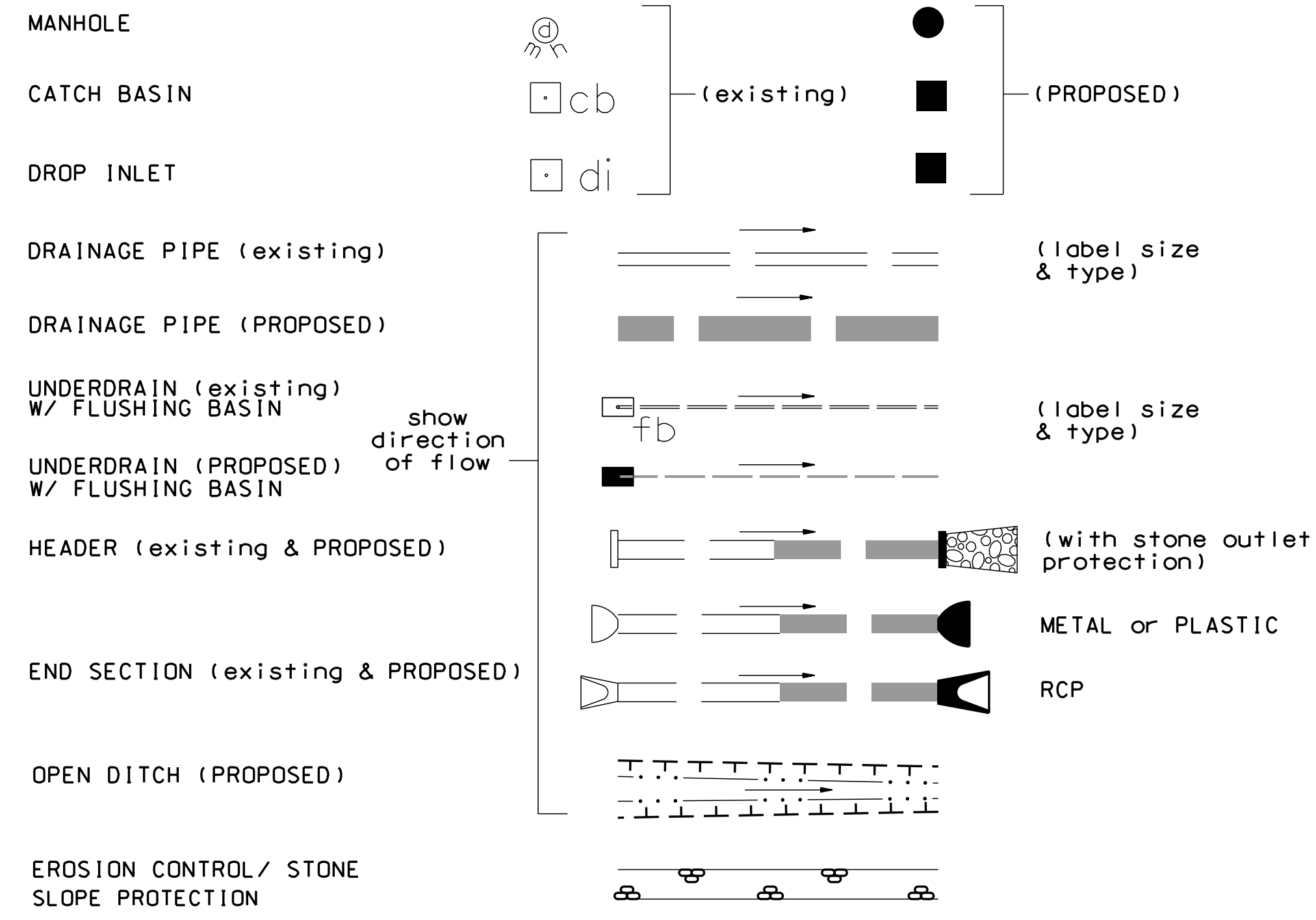
CONSTRUCTION BASELINE	
PC, PT, POT (ON CONST BASELINE)	
PI (IN CONSTRUCTION BASELINES)	
INTERSECTION OR EQUATION OF TWO LINES	
ORIGINAL GROUND LINE (PROFILES AND CROSS-SECTIONS)	
PROFILE GRADE LINE (PROFILES AND CROSS-SECTIONS)	
CLEARING LINE	
SLOPE LINE	
SLOPE LINE (FILL)	
SLOPE LINE (CUT)	
PROFILES AND CROSS SECTIONS:	
ORIGINAL GROUND ELEVATION (LEFT)	
FINISHED GRADE ELEVATION (RIGHT)	

STATE OF NEW HAMPSHIRE  
HAMPSTEAD  
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

