STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: May 23, 2022

FROM: Joshua Brown
Wetlands Program Analyst

AT (OFFICE): Department of Transportation
Bureau of Environment

SUBJECT Dredge & Fill Application
Statewide (Landaff), 41915A

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 Bridge Design for the subject major impact project. The project is located along Millbrook Road in the Town of Landaff, NH. The proposed work consists of streambank and streambed stabilization measures at the Millbrook Road crossing over Mill Brook in Landaff, NH to address existing scour issues, to prevent future scouring or undermining of the crossing, and, where feasible, to improve aquatic organism passage through the crossing.

This project was reviewed at the Natural Resource Agency Coordination Meeting on October 15, 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 David Scott, Bureau of Bridge Maintenance (271-1613 or David.L.Scott@dot.nh.gov) or Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment (271-3226 or Andrew.O'Sullivan@dot.nh.gov).

A payment voucher has been processed for this application (Voucher #683394) in the amount of $1,352.40.

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 Landaff (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)
Beth Alafat & 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)

S:\Environment\PROJECTS\STATEWIDE\41915A\Wetlands\Wetland Applications\41915A-4 (Landaff)\Application Submission Documents\WETAPP - Coverletter.doc

Bridge 079/156 – Millbrook Road over Mill Brook
Landaff, NH

NH Department of Transportation (NHDOT)
Statewide Bridge Scour Stabilization Project
Federal Project Number: X-A004(779)
NHDOT Project Number: 41915

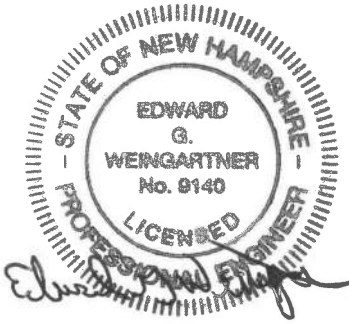
New Hampshire Department of Environmental Services

Wetlands Bureau Permit Application

Hoyle, Tanner Project Numbers: 092592.01 & 092590.18

Prepared By:

HOYLE TANNER



5/2/2022

May 2022

HOYLE TANNER

Trusted Experts | Innovative Results

May 2, 2022

D.E.S. Wetlands Bureau
P.O. Box 95
Concord, NH 03302-0095

Re: Wetlands Permit Application
NHDOT Statewide Scour Stabilization No. 41915
Bridge 079/156 – Millbrook Road over Mill Brook
Landaff, NH
Hoyle, Tanner Project Nos. 092592.01 & 092590.18

Dear Sir/Madam:

The NH Department of Transportation (NHDOT) Statewide #41915 Project involves stabilization efforts to address scour issues and prevent additional scouring or undermining of the existing crossing, and, where feasible, increase aquatic organism passage through the crossing.

Millbrook Road over Mill Brook is located in Landaff, NH. The 30-foot span concrete arch bridge is experiencing bank erosion along the upstream northeast wingwall. A gabion retaining wall system will be placed along the northeast bank for a length of approximately 12 feet, upstream of the crossing, to stabilize the bank and prevent future loss of adjacent land and functionallity.

There will be permanent and temporary resource impacts as a result of the project. All areas of temporary disturbance will be re-vegetated upon work completion. A filing fee of $1,346.40 is included with the package. The current schedule is to commence construction in the spring of 2023 and complete construction by fall 2023.

If you require any additional information, please feel free to contact me at your convenience.

Very truly yours,
HOYLE, TANNER & ASSOCIATES, INC.

Kimberly R. Peace
Senior Environmental Coordinator

TABLE OF CONTENTS

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: NH Department of Transportation / David L. Scott, PE **TOWN NAME:** Landaff

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

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

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

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

Has the required planning been completed?	☒ Yes ☐ No
Does the property contain a PRA? If yes, provide the following information:	☐ Yes ☒ No
• Does the project qualify for an Impact Classification Adjustment (e.g. NH Fish and Game Department (NHF&G) and NHB agreement for a classification downgrade) or a Project-Type Exception (e.g. Maintenance or Statutory Permit-by-Notification (SPN) project)? See Env-Wt 407.02 and Env-Wt 407.04.	☐ Yes ☒ No

• Protected species or habitat?
  ○ If yes, species or habitat name(s):
  ○ NHB Project ID #: NHB22-1025
	☐ Yes ☒ No

• Bog?	☐ Yes ☒ No
• Floodplain wetland contiguous to a tier 3 or higher watercourse?	☐ Yes ☒ No
• Designated prime wetland or duly-established 100-foot buffer?	☐ Yes ☒ No
• Sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone?	☐ Yes ☒ No
Is the property within a Designated River corridor? If yes, provide the following information: • Name of Local River Management Advisory Committee (LAC): • A copy of the application was sent to the LAC on Month: Day: Year:	☐ Yes ☒ No

For dredging projects, is the subject property contaminated? • If yes, list contaminant:	☐ Yes ☒ No
Is there potential to impact impaired waters, class A waters, or outstanding resource waters?	☐ Yes ☒ No
For stream crossing projects, provide watershed size (see WPPT or Stream Stats):	

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 NH Department of Transportation (NHDOT) is proposing streambank and streambed stabilization measures at the Millbrook Road crossing over Mill Brook in Landaff, NH to address existing scour issues, to prevent future scouring or undermining of the crossing, and, where feasible, to improve aquatic organism passage through the crossing.

Millbrook Road over Mill Brook is located in Landaff, NH. The 30-foot span concrete arch bridge is experiencing bank erosion along the upstream northeast wingwall. A gabion retaining wall system will be placed from the wingwall along the bank for a length of approximately 12 feet upstream to stabilize the bank. Concrete Class T, Foundation Seal will be placed on bedrock to provide a level bearing surface for the gabion retaining wall system.

The proposed project would result in a total of 3,358 square feet and 194 linear feet of temporary wetland impact and 23 square feet and 14 linear feet of permanent wetland impact. Temporary impacts are associated with space for the installation of water diversion structures and other erosion control best management practices as well as vegetation clearing at the southern extent of a construction access road from the north to the inlet of the crossing. Permanent impacts are associated with the placement of the proposed gabion retaining wall system and associated foundation seal, which will provide a level bearing surface for the wall on the exposed bedrock. Temporary bank impact areas that include soil disturbance and vegetation removal will be restored via installation of plantings.

SECTION 3 - PROJECT LOCATION

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

ADDRESS: Millbrook Road

TOWN/CITY: Landaff

TAX MAP/BLOCK/LOT/UNIT: NHDOT ROW Adjacent to Map 15, Lot 912

US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: Mill Brook
☐ N/A

(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places): 44.110860° North / -71.550796° West

SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 311.04(a))

If the applicant is a trust or a company, then complete with the trust or company information.

NAME: NH Department of Transportation / David L. Scott, PE

MAILING ADDRESS: P.O. Box 483, 7 Haven Drive

TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03302

EMAIL ADDRESS: david.l.scott@dot.nh.gov

FAX: (603) 271-2759	PHONE: (603) 271-2731

ELECTRONIC COMMUNICATION: By initialing here:- DLS , I hereby authorize NHDES to communicate all matters relative to this application electronically.

SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c))

☐ N/A

LAST NAME, FIRST NAME, M.I.: Peace, Kimberly R.		
COMPANY NAME: Hoyle, Tanner & Associates, Inc.		
MAILING ADDRESS: 150 Dow Street		
TOWN/CITY: Manchester	STATE: NH	ZIP CODE: 03101
EMAIL ADDRESS: kpeace@hoyletanner.com		
FAX: 603-669-4168	PHONE: (603) 460-5205	

ELECTRONIC COMMUNICATION: By initialing here KRP, I hereby authorize NHDES to communicate all matters relative to this application electronically.

SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b))

If the owner is a trust or a company, then complete with the trust or company information.

☒ Same as applicant

NAME:		
MAILING ADDRESS:		
TOWN/CITY:	STATE:	ZIP CODE:
EMAIL ADDRESS:		
FAX:	PHONE:	

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

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

Describe how the resource-specific criteria have been met for each chapter listed above (please attach information about stream crossings, coastal resources, prime wetlands, or non-tidal wetlands and surface waters):

In accordance with Env-Wt 400 the jurisdictional areas within the project limits have been delineated by Stoney Ridge Environmental, LLC. A copy of the Wetland Delineation and Invasive Species Report is included with this application. The jurisdictional areas are referenced on the included wetland impact plan.

The project has been designed in accordance with, Env-Wt 514.02, Env-Wt 514.03, Env-Wt 514.04, Env-Wt 514.05, and 514.06. Project-specific information is contained within this permit application.

SECTION 8 - AVOIDANCE AND MINIMIZATION

The Avoidance and Minimization Checklist is attached to this permit application.

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: Day: Year:

(☒ N/A - Mitigation is not required) – See Supplemental Narratvie for Details

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) Per Env-Wt 313.04(a)(1), (2), and (3)(a) mitigation is not required for the proposed project because: there will be no permanent impact to a PRA, the total project impacts are less than 10,000 SF of non-tidal wetlands, and the project is limited to bank stabilization using riprap, bio-engineering methods, or other bank stabilization techniques to protect existing infrastructure such as highways, bridges, dams, or buildings. Therefore, no compensatory mitigation is being proposed for the project.

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/rivers, 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			☐	15		☐
	Scrub-shrub Wetland			☐			☐
	Emergent Wetland			☐			☐
	Wet Meadow			☐			☐
	Vernal Pool			☐			☐
	Designated Prime Wetland			☐			☐
	Duly-established 100-foot Prime Wetland Buffer			☐			☐
Surface Water	Intermittent / Ephemeral Stream			☐			☐
	Perennial Stream or River			☐	2,464	73	☐
	Lake / Pond			☐			☐
	Docking - Lake / Pond			☐			☐
	Docking - River			☐			☐
Banks	Bank - Intermittent Stream			☐			☐
	Bank - Perennial Stream / River	23	14	☐	879	121	☐
	Bank / Shoreline - Lake / Pond			☐			☐
Tidal	Tidal Waters			☐			☐
	Tidal Marsh			☐			☐
	Sand Dune			☐			☐
	Undeveloped Tidal Buffer Zone (TBZ)			☐			☐
	Previously-developed TBZ			☐			☐
	Docking - Tidal Water			☐			☐
TOTAL		**23**	**14**		**3,358**	**194**	

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):	3,381 SF	× $0.40 =	$ 1,352.40
Seasonal docking structure:	SF	× $2.00 =	$
Permanent docking structure:	SF	× $4.00 =	$
Projects proposing shoreline structures (including docks) add $400 =			$
Total =			$ 1,352.40
The application fee for minor or major impact is the above calculated total or $400, whichever is greater =			$ 1,352.40

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:	To the best of the signer's knowledge and belief, all required notifications have been provided.
Initials:	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:	The signer understands that: • The submission of false, incomplete, or misleading information constitutes grounds for NHDES to: 1. Deny the application. 2. Revoke any approval that is granted based on the information. 3. If the signer is a certified wetland scientist, licensed surveyor, or professional engineer licensed to practice in New Hampshire, refer the matter to the joint board of licensure and certification established by RSA 310-A:1. • The signer is subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641. • The signature shall constitute authorization for the municipal conservation commission and the Department to inspect the site of the proposed project, except for minimum impact forestry SPN projects and minimum impact trail projects, where the signature shall authorize only the Department to inspect the site pursuant to RSA 482-A:6, II.
Initials: N/A	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.

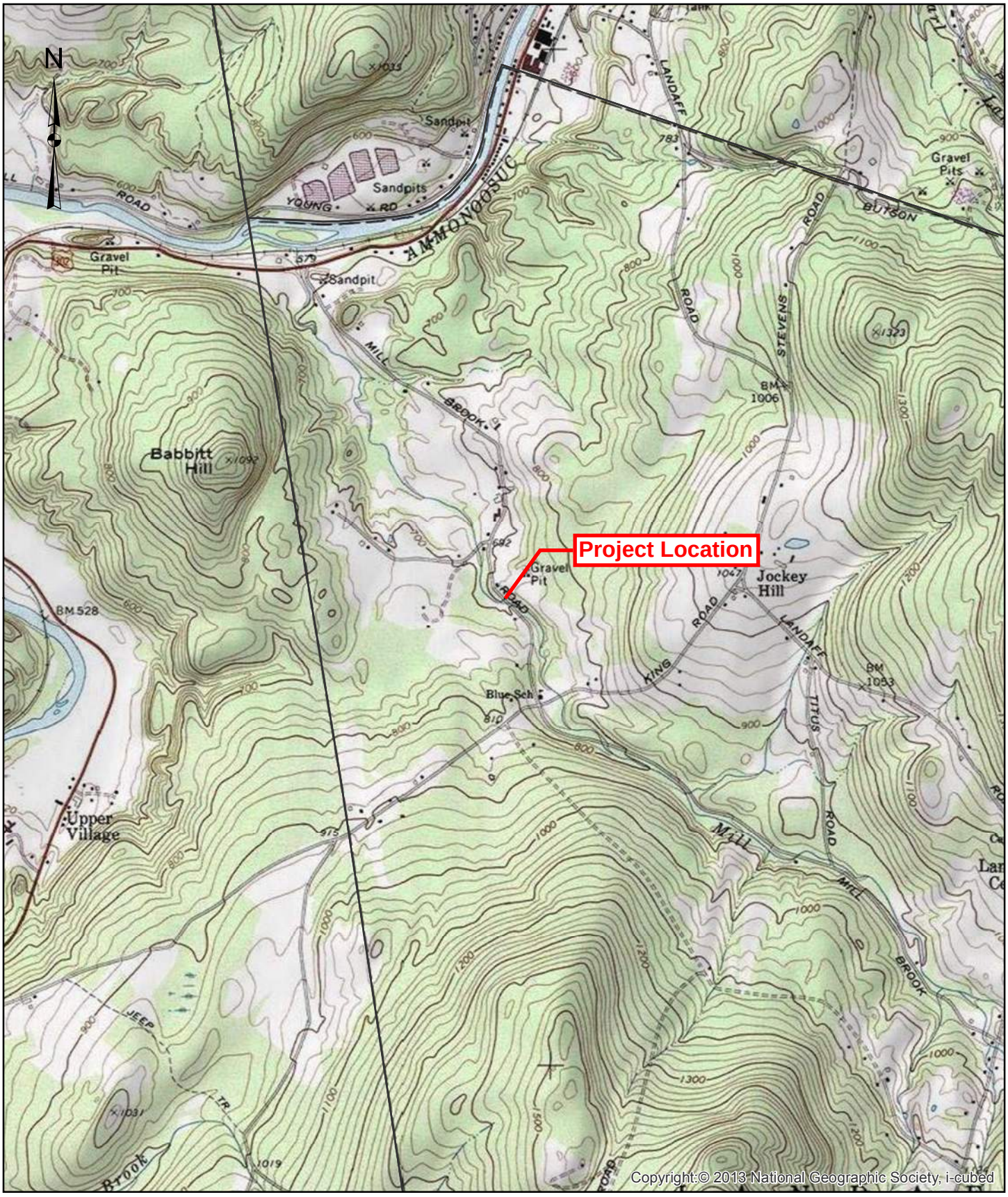
SECTION 15 - REQUIRED SIGNATURES (Env-Wt 311.04(d); Env-Wt 311.11)		
SIGNATURE (OWNER): David L Scott	PRINT NAME LEGIBLY: David L. Scott	DATE: May 18, 2022
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (AGENT, IF APPLICABLE): Kimberly Peace	PRINT NAME LEGIBLY: Kimberly Peace	DATE: 5/2/2022

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: Please refer to Env-wt 311.05(a)(14) & RSA 482-A:3I(a)(1) The four (4) town copies have been sent via certified mail and filed directly with the town in accordance with the above rule and regulation.
TOWN/CITY:	DATE:

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”.



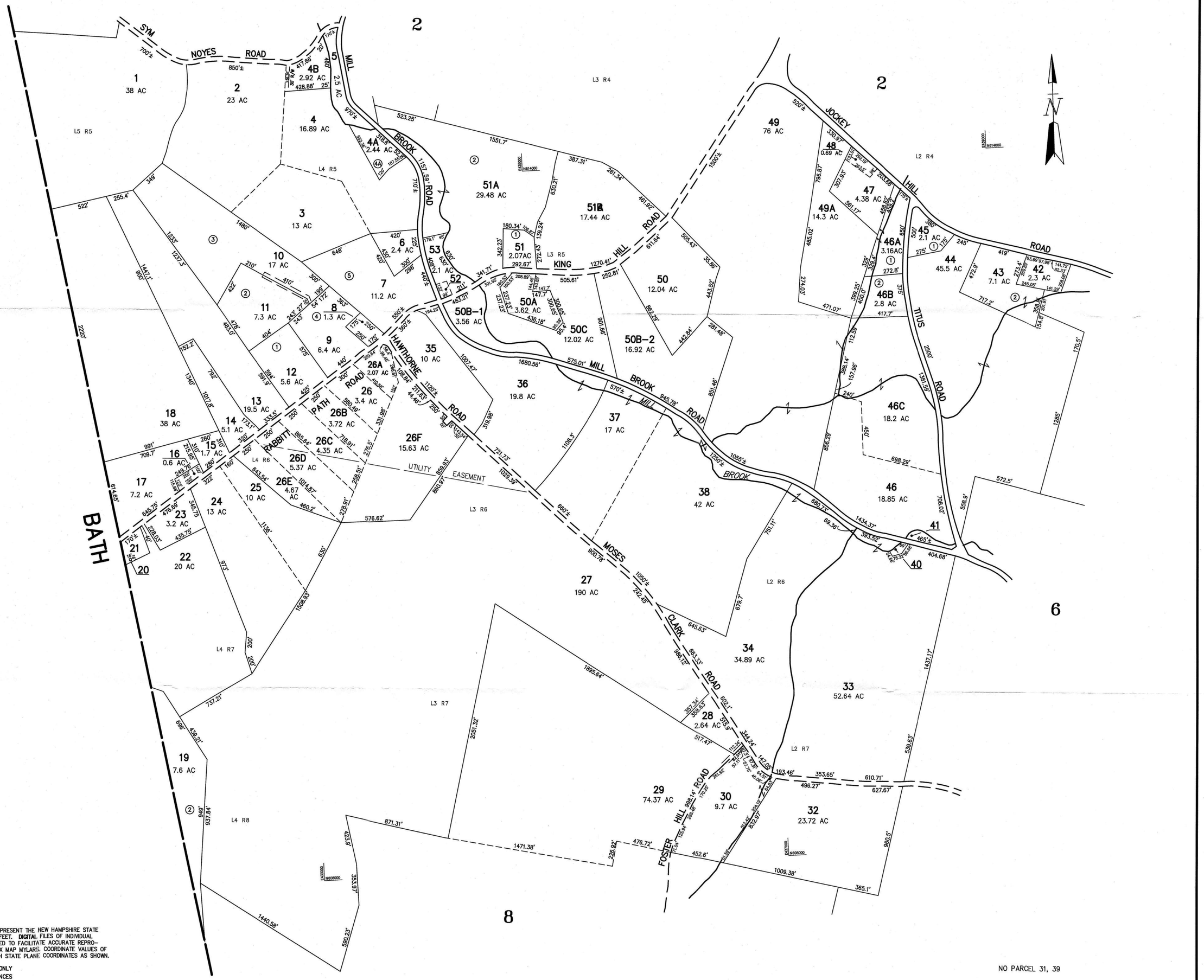
Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page www.hoyletanner.com

NHDOT 41915 SCOUR STABILIZATION PROJECT
LANDAFF BRIDGE 079-156
MILL BROOK ROAD OVER MILL BROOK

PROJECT LOCATION MAP

MAP 3

DR. BY	DATE	SCALE
jtheriault	9/5/2019	1 inch = 2,000 feet



GRID COORDINATES SHOWN REPRESENT THE NEW HAMPSHIRE STATE PLANE COORDINATES, NAD27 FEET. DIGITAL FILES OF INDIVIDUAL TAX MAPS HAVE BEEN ROTATED TO FACILITATE ACCURATE REPRODUCTION OF THE ORIGINAL TAX MAP MYLARS. COORDINATE VALUES OF DIGITAL FILES WILL NOT MATCH STATE PLANE COORDINATES AS SHOWN.

FOR ASSESSMENT PURPOSES ONLY
NOT FOR PROPERTY CONVEYANCES

NO PARCEL 31, 39

PREPARED BY PHOTOGRAMMETRIC METHODS BY

JOHN E. O'DONNELL & ASSOCIATES
AUBURN, MAINE
1979

LEGEND

ADJACENT SHEET NO.	12 OR 2
COMMON OWNERSHIP	
DEVELOPMENT LOT NO.	②
SCALED DIMENSION	±

PROPERTY MAP

LANDAFF

NEW HAMPSHIRE

REVISED & REPRINTED BY

CAI Technologies
Precision Mapping. Geospatial Solutions.
11 PLEASANT STREET, LITTLETON, NH 03561
800.322.4540 - WWW.CAI-TECH.COM

SCALE IN FEET
0 400 800

CURRENT TO APRIL 1, 2019

7

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 Department of Transportation / David L. Scott, PE **TOWN NAME:** Landaff

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.

Streambed and bank impacts have been minimized to the extent practicable while meeting the project purpose and need of repairing existing scour damage and preventing additional undermining of the structure in the future. Due to Mill Brook's maximum velocities of 14.3 cubic feet per second (CFS) during the 50-year design storm, as detailed in the attached hydraulic analysis, soft or bioengineered bank materials within the limits of ordinary high water would wash downstream, leaving an exposed bank and footings vulnerable to further scour damage. The proposed project includes installation of gabion retaining wall system from the northeast upstream wingwall along the bank for a length of approximately 12 feet to stabilize the bank. Concrete Class T, Foundation Seal will be placed on bedrock to provide a level bearing surface for the gabion retaining wall system. Temporary bank impact areas that include soil disturbance and vegetation removal will be restored via installation of plantings.

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.

N/A – this project is not located within tidal waters or marshes.

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 proposed scour protection work will improve and restore connectivity and provide a protective erosive surface that will be strong enough to withstand the high flow forces that occur during storm events. The proposed gabion retaining wall system will be placed from the wingwall along the northeast upstream bank for a length of approximately 12 feet upstream to stabilize the bank while maintaining the existing natural streambed.

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.

Impacts to the jurisdictional bank and bed of Mill Brook are necessary to protect the undermined structure and prevent additional scour, but these impacts and have been minimized to the extent practicable. There are no exemplary natural communities, vernal pools, protected species or protected habitat, or documented fisheries. The NHDES Wetlands Permit Planning Tool shows the proposed project area as cold water fisheries habitat; coordination with NHF&G is ongoing at the time of application development. Temporary bank impact areas that include soil disturbance and vegetation removal will be restored via installation of plantings.

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 scour stabilization project will have a positive effect on public commerce. The project will enhance roadway safety to the traveling public by diminishing the potential for undermining of an existing structure on a state-maintained roadway.

The project will have no impact on navigation or recreation. The US Coast Guard, in an April 30, 2020 Determination of Navigability, concluded that Mill Brook at the crossing location is not a Navigable Water of the United States

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.