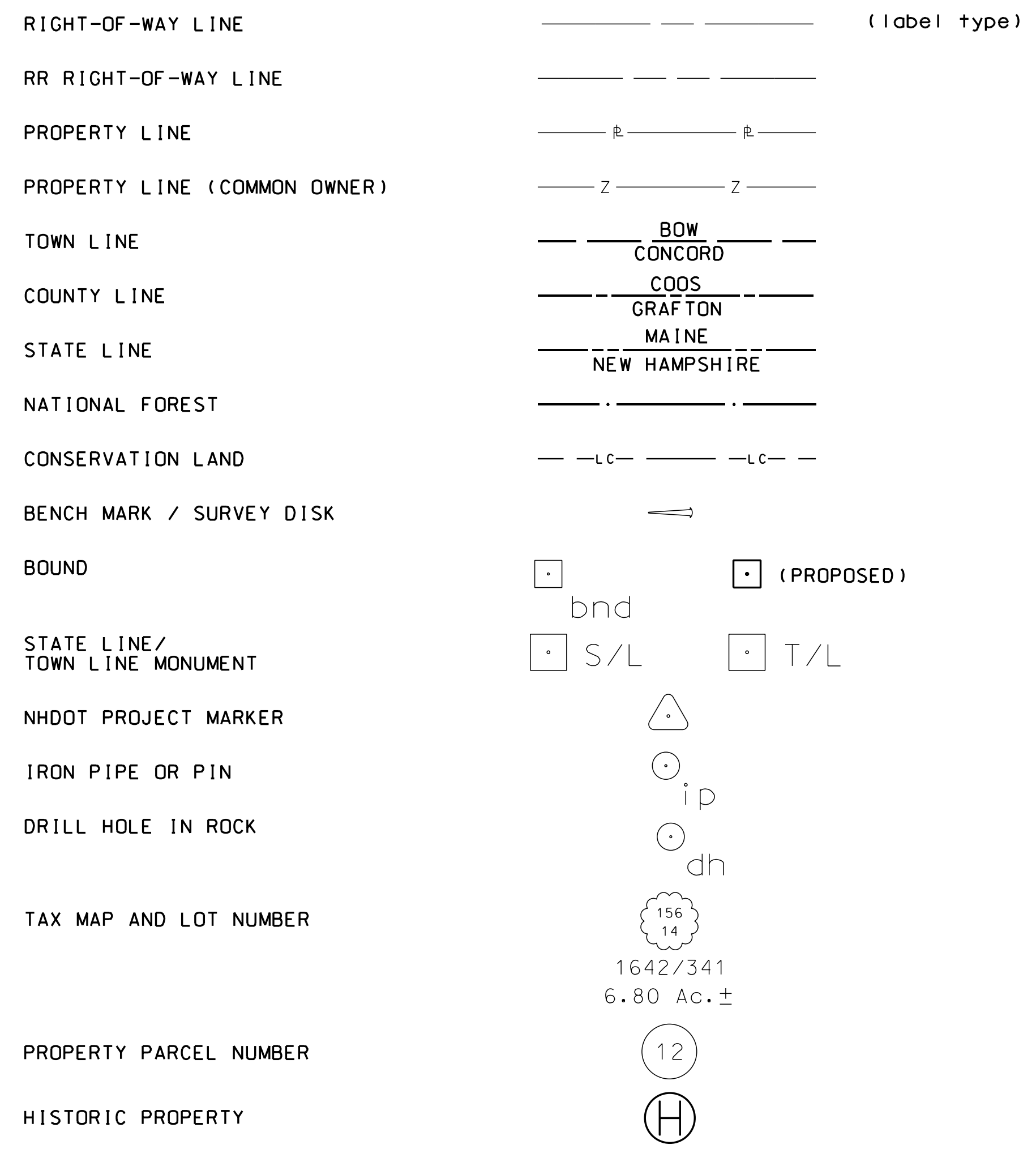
## STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	stdsyml-2	43275	2	8