Scour stabilization measures are proposed in the streambank and streambed of Mill Brook. Stoney Ridge Environmental has provided a wetland delineation and invasive species report (attached) showing the locations of any floodplain wetland above the jurisdictional top-of-bank in the proposed work area. The proposed project will have no impact on floodplain wetlands.

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.

N/A

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.

N/A

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.

Impacts to the Mill Brook channel will be necessary to effectively stabilize the existing streambed and crossing structure as flow velocities at this location can reach 14.3 feet per second (fps) during a 50-year storm event. The proposed project includes installation of gabion retaining wall system from the northeast upstream wingwall along the bank for a length of approximately 12 feet to stabilize the bank. Concrete Class T, Foundation Seal will be placed on bedrock to provide a level bearing surface for the gabion retaining wall system. Effective stabilization of this crossing will improve Mill Brook's ability to handle runoff waters by preventing downstream sedimentation caused by bank and bed erosion.

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 – No shoreline structures are proposed

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 – No shoreline structures are proposed

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 – No shoreline structures are proposed

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 – No shoreline structures are proposed

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 – No shoreline structures are proposed

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 – No shoreline structures are proposed

PART II: FUNCTIONAL ASSESSMENT
REQUIREMENTS Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).
FUNCTIONAL ASSESSMENT METHOD USED: Stoney Ridge Environmental, LLC has prepared a functional assessment using the US Army Corps Highway Methodology guidelines. A summary narrative of the assessment results is part of the Wetland Delineation & Invasive Species Report included with this application.
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: Cindy Balcius, CWS
DATE OF ASSESSMENT: September 2019
Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT: ☒
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: ☒ Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.

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 Department of Transportation / David L. Scott. PE		
PROJECT STREET ADDRESS: MILL BROOK ROAD		PROJECT TOWN: LANDAFF
TAX MAP/LOT NUMBER: Map 15, Lot 912		
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.	☐ Yes ☒ No
If you answered "no" to this question, describe the purpose of the "non-access" project type you have proposed: The purpose of the project is to maintain safety and protect the traveling public by addressing hydraulic scour damage compromising the safety of the bridge conveying Mill Brook at its crossing under Millbrook Road in Landaff.		
SECTION 3 - A/M PROJECT DESIGN TECHNIQUES 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.	☐ Check ☒ 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.	☒ Check ☐ 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.	☐ Check ☒ 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.	☐ Check ☒ 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.	☒ Check ☐ 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.	☐ Check ☒ 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.	☒ Check ☐ 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.	☒ Check ☐ N/A
Env-Wt 311.10 A/M BMPs	The project clusters structures to avoid wetland impacts.	☐ Check ☒ N/A
Env-Wt 311.10 A/M BMPs	The placement of roads and utility corridors avoids wetlands and their associated streams.	☐ Check ☒ 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.	☐ Check ☒ N/A
A/M BMPs	The project proposes bridges or spans instead of roads/driveways/trails with culverts.	☐ Check ☒ N/A
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.	☐ Check ☒ N/A
Env-Wt 500 Env-Wt 600 Env-Wt 900	Wetland and stream crossings include features that accommodate aquatic organism and wildlife passage.	☐ Check ☒ N/A
Env-Wt 900	Stream crossings are sized to address hydraulic capacity and geomorphic compatibility.	☐ Check ☒ 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.	☐ Check ☒ N/A

SECTION 4 - NON-TIDAL SHORELINE STRUCTURES		
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.	☐ Check ☒ 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.	☐ Check ☒ 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.	☐ Check ☒ 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.	☐ Check ☒ 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.	☐ Check ☒ 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.	☐ Check ☒ N/A

Pre-Application Correspondence with NHDES

MEETING NOTES

PROJECT:	Bridge Scour Stabilization: Dorchester NH 118 Dorchester River Road Landaff Millbrook Road Thornton NH 175 Rumney NH 25 NHDOT Project No. 41915A
DATE OF MEETING:	October 15, 2021
LOCATION:	Microsoft Teams Online Meeting
ATTENDEES:	Karl Benedict, NHDES Lori Sommer, NHDES Andrew O'Sullivan, NHDOT Kimberly Peace, Hoyle, Tanner Deb Coon, Hoyle, Tanner Sean James, Hoyle, Tanner
SUBJECT:	Pre-Application Meeting and Mitigation Coordination
PREPARED BY:	K. Peace Hoyle, Tanner Project No. 092592.01 and 092590.18
Distribution:	All attendees

The NH Department of Transportation (NHDOT) Statewide #41915A Project involves stabilization efforts at seven locations in Grafton County to address scour issues and prevent additional scouring or undermining of the existing crossings, and, where feasible, increase aquatic organism passage (AOP) and stabilize bank and streambed areas through the crossing. NHDOT and Hoyle, Tanner & Associates, Inc. (Hoyle, Tanner) are currently preparing the following wetland permit applications:

- Dorchester Bridge 138/064 - NH 118 over Bucks Brook
- Dorchester Bridge 155/099 – River Road over South Branch Baker River
- Landaff Bridge 079/156 – Millbrook Road over Mill Brook
- Thornton Bridge 203/099 – NH Route 175 over Mill Brook
- Rumney Bridge 105/063 – NH Route 25 over Halls Brook

K. Peace refamiliarized meeting attendants with the scope of the project and introduced the first four current proposed project locations to discuss collectively how to address mitigation for proposed impacts. The following items were discussed among the meeting attendees:

For Dorchester 138/038 over Bucks Brook, the linear feet of the fill in the streambed will be considered a permanent impact. L. Sommer stated mitigation could be calculated according to the linear feet (LF) of impact to the stream channel.

A. O'Sullivan asked if, because the impact is less than 200 lf, could this fall below the mitigation threshold for a bank stabilization project?

L. Sommer agreed that this, and other projects with LF of fill under 200 LF, would not require mitigation as long as a post-construction monitoring plan was submitted to ensure a functioning system results from the work.

K. Benedict stated DES would like to see plantings added to the seeding and loaming in areas of temporary bank impacts. A. O'Sullivan agreed and will work with Hoyle Tanner to provide a Planting and Post-Construction Monitoring Plan for each site. K. Peace noted that plantings can only be successful above flowing water and that typically design notes that planting only will be on banks above Q2 or even Q10 storm elevations. K. Benedict agreed and said provide explanations of the limit of plantings based on the hydraulic analysis of each site. He also asked the native excavate be re-used as feasible to increase potential for re-colonization of native vegetation, and that this be included on the construction plans and in the application construction sequence, as well as the planting plan.

L. Sommer requested Note #2 on the wetland plan under Access for Bridge Construction be revised to specify that temporary fill shall occur only within limits as shown, and that the word "remain" be removed so there is no doubt that any temporary stone fill will need to be removed upon completion.

Discussion ensued over the need for water flows to not go subsurface, or below any fill placed in the streambed, but go over the installed surface. Plan notes include crushed stone infill installed over and between riprap to address this, and per Karl's comment, native excavate from the existing streambed will be used instead of stone brought from offsite where feasible according to engineering best practices. This will be noted in the construction sequence in the application and on plans. NHDOT stone/riprap spec will be provided in the application and on construction plans as well.

K. Benedict stated that if off-site material should be required for infill, a sieve analysis should be completed and data provided to DES to ensure that it meets the required gradation. This will be included in the Post-Construction Monitoring Plan as needed. Sieve analysis will not be required for native excavate from the sites.

DES asked that the extent of channel impacts be provided for Thornton, excluding areas under the bridge, to confirm the fill will not be over 200 LF and require mitigation. Areas that are ledge will not need to be revegetated.

K. Benedict said for each site, the avoidance and minimization narrative should address the reasons why the project is needed, why only scour protection, why now, why what is proposed, and include temporary access locations.

L. Sommer agreed that impacts where there is replacement of existing or prior installed riprap can be shown as temporary.

K. Benedict stated that in locations where there is a DW line between OHW and TOB, each site should be reviewed to determine if that impacted DW lies in a FEMA-mapped 100-yr floodplain, since those areas would be Priority resource Areas, and will require mitigation.

For the Rumney site, K. Peace and S. James presented the plan developed with Sean Sweeney to address low flows through the perched box culvert by installing several cross-vane grade control structures downstream of the crossing, as well as baffles through the box culvert itself. S. James presented details from a cast-molded stream bottom with baffles built into it installed in a crossing in Vermont that has been successful. He stated that the post-construction hydraulics prove that the baffles met the desired purpose.

K. Benedict stated because this design is complex, and such structures can be difficult to install correctly, that Sean Sweeney should be on site during installation.

L. Sommer and K. Benedict agreed that provided the installed structures prove to meet the goal of elevating low flows through the crossing, no mitigation would be required as the project will be viewed as a stream restoration project. They also noted that the design must be approved by John Magee at NHF&G.

K. Peace suggested that a multi-resource agency meeting be set up, and a field visit was proposed for DES and NHF&G to meet with DOT and Hoyle Tanner on site. This application (Rumney) will be held until after that meeting, but the other four will be submitted within the next few weeks.

Should you have any questions regarding the above, please contact Kimberly Peace at kpeace@hoyletanner.com

Submitted by:

Kimberly Peace
Senior Environmental Coordinator
Hoyle, Tanner & Associates, Inc.
cc: Attendees, File

Natural Resources Agency Coordination Meeting Minutes

MEETING NOTES

Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, New Hampshire 03101
603-669-5555
603-669-4168 fax
www.hoyletanner.com

PROJECT: Bridge Scour Stabilization
Seven Locations
Federal Project No.: X-A004(779)
NHDOT Project No. 41915

DATE OF CONFERENCE: April 15, 2020

DATE ISSUED: April 23, 2020

LOCATION: NHDOT, Bureau of Environment, Zoom teleconference

ATTENDEES:
Bill Saffian, NHDOT
Chelsea Noyes, NHDOT
Ron Crickard, NHDOT
Andrew O'Sullivan, NHDOT
Karl Benedict, NHDES
Lori Sommer, NHDES
Beth Alaphat, USEPA
Carol Henderson, NHF&G
Rick Kristoff, USACE
Pete Steckler, The Nature Conservancy
Kimberly Peace, Hoyle, Tanner
Joanne Theriault, Hoyle, Tanner
Sean James, Hoyle, Tanner

SUBJECT: Environmental Permitting Requirements

PREPARED BY: K. Peace
Hoyle, Tanner Project No. 092592.01 and 092590.18

Distribution: All attendees

The NH Department of Transportation (NHDOT) Statewide #41915 Project involves stabilization efforts at seven locations in Grafton County to address scour issues and prevent additional scouring or undermining of the existing crossings, and, where feasible, increase aquatic organism passage and stabilize bank and streambed areas through the crossing. The seven locations include: NH Route 118 over Bucks Brook in Dorchester; River Road over the South Branch Baker River in Dorchester; Millbrook Road over Mill Brook located in Landaff; NH Route 10 over Grant Brook located in Lyme; NH Route 25 over Halls Brook in Rumney; NH Route 175 over Mill Brook in Thornton; and Interstate 93 over Eastman Brook in Woodstock. Kimberly Peace, Sean James, and Joanne Theriault from Hoyle Tanner presented.