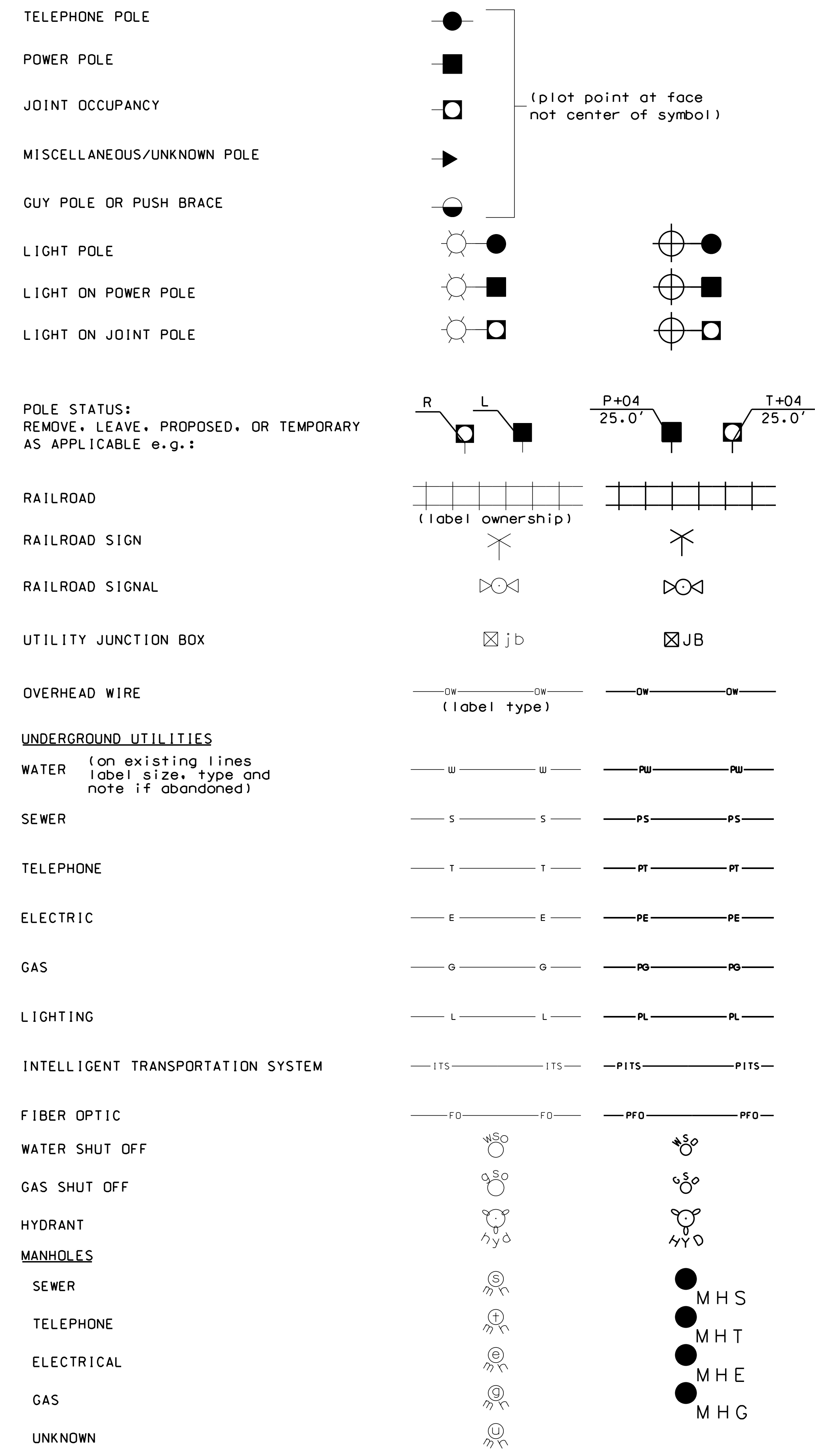
## DRAINAGE



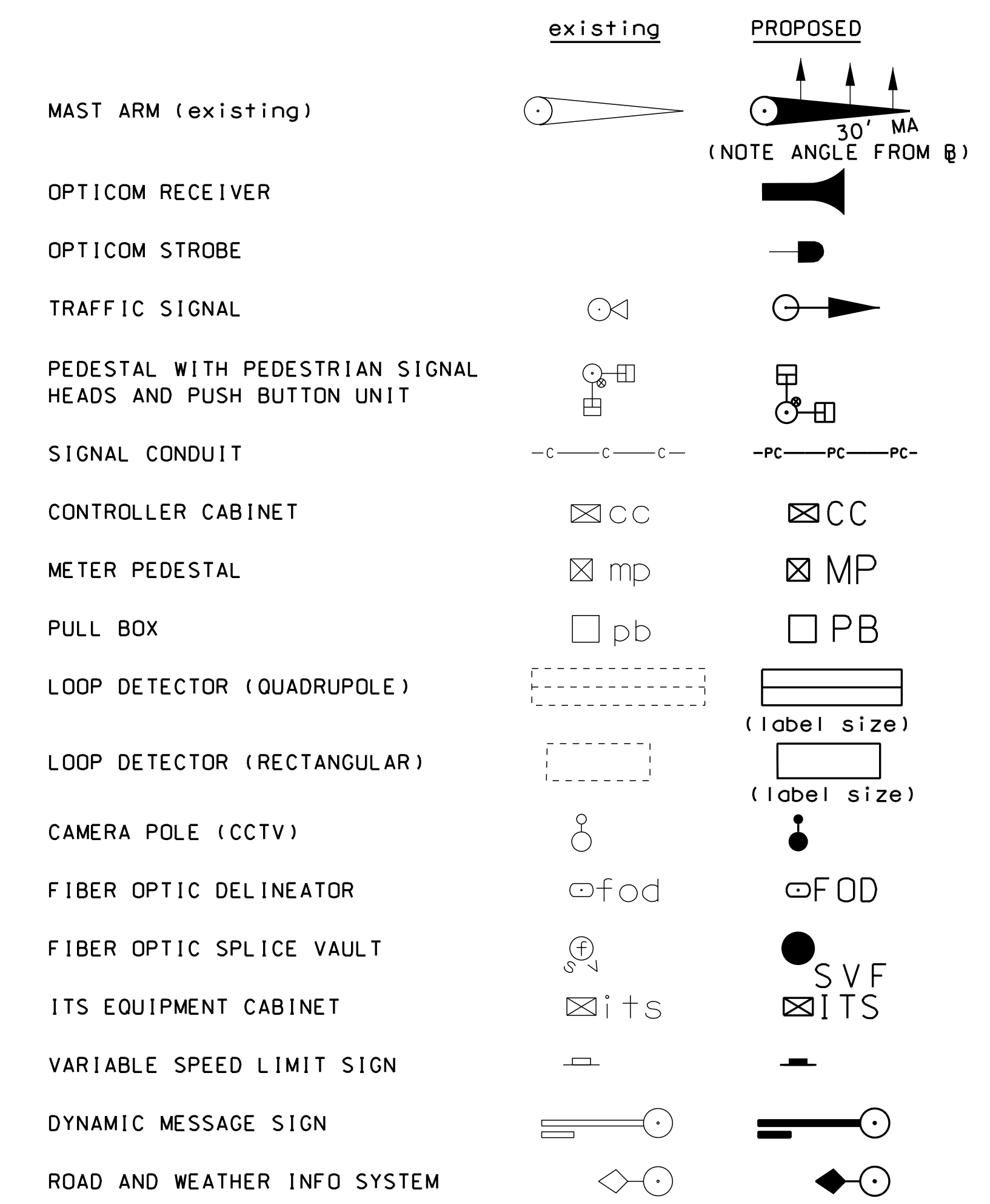
## BOUNDARIES / RIGHT-OF-WAY



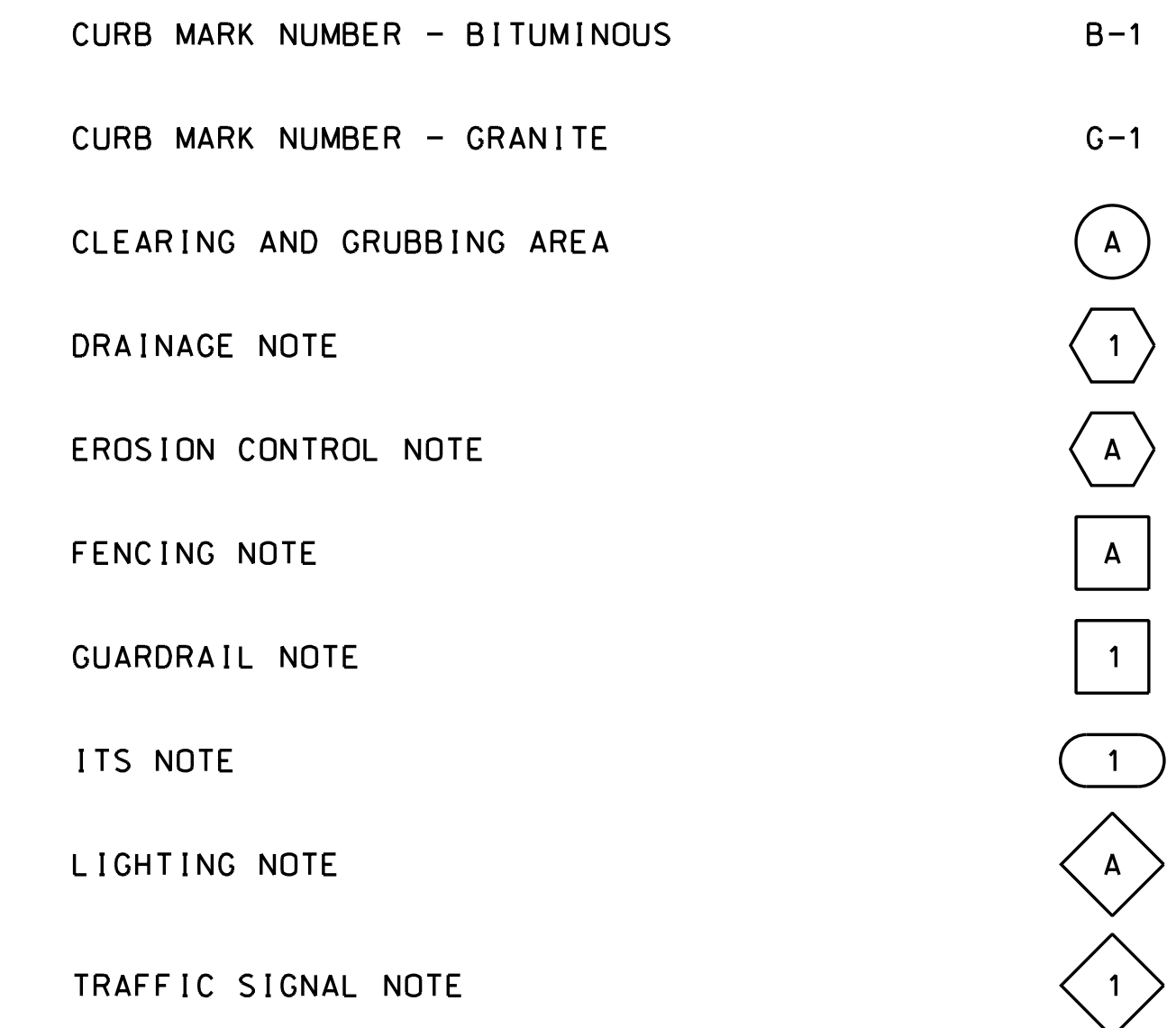
## UTILITIES



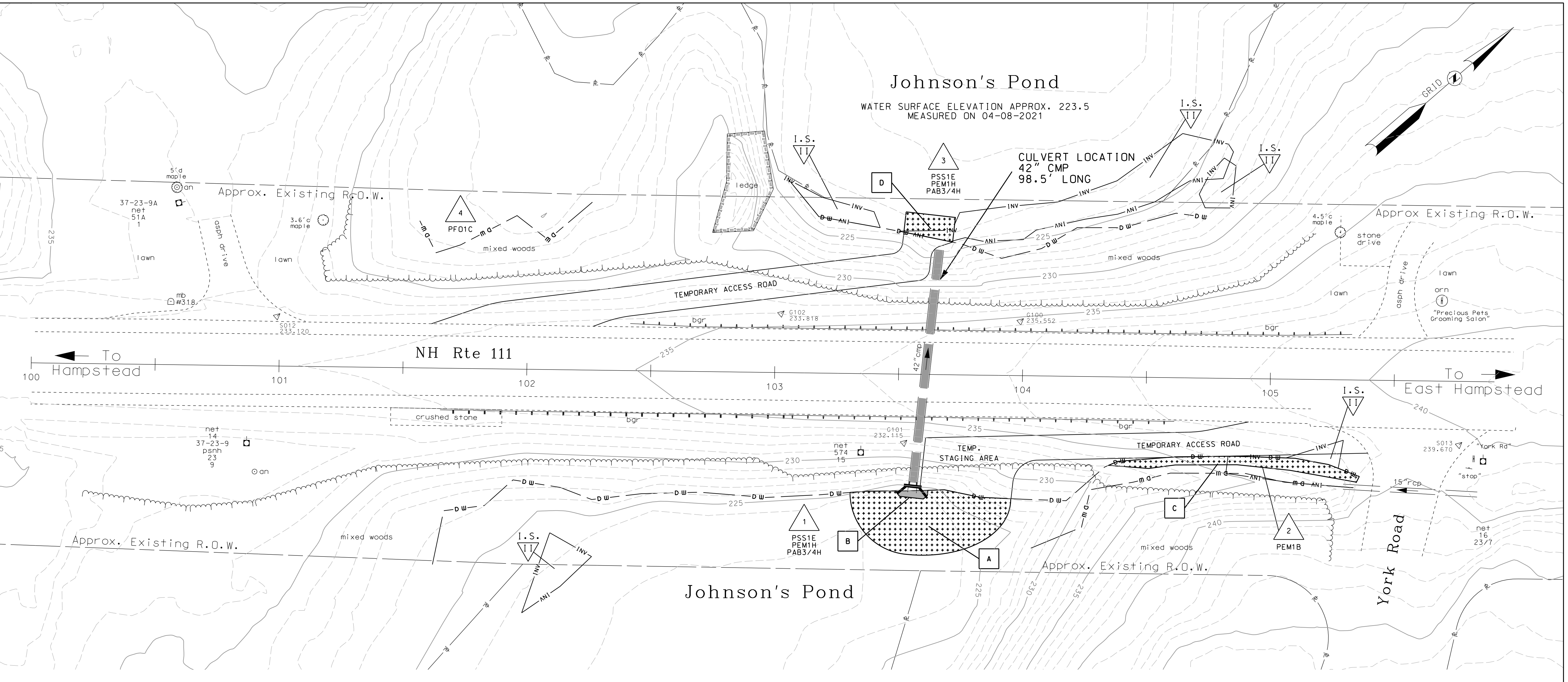
## TRAFFIC SIGNALS / ITS



## CONSTRUCTION NOTES



REVISIONS AFTER PROPOSAL	DESCRIPTION
STATION	
STATION	
DATE	
NUMBER	
SEL	DATE
GR	DATE
TSM	DATE
AS BUILT DETAILS	DATE



WETLAND IMPACT SUMMARY												
WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA IMPACTS					LINEAR STREAM IMPACTS FOR MITIGATION				
			PERMANENT					PERMANENT				
			N.H.W.B. (NON-WETLAND)		N.H.W.B. & A.C.O.E. (WETLAND)		TEMPORARY		BANK LEFT	BANK RIGHT	CHANNEL	
SF	LF	SF	LF	SF	LF	LF	LF	LF				
1	PSS1E/PEM1H	A							1291			
1	PSS1E/PEM1H	B			34							
2	PEM1B	C							377			
3	PSS1E/PEM1H	D							182			
<b>TOTAL</b>					<b>34</b>				<b>1850</b>			