J. Theriault gave an overview of the project goals and then reviewed each bridge individually. In each location, scour stabilization measures will be installed to protect the existing infrastructure. Work will not

be conducted on the bridge, wingwalls or abutments. Plans provided show approximate impact areas and locations of construction access routes. Survey/topo shown on plans has been created using LIDAR along with limited ground survey in some locations. In all locations, unless stated otherwise, the intent is to excavate the streambed to the required depth, install riprap to match existing elevations and key into the upstream and downstream profiles. Impacts to Northern long-eared bat summer habitat will need to be addressed at all locations, and Essential Fish Habitat (EFH) analysis for Atlantic salmon will need to be addressed at all but one location (Lyme 075/106). A Categorical Exclusion for the project is being developed that will address these issues, along with some potential Section 6(f) concerns in Dorchester and Section 106 and 4(f) concerns in Lyme. Each location will undergo state environmental permitting separately, and all locations are Tier 3 stream crossings with watersheds greater than or equal to 640 acres per Env-Wt 904.05.

NH Route 118 over Bucks Brook in Dorchester

Proposed installation of Class V stone on outlet side only for approximately 1,300 sq ft of streambed and bank impact. S. James noted that the streambed will be excavated approximately 3' deep so that the stone will be installed at existing grade, over a geotextile layer, with no change in streambed profile.

L. Sommer: Is the culvert perched? S. James: No.

R. Crickard: The plans for the next meeting should indicate more precise locations of riprap installation. Hoyle, Tanner agreed.

L. Sommer: The linear feet of channel impact would be used to calculate mitigation, and are you proposing to cover the bank areas with native or original streambed material?

K. Benedict: DES requests covering riprap to fill the voids, using existing stone where possible, and presenting a good alternatives analysis. The result should be a stream simulation that matches upstream and downstream conditions where possible, but if the hydrology of the stream would result in loose materials washing downstream, maybe just fill the voids. The end result should be a stabilized base to sit below the streambed simulation materials.

S. James: In this location, there is high enough velocity that the native material would wash downstream. Hoyle, Tanner agrees to look into filling the riprap voids.

K. Benedict: Look at the wetlands rules Env-Wt 514 to address the requirements for bank stabilization, specifically how high up the banks the riprap should be. Can some portion of the bank be left vegetated? How will impacts be minimized? The permit application will need to include analysis of stream velocities and flood elevations.

C. Henderson: What about the NHNHB Datacheck results?

J. Theriault: There are no species identified in this location, and per prior discussion with K. Benedict, plans with impacts identified will be sent to NHF&G for their review prior to permit submittal.

River Road over the South Branch Baker River in Dorchester

Proposed installation of Class IX stone on outlet and inlet sides for approximately 6,550 sq ft of streambed and bank impact. S. James noted that the streambed will be excavated approximately 6' deep so that the

stone will be installed at existing grade, over a geotextile layer, with no change in streambed profile. The northwest bank will contain some armoring to provide stability where it currently erodes.

K Benedict: Similar concerns as prior crossing. Additionally, has there been thought of deflecting the energy using design instead of bank armoring?

S. James: Those options can be examined.

K. Benedict: Will the stream be crossed with equipment to work on the opposite bank, or will there be a second access on the west side?

S. James: The site has limited access options, so work will occur on the opposite (west) side from the access road while the stream is diverted on that side. The diversion and stream flow will then reverse, and work will occur on the east side closer to the access road.

Millbrook Road over Mill Brook located in Landaff

Proposed installation of Class VII stone on outlet side only for approximately 1,250 sq ft of streambed and bank impact along with repairs to the stone masonry wall on the northeast side. S. James noted that the streambed will be excavated approximately 4' deep so that the stone will be installed at existing grade, over a geotextile layer, with no change in streambed profile.

K. Benedict: Same concerns as prior crossings.

NH Route 10 over Grant Brook located in Lyme

Proposed installation of Class V stone on the outlet and inlet sides for approximately 3,500 sq ft of streambed and bank impact. S. James noted that the streambed will be excavated approximately 3' deep so that the stone will be installed at existing grade, over a geotextile layer, with no change in streambed profile. The stream has aggraded in the southeast side through the crossing.

A. O'Sullivan: Will the aggraded material be removed?

S. James: It isn't planned to be removed since the stream through the crossing is in a steady-state, the aggradation has been stabilized, and the focus is on protection of the infrastructure.

K. Benedict: Current and energy deflection could also be examined in this location to direct energy back to the center of the channel.

C. Henderson: NHF&G would like to examine this more closely as it relates to fish passage.

NH Route 25 over Halls Brook in Rumney

Proposed installation of stone on the outlet for approximately 4,500 sq ft of streambed and bank impact along with grout filled nylon bags at the wingwalls where they have been undermined. S. James noted that the depth and type of stone is still being investigated and will be based on final survey data to address the scour hole and perched outlet.

C. Henderson: How will the perched outlet be addressed?

S. James: Stone will be added to fill the scour hole and regrade the streambed so that it will key into the downstream elevation. In this location the streambed will not be excavated unless it is determined during final survey.

K. Benedict: Consider using a grade control structure.

S. James: The issue with grade control is that we encounter resistance during permitting due to reduction in aquatic organism passage. If DES could provide suggestions that could satisfy NHF&G we would review them for potential use in this location.

K. Benedict agreed and said the new crossing should be an improvement for fish passage.

J. Theriault: This location has wood turtle habitat nearby but just outside of the proposed work areas. Once impacts have been determined, coordination with NHF&G will occur to determine avoidance and minimization measures.

NH Route 175 over Mill Brook in Thornton

Proposed installation of Class VII stone on the outlet and inlet sides for approximately 5,650 sq ft of streambed and bank impact. This location will have two access routes. S. James noted that the streambed will be excavated approximately 4' deep so that the stone will be installed at existing grade, over a geotextile layer, with no change in streambed profile.

P. Steckler: What is the pond upstream and north of the site? Is it connected to the stream crossing?

S. James: We are aware of this water feature but are not sure whether it is natural or manmade. The water feature / pond is outside of the proposed work areas, but Hoyle, Tanner will review the mapping of the area to determine any potential connection between the pond and the river.

NH Route 175 over the Pemigewasset River in Woodstock

Proposed installation of A Jacks or an armor matrix on the outlet side within the streambed and Class IX stone to be placed on the banks for approximately 7,100 sq ft of streambed and bank impact. There is steel sheeting in the river on the downstream side that will be removed in order to install the armor matrix.

K. Benedict: DES will want to review the specs of the armor matrix.

S. Large: DOT has proposed and permitted, but not constructed, this product and understands DES will require cross-section profiles as part of the permit for review. The impacts will be shown as permanent for the wetland permits. Adding native material or infill may not be feasible due to the high water velocity here. Hydraulic analysis will be provided with the application.

Project Summary Discussion

S. Large: Crossing designs will need to be reviewed for consistency with the wetland rules regarding bank stabilization.

K. Benedict: In general, each permit application will need to address avoidance and minimization, alternative designs, stream simulations and materials, and plans will need to show cross-sections, erosion controls and water diversion. It would be helpful for the next meeting to have the limits of existing riprap shown. For the crossings that are perched, presentation should include longitudinal profiles. Consider adding a low flow channel through the center of the stream simulation to allow for continual hydraulic connectivity.

P. Steckler agreed with this comment.

K. Benedict: Information should also be provided to quantify linear feet of impacts between stream bed and banks, and DOT should consider and plan for timing of work to minimize impacts to fish populations.

S. Large: A meeting should be held between K. Benedict and DOT before the next NR Meeting.

S. James: Requested clarification on the amount of detail for water diversion, since contractor means and methods allow the to modify what we propose. K. Benedict stated that DES can condition the permit for the contractor to provide a final dewatering plan with DES given 2 weeks to review it before start of construction, and that his review is to ensure the impacts from dewatering are contained in the permit and that the dewatering plan is feasible.

There were no other concerns stated by the meeting attendees.

It was decided that a second NR Meeting should be held before submitting permit applications.

Should you have any questions regarding the above, please contact Kimberly Peace at kpeace@hoyletanner.com

Submitted by:

Kimberly Peace
Senior Environmental Coordinator
Hoyle, Tanner & Associates, Inc.
cc: Attendees, File

Wetland Delineation Report, Functional Assessment & Site Photos
Stoney Ridge Environmental, LLC

WETLAND DELINEATION & INVASIVE SPECIES REPORT

STATEWIDE SCOUR PROJECT
DORCHESTER, EASTON, LANDAFF, LYME, RUMNEY,THORNTON, WOODSTOCK, NEW HAMPSHIRE

Prepared For:

Hoyle, Tanner, & Associates
150 Dow Street
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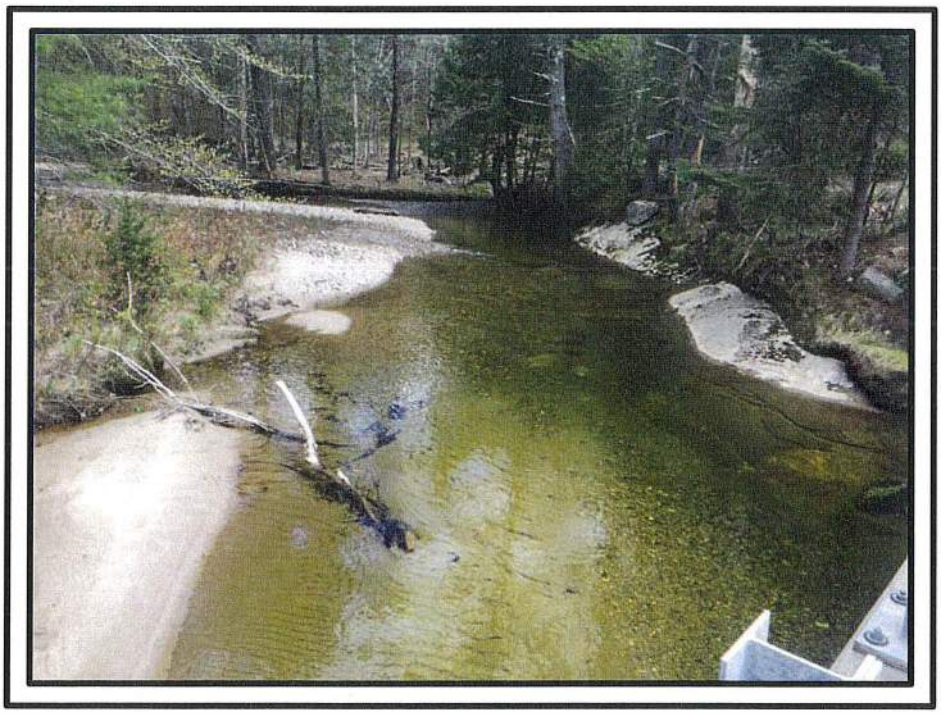

Prepared By:

Stoney Ridge ENVIRONMENTAL LLC
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STATE OF NEW HAMPSHIRE
CYNTHIA M. BALCIUS
7/6/20
No. 061
CERTIFIED WETLAND SCIENTIST

September 2019

SRE # 18-138

Note: This report has been redacted to only include permit application specific locations.

Wetland Delineation & Invasive Species Report
Statewide Scour Project
Dorchester, Easton, Landaff, Lyme, Rumney, Thornton,Woodstock, New Hampshire

Introduction

The purpose of this report is to document the field data collected by Stoney Ridge Environmental LLC (SRE) for the Statewide Scour Project. SRE was contracted by Hoyle, Tanner & Associates (HTA) to complete a wetland delineation, invasive species delineation and a function and value assessment at 9 sites across Northern New Hampshire and provide a report documenting the results. The delineation was completed for edge of jurisdictional wetland, ordinary high water mark, and top of bank. The sites consisted of 9 stream crossings in the towns of Dorchester, Easton, Landaff, Lyme, Rumney, Thornton, and Woodstock. All sites were crossings of upper perennial streams.

Site Description

For the purposes of this report, each site was given a site number. Site numbers can be found in the table below.

Table 1: Summary of Site Numbers

Site Number	Road of Crossing	Stream	Town
1	Route 118	Buck's Brook	Dorchester
2	River Road	South Branch Baker River	Dorchester
3	Easton Road	Unknown	Easton
4	Millbrook Road	Mill Brook	Landaff
5	Route 10	Grant Brook	Lyme
6	Route 25	Hall's Brook	Rumney
7	Route 175	Mill Brook	Thornton
8	Eastside Road	Pemigewasset River	Woodstock
9	Route 93	Eastman Brook	Woodstock

Methods

Field work for this project was completed on May 14, 15, and 16 of 2019. Arctic pink flagging was utilized for edge of jurisdictional wetlands, blue polka dotted flagging was utilized for ordinary high water mark, and red striped flagging was utilized for top of bank. All pertinent flagging was GPS located using an Sokkia GRX 2 GPS unit with sub-meter resolution capabilities. Locations of any invasive species within the project area were also GPS located. The GPS located flags were overlaid on an aerial images of the project areas. A plan for each site

depicting edge of jurisdictional wetlands, ordinary high water mark, and top of bank is provided as a part of this report. These plans also show the locations of any invasive species, as well as the classification of the streams and any wetlands within the project area. Wetlands were classified using the criteria outlined in the "Classification of Wetlands and Deepwater Habitats of the United States" (Cowardin et al. 1979). A function and value assessment was completed for each site using the Army Corps Highway Methodology.

All of the wetland delineations within the project area utilized the following standards:

1) United States Department of Agriculture, Natural Resources Conservation Service. 2016. *Field Indicators of Hydric Soils in the United States*, Version 8.0. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
2) *Field Indicators for Identifying Hydric Soils In New England*. Version 4. May 2017. New England Hydric Soils Technical Committee.
3) *North American Digital Flora: National Wetland Plant List, version 2.1.0 (http://wetland_plants.usace.army.mil).* U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH, and BONAP, Chapen Hill.
4) *The National Wetland Plant List: 2016 wetland ratings.* Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X.
5) *Corps of Engineers Wetlands Delineation Manual*. January 1987. Wetlands Research Program Technical Report Y-87-1.
6) *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*: Northcentral and Northeast Region. January 2012, version 2. U.S. Army Corps of Engineers. Environmental Laboratory ERDC/EL TR-12-1.
7) *Classification of Wetlands and Deepwater Habitats of the United States*. December 1979. L. Cowardin, V. Carter, F. Golet, and E. LaRoe. US Department of the Interior. Fish and Wildlife Service. FWS/OBS-79/31.

Site 4:

Site 4 is a stream crossing located on Millbrook Road in Landaff, New Hampshire on Mill Brook. This crossing is an open bottom arch structure. SRE performed the delineation approximately 75 feet up and downstream of the crossing. The stream is classified as riverine, upper perennial with an unconsolidated bottom composed of cobble-gravel and sand (R3UB1/2). The stream is shallow and fast moving, flowing west in the project area. There were multiple areas of adjacent wetland, which are all classified as palustrine, forested, with needle leaved evergreen vegetation that is seasonally flooded/saturated (PFO4E). These areas are depicted on the attached plan.

This is a view looking downstream towards the crossing structure.

Adjacent upland areas are dominated by balsam fir (*Abies balsamea*), eastern hemlock (*Tsuga canadensis*), and red maple (*Acer rubrum*). The forested wetlands are dominated by the same tree species, but also feature green false hellebore (*Veratrum viride*) as groundcover. The invasive species honeysuckle (*Lonicera spp.*) as well as a small stand of Japanese knotweed (*Fallopia japonica*) were observed within the project area. The locations of these invasive species are depicted on the attached plan.

An annotated function and value assessment was performed for this site using the Army Corps Highway Methodology. It was determined that this system exhibits the following functions: floodflow alteration, fish habitat, production export, sediment/shoreline stabilization and wildlife habitat. Floodflow alteration and sediment/shoreline stabilization are high at this site due to the large amount of floodplain wetland present.

PHOTO LOG

Statewide Scour Project
Northern New Hampshire
Photos Taken: May 14-16, 2019

PHOTO 13: This is a view of the inlet of the crossing structure at site 4.

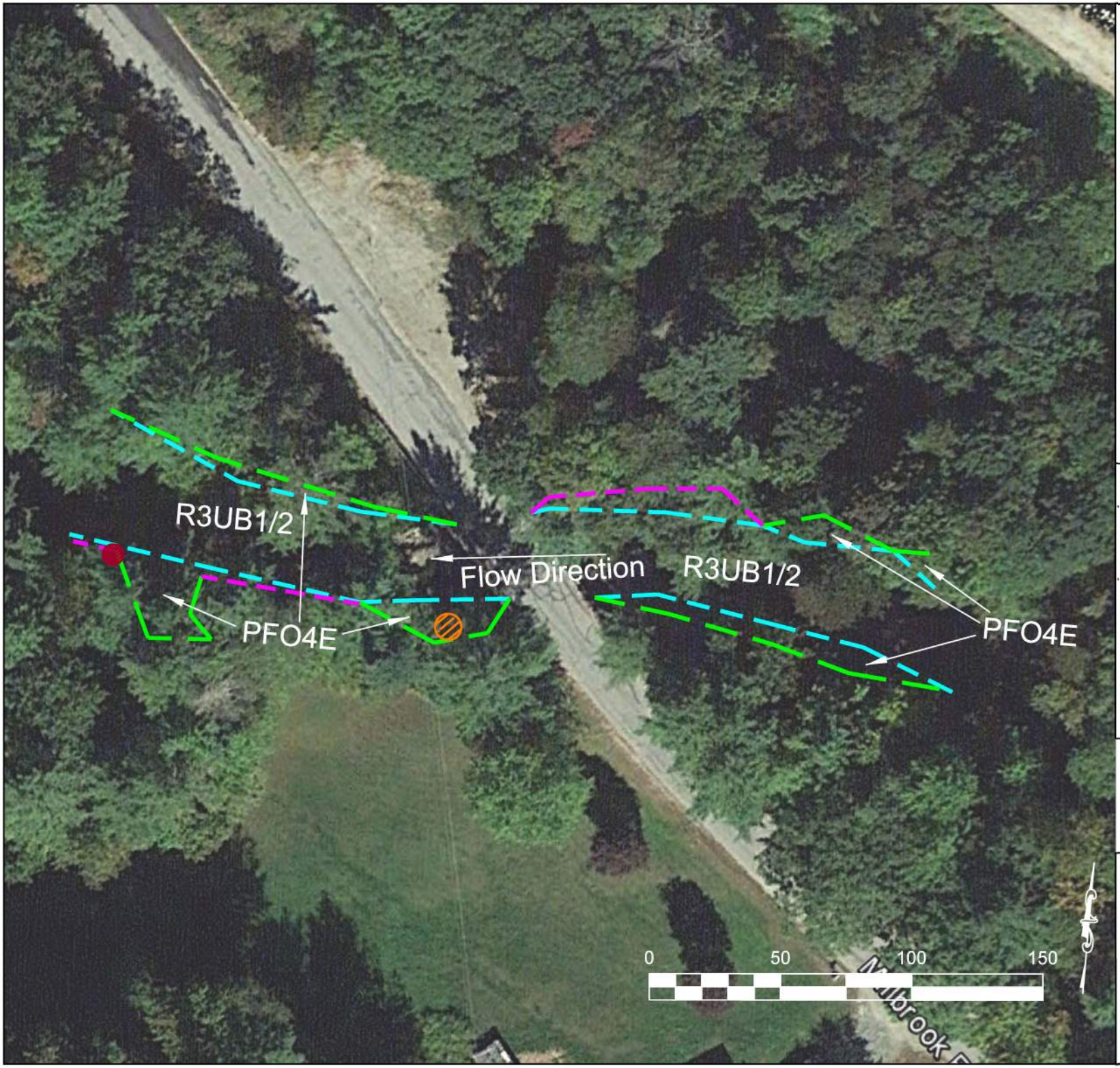
PHOTO 14: This is a view looking towards the outlet of the crossing structure at site 4.

PHOTO LOG

Statewide Scour Project
Northern New Hampshire
Photos Taken: May 14-16, 2019

PHOTO 15: This is a view looking downstream away from the crossing structure at site 4.

PHOTO 16: This is a view looking upstream away from the crossing structure at site 4. Floodplain wetland can be seen on the right side of this photo.



Legend

- Top of Bank
- Edge of Jurisdictional Wetland
- Ordinary High Water Mark
- Japanese Knotweed
- Honeysuckle

Plan Notes

All points were located using a GPS unit with sub-meter resolution. Jurisdictional wetlands on site were delinieated by Stoney Ridge Environmental LLC on 5/14/2019

Existing Conditions Site 4 - Millbrook Rd Landaff, NH

Stoney Ridge ENVIRONMENTAL LLC
233 Prospect Mountain Road
Phone: 603-776-5825
Fax: 603-776-5826
www.stoneyridgeenv.com

Conclusion

In conclusion, SRE visited 9 stream crossing sites across northern New Hampshire as part of the Statewide Scour Project. At each site, SRE delineated the edge of jurisdictional wetlands, as well as the ordinary high water mark and top of bank. SRE also delineated the extent of any invasive species observed on site. All points were GPS located and overlaid onto aerial imagery. A plan for each site was created depicting each of the delineated lines, the classification of each system, and the location of any invasive species. An annotated scaled down function and value assessment was performed for each site, and the results are summarized in this report.

This completes the delineation and invasive species report for the 9 sites located in the towns of Dorchester, Easton, Landaff, Lyme, Rumney, Thornton, and Woodstock. Please feel free to contact our office at 603-776-5825 with any questions.

Hydrologic and Hydraulic Analysis

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
WETLAND PERMIT APPLICATION
for
Scour Stabilization of Bridge 079/156 – Mill Brook Road over Mill Brook
Landaff, NH
Hydrologic and Hydraulic Analysis

Severe channel degradation has occurred and has exposed the footings of the 30-foot span concrete arch bridge carrying Millbrook Road over Mill Brook in Landaff, NH. The streambed upstream and downstream of the crossing appears to have degraded over time. Due to the alignment of the stream to the bridge, the northeast bank adjacent to the wingwall has significant erosion.

Hydrologic and hydraulic analyses were performed for the existing conditions for Mill Brook crossing at the Mill Brook Bridge. The hydrologic analysis was performed using USGS StreamStats for NH (USGS NH Regression Equations), which is the preferred method per the NHDOT Bridge Design Manual for ungagged sites. The 50-year storm event was used for design based on the estimated remaining life of the structure and the probability of exceedance for the storm event within that timeframe. This corresponds to a flow of 1,180 cubic feet per second.

The hydraulic analyses were performed using the Bureau of Reclamation's Sedimentation and River Hydraulics – Two-Dimensional model (SRH-2D), which is a 2D hydraulic, sediment, temperature, and vegetation model for river systems, utilizing Aquaveo surface-water modeling solution program, SMS 13.0, for the existing conditions. A two-dimensional analysis was completed because the waterway in the vicinity of the bridge is more complex and the brook is fairly large conveying water from a drainage area of 12.5 square miles. The existing plans, bridge inspection report, site photos, and publicly sourced LiDAR data were used to develop the hydraulic model of the crossing to obtain velocities and approximate water depths.

The maximum velocity in the channel for the 50-year storm event is 14.3 feet per second. The footings are founded on bedrock, so it was determined that riprap installation would not be beneficial. However, to protect the northeast wingwall bank that experiences direct attack by the stream, a gabion wall will be installed. It will extend approximately 12' upstream from the end of the wingwall. The purpose is to prevent further erosion of the material behind the wingwall and protect the roadway embankment.