PERMANENT IMPACTS: 34 SF  
 TEMPORARY IMPACTS: 1850 SF  
 TOTAL IMPACTS: 1884 SF

WETLAND CLASSIFICATION CODES	
PSS1E	PALUSTRINE, SCRUB-SHRUB, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
PEM1H	PALUSTRINE, EMERGENT, PERSISTENT, PERMANENTLY FLOODED
PAB3/4H	PALUSTRINE, AQUATIC BED, ROOTED/FLOATING VASCULAR, PERMANENTLY FLOODED
PEM1B	PALUSTRINE, EMERGENT, PERSISTENT, SEASONALLY SATURATED
PF01C	PALUSTRINE, FORESTED, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED

- NOTES:**
- WETLANDS DELINEATED BY GOVE ENVIRONMENTAL SERVICES, INC. IN OCTOBER 2021.
  - THE VERTICAL DATUM IS NAVD88.
  - ROW AND PROPERTY LINES ARE SHOWN APPROXIMATE FROM ASSESSORS PARCEL DATA.



LEGEND	
TYPE OF WETLAND IMPACT	SHADING/HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	
	WETLAND DESIGNATION NUMBER
	WETLAND IMPACT LOCATION
	WETLAND MITIGATION AREA
	MITIGATION

STATE OF NEW HAMPSHIRE HAMPSTEAD			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>WETLAND IMPACT PLAN</b>			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
43275wetplan	43275	4	8



# 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 30<sup>th</sup> AND MAY 1<sup>st</sup> 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 15<sup>th</sup>, OR WHICH ARE DISTURBED AFTER OCTOBER 15<sup>th</sup>, 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 15<sup>th</sup>, OR WHICH ARE DISTURBED AFTER OCTOBER 15<sup>th</sup>, SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
    - (C) AFTER NOVEMBER 30<sup>th</sup> 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 30<sup>th</sup>.

## 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 1<sup>st</sup> THROUGH NOVEMBER 30<sup>th</sup>, 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 SEEDED 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 <sup>2</sup>				ROLLED EROSION CONTROL BLANKETS <sup>3</sup>			
	HMT	WC	SG	CB	HM	SMM	BFM	FRM	SNSB	DNSB	DNSCB	DNCB
SLOPES <sup>1</sup>												
STEEPER THAN 2:1	NO	NO	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES
2:1 SLOPE	YES <sup>1</sup>	YES <sup>1</sup>	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