BANK/SHORELINE STABILIZATION PROJECT-SPECIFIC WORKSHEET FOR STANDARD APPLICATION

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482/ Env-Wt 514

APPLICANT LAST NAME, FIRST NAME, M.I.: NH Department of Transportation / David L. Scott, PE

This worksheet summarizes the criteria and requirements for a Standard Permit for all types of "bank/shoreline stabilization" projects, as outlined in Chapter Env-Wt 500. In addition to the project-specific criteria and requirements on this worksheet, all Standard Applications must meet the criteria and requirements listed in the Standard Dredge and Fill Wetlands Permit Application form (NHDES-W-06-012).

Do **not** use this worksheet if the project is located in a coastal (tidal) area (Env-Wt 509.02(b)).

SECTION 1 - APPROVAL CRITERIA (Env-Wt 514.02)

An application for bank/shoreline stabilization must meet the following approval criteria:

☒ The project must meet the applicable conditions established in Env-Wt 300.

☒ For a hard-scape stabilization proposal, such as rip-rap or a retaining wall, the applicant must demonstrate that the bank or shoreline in that location cannot be stabilized by preserving natural vegetation, landscaping, or bioengineering.

☒ Bank/shoreline stabilization must be designed to be the least intrusive practicable method in accordance with Chapter 8 of the Wetlands Best Management Practice Techniques for Avoidance and Minimization (A/M BMPs).

☒ Bank/shoreline stabilization must conform to the natural alignment of the bank/shoreline.

☒ Bank/shoreline stabilization must not adversely affect the stream course such that water flow will be transported by the stream channel in a manner that the stream maintains it dimensions, general pattern, and slope with no unnatural raising or lowering of the channel bed elevation along the stream bed profile.

☒ Bank/shoreline stabilization must not adversely affect the physical stream forms or alter the local channel hydraulics, natural stream bank stability, or floodplain connectivity.

☒ Bank/shoreline stabilization must avoid and minimize impacts to shoreline resource functions as described in Env-Wt 514.01 and Chapter 8 of the A/M BMPs.

☐ If the project is a wall on a great pond or other surface water where the state holds fee simple ownership of the bed, bank/shoreline stabilization must locate the wall on the shoreward side of the normal high water line.

☐ If the project is to install rip-rap, bank/shoreline stabilization must locate the rip-rap shoreward of the normal high water line, where practicable, and extend it not more than two feet lakeward of that line at any point.

☒ The hierarchy of bank stabilization practices must be as follows:

(1) Soft vegetative bank stabilization, including regrading and replanting of slopes, in which all work occurs above ordinary high water or normal high water,

(2) Bioengineered bank stabilization or naturalized design techniques that uses a combination of live vegetation, woody material, or geotextile matting and may include regrading and replanting of slopes,

(3) Semi-natural form design shall be allowed only where the applicant demonstrates that anticipated turbulence, flows, restricted space, or similar factors, render vegetative or soft stabilization methods, bioengineering, and natural process design stabilization methods physically impractical,

(4) Hard-scape or rip-rap design shall be allowed only where anticipated turbulence, flows, restricted space, or similar factors render vegetative, bio-engineering, semi-natural form design and diversion methods physically impractical and where necessary to protect existing infrastructure, and

(5) Wall construction shall be allowed as the last available option, only where lack of space or other limitations of the site make alternative stabilization methods of bioengineering, seminatural, and rip-rap impractical. Wherever sufficient room exists, slopes shall be cut back to eliminate the requirement for a wall.

☒ Stream bank-stabilization project plans must be developed in accordance with the following techniques, as applicable:

- Naturalized and semi-natural design techniques where practicable in accordance with the Guidelines for Naturalized River Channel Design and Bank Stabilization dated February 2007; R. Schiff, J.G. MacBroom, and J. Armstrong Bonin.
- For bioengineering projects, National Engineering Handbook Part 654 (NEH 654), Technical Supplement 141, Streambank Soil Bioengineering, dated August 2007, USDA NRCS.
- For stream restoration projects, NEH 654, Stream Restoration Design, dated August 2007, USDA NRCS.

SECTION 2 - APPLICATION REQUIREMENTS FOR ALL BANK/SHORELINE STABILIZATION PROJECTS (Env-Wt 514.03)

An application for any bank/shoreline stabilization project must include:

☒ A narrative and photos that:

- Describe and illustrate existing conditions and locations where shoreline vegetation currently exists.

  The wetland permit application includes a Wetland Delineation and Invasive Species Report by Stoney Ridge Environmental, LLC (SRE). Wetlands were delineated by Cindy Balcius, NH CWS No. 61. Photos are contained within this report.

  As seen in the photos, each of the four wings and banks at the bridge were previously armored. The bank then transitions into natural vegetation which includes ground cover, shrubs, and trees.

- Identify all known causes of erosion to the bank/shoreline in that location.

  Mill Brook through the crossing and in the project location experiences high velocities of 14.3 cubic feet per second (CFS) during the 50-yr design storm, as detailed in the hydraulic analysis included in this wetland permit application. Severe channel degradation has occurred and has exposed the footings of the 30-foot span concrete arch bridge carrying Mill Brook Road over Mill Brook in Landaff, NH. The streambed upstream and downstream of the crossing appears to have degraded over time. Due to the alignment of the stream to the bridge, the northeast bank adjacent to the wingwall has significant erosion. The bridge cannot be replaced with a larger structure at this time, and the purpose of the project is to stabilize the bridge and abutments of this important piece of infrastructure.

- Identify information and, for minor and major projects, engineering standards used to determine the appropriateness of the proposed bank stabilization treatment or practice.

  Refer to the attached hydrologic analysis for details regarding the type of analysis that was performed. The analysis shows that the maximum velocity in the channel for the 50-year storm event is 14.3 feet per second. This coupled with the observed exposure of the structure footings necessitates the installation of a gabion wall to prevent further erosion of the material behind the wingwall and to protect the roadway embankment per Chapter 8 (Section 8.4.4) in the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No 23 (HEC-23), volume 1.

- Explain the design elements that have been incorporated to address erosion, by eliminating or minimizing the causes therefor.

  As detailed in the wetland permit application supplemental narrative and answers to questions, the proposed design, including a proposed protective gabion wall, has been developed for this site to specifically address the scouring that is occurring along the northeast bank adjacent to the bridge's existing wingwall. The high flows that occur in this location cannot be reduced, and the crossing cannot be replaced with a larger structure at this time. It is anticipated that the stabilization measures, once implemented, will prevent further erosion of the material behind the wingwall and protect the roadway embankment.

- For minor and major bank/shoreline stabilization projects or minimum impact bioengineering stream bank projects, identify the flood risk tolerance of the proposed treatment or practice using the appropriate technical guidance or national engineering handbook.

  The bridge is a critical piece of infrastructure within the State of New Hampshire's transportation system, with a low flood risk tolerance. The project goal is to protect this bridge by installing stabilization measures that will accommodate future flood events without impacting the bridge. Refer to the hydraulic analysis for more information on how the analysis meets the FHWA engineering standards.

A cross-section plan that shows:

☒ The difference in elevation between the lowest point of the bank/shoreline slope to be impacted by the construction and the highest point of the bank/shoreline slope to be impacted.

☒ The linear distance across the proposed project area as measured along a straight line between the highest and lowest point of the bank/shoreline slope to be impacted.

☒ The existing and proposed slope of the bank/shoreline.

☒ The normal high water line or ordinary high water mark, as applicable.

Hard-scape, rip-rap, or unnatural design plans that must include:

☐ Designation of minimum and maximum stone size.

☐ Gradation.

☐ Minimum rip-rap thickness.

☐ Type of bedding for stone.

☒ Cross-section and plan views of the proposed installation.

☒ A description of anticipated turbulence, flows, restricted space, or similar factors that would render vegetation and bioengineering stabilization methods physically impracticable.

☐ Engineering plans for rip-rap in excess of 100 linear feet along the bank or bed of a stream or river, including in-stream revetments, stamped by a professional engineer.

☐ If the project proposes rip-rap adjacent to great ponds or other surface waters where the state holds fee simple ownership to the bed, a stamped surveyed plan showing the location of the normal high water line and the footprint of the proposed project.

Design plans for a wall in non-tidal waters must include:

☒ Cross-section and plan views of the proposed installation and sufficient plans to clearly indicate the relationship of the project to fixed points of reference, abutting properties, and features of the natural shoreline.

☐ If the application is for a wall adjacent to a great pond or other surface water where the state holds fee simple ownership to the bed, a surveyed plan, stamped by a licensed land surveyor, showing the location of the normal high water line and the footprint of the proposed project.

SECTION 3 - DESIGN REQUIREMENTS FOR ALL BANK/SHORELINE STABILIZATION PROJECTS (Env-Wt 514.04)

In addition to meeting all applicable requirements in Env-Wt 300, bank/shoreline stabilization must be designed to:

☒ Incorporate stormwater diversion and retention to minimize erosion.

☒ Retain natural vegetation to the maximum extent possible.

☐ If space and soil conditions allow, cut back unstable banks to a flatter slope and then plant with native, non-invasive trees, shrubs, and groundcover.

☒ Avoid and minimize impacts to adjacent properties and infrastructure.

☒ Avoid and minimize impacts to water quality.

☒ Avoid and minimize impacts to priority resource areas, avian nesting areas, fish spawning locations, and other wildlife habitat to meet the requirements of Env-Wt 514.02.

☒ Incorporate naturalized and semi-natural design techniques where practicable in accordance with Guidelines for Naturalized River Channel Design and Bank Stabilization dated February 2007, R. Schiff, J.G. MacBroom, and J. Armstrong Bonin.

☐ For bioengineering projects, be in accordance with NEH 654, Technical Supplement 141, Streambank Soil Bioengineering, dated August 2007, USDA NRCS.

☐ For stream restoration projects, be in accordance with NEH 654, Stream Restoration Design, dated August, 2007, USDA NRCS.

SECTION 4 - CONSTRUCTION REQUIREMENTS FOR ALL BANK/SHORELINE STABILIZATION PROJECTS (Env-Wt 514.05)

In addition to all applicable construction standards specified in Env-Wt 300, the following apply to all bank/ shoreline stabilization projects:

☐ Materials used to emulate a natural channel bottom must:

- Be consistent with materials identified in the reference reach, and
- Not include any angular rip-rap or gravel unless specifically identified on the approved plan.

☒ Bank restoration must be constructed, landscaped, and monitored in a manner that will create a healthy riparian or lacustrine shoreline system.

☒ Bank/shoreline stabilization areas must:

(1) Have at least 75% successful establishment of vegetation after two growing seasons, or

(2) Be replanted and re-established until a functional lacustrine, wetland, or riparian system has been reestablished in accordance with the approved plans.

☒ Unless otherwise approved, construction must be performed during low flow or dry conditions.

☒ Where there is documented occurrence of a cold water fishery or protected species or habitat, unless a waiver of this condition is issued in writing by the department in consultation with the New Hampshire Fish and Game Department, work must occur:

- During low-flow or dry conditions during the growing season, and
- Prior to October 1.

☒ Work authorized must be carried out in accordance with Env-Wt 307 such that there are no discharges in or to spawning or nursery areas during spawning seasons.

☒ Work authorized must be carried out in accordance with Env-Wt 307 such that controls are in place to protect water quality and appropriate turbidity controls such that no turbidity escape the immediate dredge area and must remain until suspended particles have settled and water at the work site has returned to normal clarity.

☒ Within 60 days of completion of construction, the applicant must submit a post-construction report that:

- Has been prepared by a professional engineer, certified wetland scientist, or qualified professional, as applicable, and
- Contains a narrative, exhibits, and photographs, as necessary to report the status of the project area and restored jurisdictional area.

SECTION 5 - ON-GOING REQUIREMENTS FOR ALL BANK/SHORELINE STABILIZATION PROJECTS (Env-Wt 514.06)

The owner must monitor the project and take corrective measures if the area is inadequately stabilized or restored by:

(a) Replacing fallen or displaced materials without a permit, where no machinery in the channel is required,

(b) Identifying corrective actions and follow-up plans in accordance with Env-Wt 307, and

(c) Filing appropriate application and plans where work exceeds (a), above.

SECTION 6 - BANK STABILIZATION CONSTRUCTION PROJECT CLASSIFICATION (Env-Wt 514.07)

Refer to Env-Wt 514.07 for project classification.

Natural Heritage Bureau (NHB) Review & NHF&G Coordination

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

To: Hoyle, Tanner & Associates / Deb Coon
Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101

From: NH Natural Heritage Bureau

Date: 3/15/2022 (This letter is valid through 3/15/2023)

Re: Review by NH Natural Heritage Bureau of request dated 3/15/2022

Permit Types: Wetland Standard Dredge & Fill - Major
General Permit

NHB ID: NHB22-1025

Applicant: Hoyle, Tanner & Associates / Deb Coon

Location: Landaff
Tax Map: N/A, Tax Lot: N/A
Address: Millbrook Road over Mill Brook

Proj. Description: Previously reviewed as NHB21-1106. Millbrook Road over Mill Brook is located in Landaff, NH. The 30-foot span concrete arch bridge is experiencing bank erosion along the upstream northeast wingwall. Class VII riprap will be placed for a length of approximately 25 feet along the wingwall and bank and for a length of approximately 10 feet within the brook for a distance of approximately 12 feet upstream to stabilize the location. Channel excavation may be needed to install the proposed riprap.

The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

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.

Based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

MAP OF PROJECT BOUNDARIES FOR: NHB22-1025

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord NH 03301

Coon, Deb L.

From: Theriault, Joanne E.
Sent: Monday, October 25, 2021 2:33 PM
To: Henderson, Carol; Magee, John
Cc: Peace, Kimberly R.; Coon, Deb; James, Sean T.; 092592.01 - NHDOT Statewide Env #41768 Scour Stabilization
Subject: RE: [External] Re: NHDOT 41915 Scour Stabilization Project - Request for Fisheries Comments

Hi Carol and John,
I'm writing to provide some additional information about the NHDOT 41915 Scour Stabilization Project. We are currently in the process of drafting/submitting Wetland Permit applications for the following bridge scour stabilization locations:

- Dorchester Bridge 138/064 – NH Route 118 over Bucks Brook
- Thornton Bridge 203/088 – NH Route 175 over Mill Brook
- Dorchester Bridge 155/088 – River Road over South Branch Baker River
- Landaff Bridge 079/156 – Mill Brook Road over Mill Brook

In the previous correspondence documented below, we discussed incorporating fisheries-related construction timing restrictions in the project designs. Per Env-Wt 307.10 (G)(1), the NHDOT has committed to construct Landaff Bridge 079/156, which is located in *documented* cold-water fish habitat, between October 1 and March 31. Due to logistical constraints, this timing restriction will not be included in the project plans and permitting documents for the remaining project locations, which are located in *predicted* cold-water fisheries.
The bridges in this project have extreme perching and erosion issues, and the proposed scour control measures will result in substantial improvements for Aquatic Organism Passage with the inclusion of low-flow channels and repair of culvert perching through the crossings. We truly appreciate your review and assistance throughout the design process.
Thanks so much,
-Joanne

Joanne Theriault, CWS
Environmental Scientist at Hoyle Tanner
T: 603-460-5578

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From: Henderson, Carol <Carol.B.Henderson@wildlife.nh.gov>
Sent: Monday, July 26, 2021 1:23 PM
To: Theriault, Joanne E. <jtheriault@hoyletanner.com>; Magee, John <john.a.magee@wildlife.nh.gov>
Cc: Peace, Kimberly R. <kpeace@hoyletanner.com>; Coon, Deb <dcoon@hoyletanner.com>; James, Sean T. <sjames@hoyletanner.com>; 092592.01 - NHDOT Statewide Env #41768 Scour Stabilization <092592.01-NHDOTStatewideEnv#41768ScourStabilization@hoyletanner.onmicrosoft.com>
Subject: [External] Re: NHDOT 41915 Scour Stabilization Project - Request for Fisheries Comments

Hi Joanne:

No additional restrictions requested. We agree with the time restraint for cold-water fish within the new Wetlands Bureau rules, in addition to the application of all BMP's for erosion control. The sooner the work is completed within the water, the better. Also, the Department appreciates your efforts to remove all perches in order to increase connectivity for aquatic organisms.. Thank you, Carol

From: Theriault, Joanne E. <jtheriault@hoyletanner.com>
Sent: Monday, July 26, 2021 11:48 AM
To: Magee, John <john.a.magee@wildlife.nh.gov>; Henderson, Carol <Carol.B.Henderson@wildlife.nh.gov>
Cc: Peace, Kimberly R. <kpeace@hoyletanner.com>; Coon, Deb <dcoon@hoyletanner.com>; James, Sean T. <sjames@hoyletanner.com>; 092592.01 - NHDOT Statewide Env #41768 Scour Stabilization <092592.01-NHDOTStatewideEnv#41768ScourStabilization@hoyletanner.onmicrosoft.com>
Subject: NHDOT 41915 Scour Stabilization Project - Request for Fisheries Comments

Hi Carol and John,
I hope you are both well! I'm writing to request your comments regarding avoidance and minimization of impacts to fish habitat at four locations that are part of the NHDOT 41915 Scour Stabilization Project. The NHDES Wetland Permitting and Planning Tool shows predicted or documented cold-water fisheries habitat in these locations. Carol, you were introduced to these projects at the April 15, 2020 NHDOT NR Meeting. I've attached USGS Location Maps and draft wetland impact plans for the following:

- Dorchester Bridge 138/064 – NH Route 118 over Bucks Brook
- Thornton Bridge 203/088 – NH Route 175 over Mill Brook

We will soon be sending information for the final two bridges involved in this statewide scour stabilization effort. I will forward wetland impacts plans for these two when they are complete:

- Dorchester Bridge 155/088 – River Road over South Branch Baker River
- Landaff Bridge 079/156 – Mill Brook Road over Mill Brook

NHDOT will be submitting NHDES Wetland and Shoreland permit applications for these proposed projects shortly. In-stream work has been minimized to the extent possible, but some will still be necessary to repair the scour damage at these locations. Perched culverts currently impeding fish passage will be repaired, and low-flow channels are being designed for crossings requiring hardscape in the streambed.
The proposed window of work is spring/summer/fall of 2022 to complete all of these sites, and in-stream work will be completed during low-flows and timed to avoid fish spawning activities in the fall.

If you have any additional comments regarding fish habitat or passage, please let us know.

Thank you so much,
-Joanne

HOYLE TANNER

Joanne Theriault, CWS
Environmental Scientist
jtheriault@hoyletanner.com

T: 603-460-5578 •° **F**: 603-669-4168
Hoyle Tanner • 150 Dow Street Manchester, NH 03101 • hoyletanner.com
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US Fish and Wildlife (USF&W) IPaC Results & Correspondence

United States Department of the Interior

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

In Reply Refer To: March 15, 2022
Project Code: 2022-0020109
Project Name: Scour Protection of Bridge No. 079/156 Millbrook Road over Mill Brook, Landaff, NH

Subject: 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:

Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

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. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

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 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. 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 by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and**

Consultation" website for step-by-step instructions on how to consider effects on listed species and prepare and submit a project review package if necessary:

https://www.fws.gov/newengland/endangeredspecies/project-review/index.html

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Additional Info About Section 7 of the Act
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines 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 Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. 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

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) 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. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/birds/policies-and-regulations.php

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Project Code: 2022-0020109
Event Code: None
Project Name: Scour Protection of Bridge No. 079/156 Millbrook Road over Mill Brook, Landaff, NH
Project Type: Bridge - Maintenance
Project Description: Scour Protection of Bridge No. 079/156 Millbrook Road over Mill Brook, Landaff, NH
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.185682797908996,-71.91879775261398,14z

Counties: Grafton County, New Hampshire

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[1], 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.

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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 *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

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

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: May 04, 2020
Consultation Code: 05E1NE00-2019-SLI-2792
Event Code: 05E1NE00-2020-E-07127
Project Name: NHDOT No. 41915 Scour Stabilization Project

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2019-SLI-2792

Event Code: 05E1NE00-2020-E-07127

Project Name: NHDOT No. 41915 Scour Stabilization Project

Project Type: TRANSPORTATION

Project Description: The NH Department of Transportation (NHDOT) Statewide #41915 Project involves stabilization efforts at seven locations to address scour issues and prevent additional scouring or undermining of the existing crossing, and, where feasible, increase aquatic organism passage through the crossing.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.969417121098886N71.67522950893765W

Counties: Grafton, NH

Endangered Species Act Species

There is a total of 1 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[1], 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.

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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 *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

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

United States Department of the Interior

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

IPaC Record Locator: 749-103805990 August 09, 2021

Subject: Consistency letter for the 'NHDOT No. 41915 Scour Stabilization Project' project (no current TAILS record) 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 **NHDOT No. 41915 Scour Stabilization Project** (Proposed Action) 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 (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, and is likely to adversely affect the endangered Indiana bat (*Myotis sodalis*) and/or the threatened Northern long-eared bat (*Myotis septentrionalis*). Consultation with the 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.

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 may affect any other federally-listed or proposed species and/or 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 advise the lead Federal action agency accordingly.

Project Description

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

Name

NHDOT No. 41915 Scour Stabilization Project

Description

The NH Department of Transportation (NHDOT) Statewide #41915 Project involves stabilization efforts at seven locations to address scour issues and prevent additional scouring or undermining of the existing crossing, and, where feasible, increase aquatic organism passage through the crossing.

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.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
http://www.fws.gov/newengland

October 4, 2021

Rebecca Martin
Bureau of Environment
NH Department of Transportation
7 Hazen Drive, P.O. Box 483
Concord, New Hampshire 03302-0483

Re: NH DOT Scour Project 41915A
TAILS: 05E1NE00-2019-F-2792

Dear Rebecca Martin:

The U.S. Fish and Wildlife Service (Service) is responding to your September 13, 2021 electronic transmission, requesting we verify that the New Hampshire Department of Transportation (NHDOT) proposed repairs to six bridge crossings to address scour issues and prevent additional scouring (Project) may rely on the revised February 5, 2018, Programmatic Biological Opinion (BO) for federally funded or approved transportation projects that may affect the northern long-eared bat (*Myotis septentrionalis*) (NLEB). This letter provides the Service's response as to whether the Federal Highway Administration may rely on the BO to comply with section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; U.S.C. 1531 *et seq.*) for the Project's effects to the NLEB.

The NHDOT, as the non-Federal agency representative for the Federal Transportation Agency, has determined that the Project may affect, and is likely to adversely affect the NLEB. Approximately 1.4 acres of tree clearing will occur in the bat active season. A bridge-bat assessment was conducted and no evidence of bats was found.

NHDOT also determined the Project may rely on the programmatic BO to comply with section 7(a)(2) of the ESA, because the Project meets the conditions outlined in the BO and all tree clearing related to the proposed work will occur farther than 0.25 mile from documented roosts and farther than 0.5 mile from any known hibernacula. The Service reviewed the LAA Consistency Letter and concurs with NHDOT's determination. This concurrence concludes your ESA section 7 responsibilities relative to this species for this Project, subject to the Reinitiation Notice below.