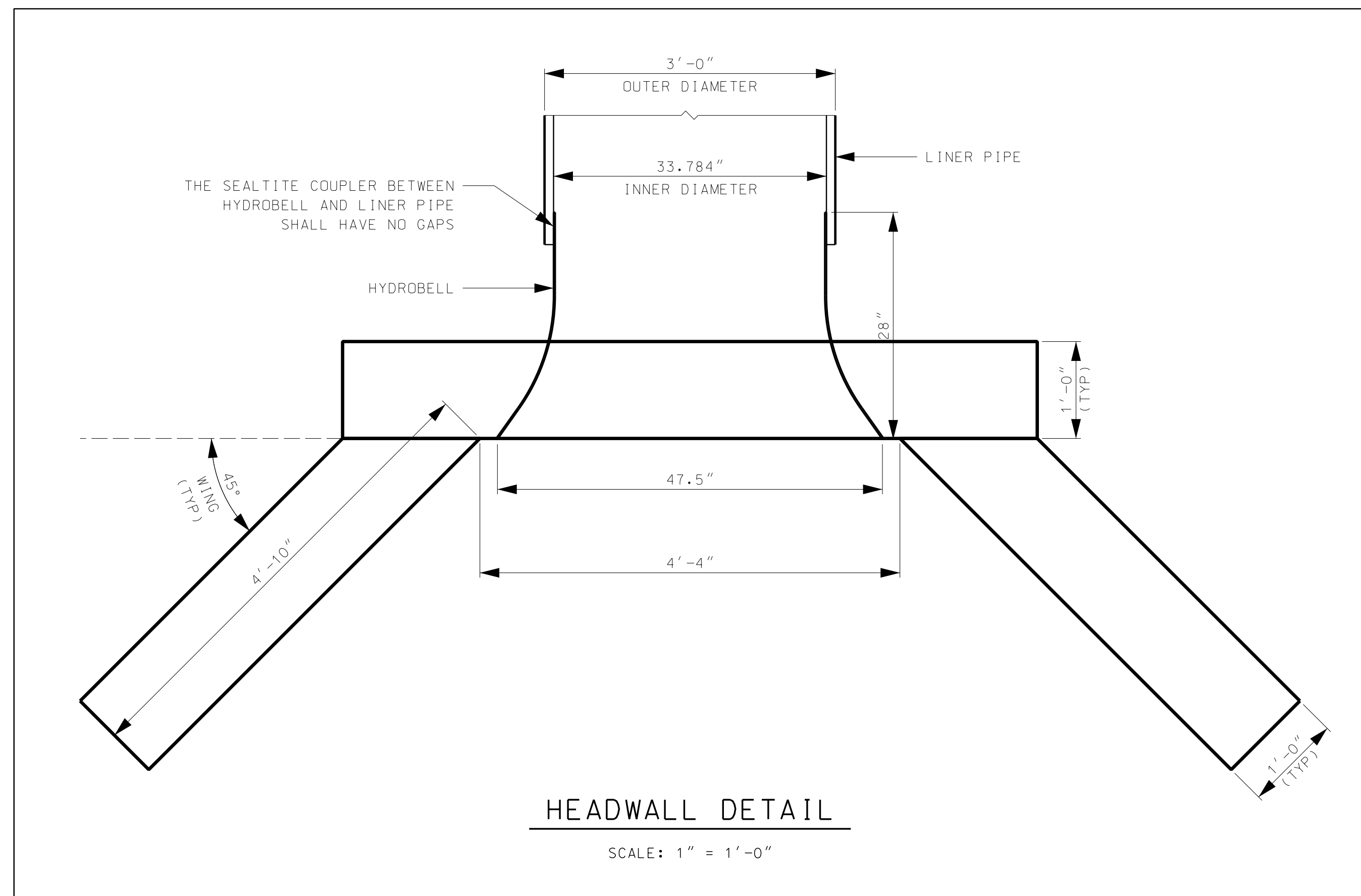
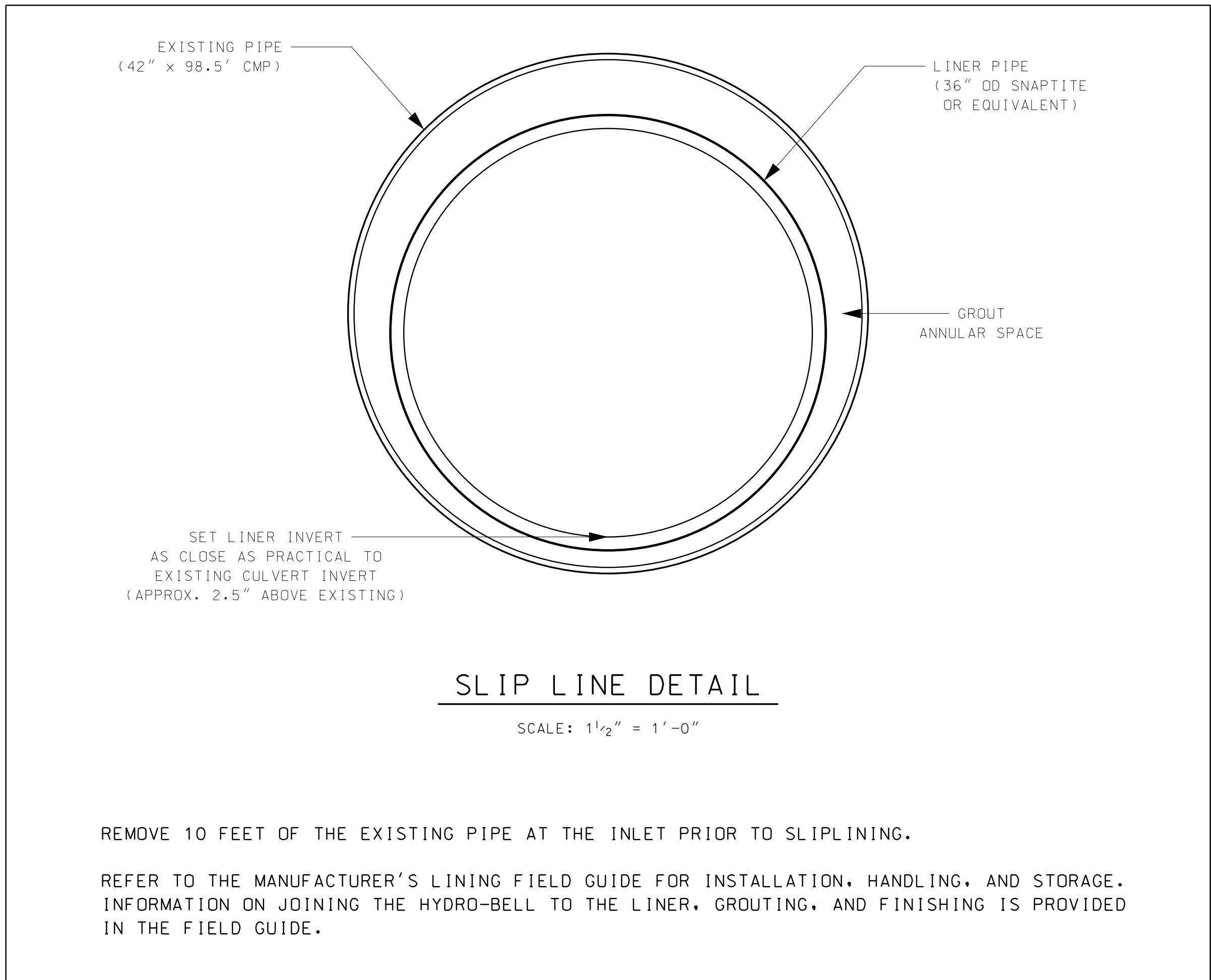
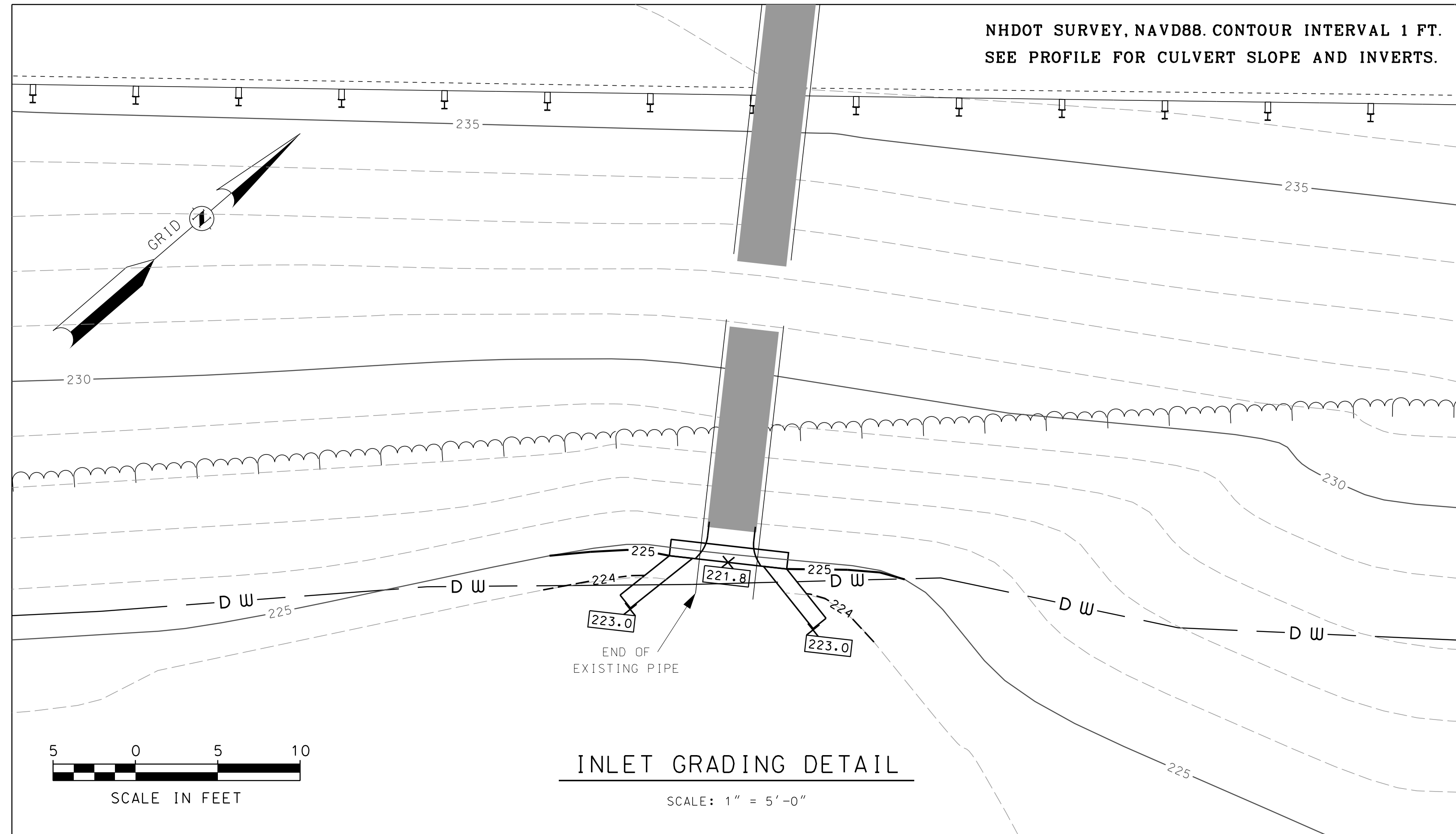
- NOTES:
1. ALL SLOPE STABILIZATION OPTIONS ASSUME A SLOPE LENGTH  $\leq 10$  TIMES THE HORIZONTAL DISTANCE COMPONENT OF THE SLOPE, IN FEET.
  2. PRODUCTS CONTAINING POLYACRYLAMIDE (PAM) SHALL NOT BE APPLIED DIRECTLY TO OR WITHIN 100 FEET OF ANY SURFACE WATER WITHOUT PRIOR WRITTEN APPROVAL FROM THE NH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

STATE OF NEW HAMPSHIRE HAMPSTEAD				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
<i>WETLAND IMPACT PLANS</i>				
REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	erosstrat	43275	6	8





REVISIONS AFTER PROPOSAL		STATION	DESCRIPTION
NO.	DATE		
1	5/2021		
2	1/2022		
3	2/7/22		
AS BUILT DETAILS			
SEL	DATE		
GRR	DATE		
TSM	DATE		
SDR PROCESSED	DATE		
NEW DESIGN	DATE		
SHEET CHECKED	DATE		



SIMILAR INSTALLATION

STATE OF NEW HAMPSHIRE HAMPSTEAD			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<b>DRAINAGE DETAILS</b>			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
43275d+101	43275	8	8