Conclusion

The Service has reviewed the effects of the proposed Project, which include the NHDOT's commitment to implement the impact avoidance, minimization, and compensation measures as indicated on the LAA Consistency Letter. We confirm that the proposed Project's effects are consistent with those analyzed in the BO. The Service has determined that the Project is consistent with the BO's conservation measures, and the scope of the program analyzed in the BO is not likely to jeopardize the continued existence of the NLEB. In coordination with your agency, the Federal Highway Administration, and the other sponsoring Federal Transportation Agencies, the Service will reevaluate this conclusion annually in light of any new pertinent information under the adaptive management provisions of the BO.

Incidental Take of the Northern Long-eared Bat

The Service anticipates that tree removal associated with the proposed Project will cause incidental take of the NLEB. However, the Project is consistent with the BO, and such projects will not cause take of NLEBs that is prohibited under the final 4(d) rule for this species (50 CFR §17.40(o)). Therefore, this taking does not require exemption from the Service.

Reporting Dead or Injured Bats

The NHDOT, the Federal Highway Administration, its State/local cooperators, and any contractors must take care when handling dead or injured NLEBs that are found at the project site, in order to preserve biological material in the best possible condition and to protect the handler from exposure to diseases, such as rabies. Project personnel are responsible for ensuring that any evidence about determining the cause of death or injury is not unnecessarily disturbed. Reporting the discovery of dead or injured listed species is required in all cases to enable the Service to determine whether the level of incidental take exempted by this BO is exceeded, and to ensure that the terms and conditions are appropriate and effective. Parties finding a dead, injured, or sick specimen of any endangered or threatened species must promptly notify the Service's New England Field Office.

Reinitiation Notice

This letter concludes consultation for the proposed Project, which qualifies for inclusion in the BO issued to the Federal Transportation Agencies. To maintain this inclusion, a reinitiation of this project-level consultation is required where the Federal Highway Administration's discretionary involvement or control over the Project has been retained (or is authorized by law) and if:

1. new information reveals that the Project may affect listed species or critical habitat in a manner or to an extent not considered in the BO;
2. the Project is subsequently modified in a manner that causes an effect to listed species or designated critical habitat not considered in the BO; or
3. a new species is listed or critical habitat designated that the Project may affect.

In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease, pending reinitiation.

We appreciate your continued efforts to ensure that this Project is fully consistent with all applicable provisions of the BO. If you have any questions regarding our response, or if you need additional information, please contact Susi von Oettingen of this office at 603-748-8357.

Sincerely yours,

AUDREY MAYER

Digitally signed by AUDREY MAYER
Date: 2021.10.04 14:58:31 -04'00'

Audrey Mayer
Supervisor
New England Field Office

cc: Reading file
Rebecca Martin/NHDOT via email Rebecca.A.Martin@dot.nh.gov
ES: SvonOettingen:jd:10-4-21:603-748-8357

Section 106
Effect Memo

New Hampshire DOT
Department of Transportation

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Victoria F. Sheehan
Commissioner

William Cass, P.E.
Assistant Commissioner

Scour Stabilization
X-A004(779)
41915
RPR 11725

No Adverse Effect Memo

Pursuant to discussions and the New Hampshire Division of Historical Resources response on May 27, 2010 to the Request for Project Review, and for the purpose of compliance with regulations of the National Historic Preservation Act and the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), the NH Division of Historical Resources (NHDHR) and the NH Division of the Federal Highway Administration (FHWA) have coordinated the identification and evaluation of historical and archaeological resources with plans to conduct stabilization activities to address scour and stabilization issues at seven locations in New Hampshire, including in Dorchester, Landaff, Lyme, Rumney, Thornton and Woodstock. Some of these undertakings in project locations align with standards and procedures detailed in the Programmatic Agreement of the 2018 Federal-Aid Highway Program in New Hampshire.

Project Description

The project consists of stabilization efforts at seven locations to address scour issues and prevent additional scouring or undermining of existing crossings, and, where feasible, improve aquatic organism passage through the crossings. Work will include:

- Dorchester 138/064
  NH Route 118 over Bucks Brook is located in Dorchester, NH. The existing bridge was constructed in 1964 and consists of two 5' diameter concrete pipes. The area will be stabilized by placing Class V riprap in the existing the scour pool and within the streambed for a length of approximately 45 feet at the outlet.

- Dorchester 155/088
  River Road over the South Branch Baker River is located in Dorchester, NH. The existing 40-foot clear span steel I-beam with concrete deck bridge is experiencing channel degradation that has exposed the footings. Class IX riprap will be placed approximately 15 feet upstream and downstream of the bridge and within the bridge to prevent further degradation of the river. Class IX riprap will be placed in an area of bank erosion in the southwest quadrant of the bridge for a length of approximately 45 feet.

- Landaff 079/156
  Millbrook Road over Mill Brook is located in Landaff, NH. The 30-foot span concrete arch bridge is experiencing bank erosion along the upstream northeast wingwall. Class VII riprap will be placed for a length of approximately 25 feet along the wingwall and bank and for a length of approximately 10 feet within the brook for approximately 12 feet upstream to stabilize the location. Channel excavation may be needed to install the proposed riprap.

- Lyme 075/106
  NH Route 10 over Grant Brook is located in Lyme, NH. The 30-foot span concrete rigid frame structure is experiencing severe channel degradation that has exposed the footings. Class IX riprap will be placed upstream and downstream of the bridge and within the bridge to prevent further degradation of the brook. Class IX riprap will be placed in an area of bank erosion in the northeast quadrant of the bridge.

- Rumney 105/063
  NH Route 25 over Halls Brook is located in Rumney, NH. The 22-foot span concrete box culvert has a large and deep scour pool that has formed at the outlet. Granular fill and Class IX riprap will be used to fill the scour hole. The riprap limits will extend approximately 65 feet downstream of the bridge.

- Thornton 203/088
  NH Route 175 over Mill Brook is located in Thornton, NH. The 41-foot clear span concrete T-beam structure bridge is experiencing channel degradation that has exposed the footings. Class VII riprap will be placed upstream and downstream of the bridge and within the bridge to prevent further degradation of the brook. The limits of the Class VII riprap will extend approximately 21 feet upstream and downstream of the existing crossing.

- Woodstock 203/079
  I-93 over Eastman Brook is located in Woodstock, NH. The existing 42-foot span structure is a twin cell concrete box culvert (18' clear span each barrel) that originally included riprap at the culvert at the inlet and outlet. This riprap has washed away at the downstream outlet, and significant bank erosion has occurred where the Eastman Brook's bend has been propagating toward a private landowner's property, approximately 300-feet downstream of the crossing. Proposed stabilization measures would include installation of A Jacks or an armor matrix component system on the outlet side within the streambed and Class IX riprap to be placed on the banks for approximately 87 feet. There is steel sheeting in the river on the downstream side that will be cutoff at the armor matrix bottom elevation as needed for installation.

The Areas of Potential Effect (APEs) include the footprints of the above-listed bridges and associated NHDOT Right-of-Ways, areas of proposed scour repair, and construction access roads depicted on each site's project plans.

Identification

Above-Ground Resources Within or Near Combined APE

- Boston, Concord and Montreal Railroad Historic District – Concord to Plymouth Branch
  - NHDHR Inventory # ZMT-BCMR
  - Determined eligible for listing in the National Register – 8/14/2003
  - Meets National Register Criteria for A - Event and C -Architecture/Engineering

- Groton Wind Project
  - NHDHR Inventory # ZMT-GRWP
  - Not evaluated for National Register Individual or District Eligibility – 1/26/2011

- Landaff Bridge 079/156
  - SRI No. 014200790015600
  - Determined eligible for listing in the National Register – 12/20/2019
  - Concrete Closed Spandrel Arch Structure
  - Meets National Register Criterion A for Event

- Lyme Common Historic District
  - NHDHR Inventory # BRW0001
  - Determined eligible for listing in the National Register – 6/8/1988
  - Meets National Register Criteria for A - Event and C -Architecture/Engineering

- Northern Pass White Mountains Region
    - NHDHR Inventory # ZMT-NPWM
    - Not evaluated for National Register Individual or District Eligibility – 4/30/2015

Archaeology

- Areas of Potential Effect at each location considered archaeologically sensitive based on topography and setting, specifically within proposed construction access routes.

Public Consultation

- Project details provided to Lyme Heritage Commission; Letter of Support received - 12/2/2019
- NHDOT Natural Resources Agency Meeting – 4/15/2020
- RPR Originally Reviewed by NHDHR – 5/27/2020
- Additional Information Reviewed by NHDOT Cultural Resources Staff and NHDHR – 6/11/2020

Determination of Effect

Above-Ground Resources

- Boston, Concord and Montreal Railroad Historic District – Concord to Plymouth Branch
    - There would be no adverse effect to the railroad district
    - Rumney Bridge 105/063 is not a contributing resource to the railroad historic district.

- Groton Wind Project
    - There would be no direct or indirect impacts to this resource.

- Landaff Bridge 079/156
    - There would be no adverse effect to the historic structure if repair and repointing of stone wall follows guidance in the Substructure section of the National Park Service's Guidelines for Rehabilitating Historic Covered Bridges.
    - This condition shall be added as an Environmental Commitment to the project's Programmatic Categorical Exclusion.

- Lyme Common Historic District
    - There would be no direct or indirect impacts to this resource.
    - Lyme Bridge 075/106 is not a contributing resource to the historic district.
    - Letter of Support received from Lyme Heritage Commission - 12/2/2019

- Northern Pass White Mountains Region
    - There would be no direct or indirect impacts to this resource.

- The resulting finding for above-ground resources is: **No Adverse Effect to Historic Properties**.

Archaeological Resources

- There would be no adverse effect to archaeologically sensitive resources with the following conditions:
    - Construction access routes would be limited to areas demarcated on project plans.
    - Vegetation clearing would be necessary for construction access routes, but stumping and underground grubbing would be avoided to leave any subterranean resources intact.
    - Excavation for construction access would be avoided where possible and limited to steep slopes.

- The conditions above shall be added as an Environmental Commitment to the project's Programmatic Categorical Exclusion.

- The resulting finding is: **No Adverse Effect to Archaeological Resources**

Based on a review pursuant to 36 CFR 800.4, NHDOT has determined that no historic or archaeological resources in the project area would be adversely affected and that no further survey work is needed.

The result of identification and evaluation for the proposed contract is a finding of: **No Adverse Effect.**

Section 4(f) *(to be completed by FHWA)*	*There Will Be:*	☒ **No 4(f);**	☐ **Programmatic 4(f);**	☐ **Full 4 (f);** or
	☐ **A finding of *de minimis* 4(f) impact as stated:** In addition, with NHDHR concurrence of no adverse effect for the above undertaking, and in accordance with 23 CFR 774.3, FHWA intends to, and by signature below, does make a finding of *de minimis* impact. NHDHR's signature represents concurrence with both the no adverse effect determination and the *de minimis* findings. Parties to the Section 106 process have been consulted and their concerns have been taken into account. Therefore, the requirements of Section 4(f) have been satisfied.			

In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

JAMISON S SIKORA

Digitally signed by JAMISON S SIKORA
Date: 2020.06.29 05:58:31 -04'00'

Jamison S. Sikora, Env. Program Manager — Date
Federal Highway Administrator

Sheila Charles — 6/26/2020

Jill Edelmann — Date
Cultural Resources Manager

Concurred with by the NH State Historic Preservation Officer:

Nadine Miller, DSHPO — 6/29/2020

Nadine Miller — Date
Deputy State Historic Preservation Officer
NH Division of Historical Resources

c.c. David Trubey, NHDHR; Laura Black, NHDHR; Marika Labash, NHDHR; Ronald Crickard, DOT; Jamie Sikora, FHWA; David Scott, NHDOT; Joanne Theriault, HTA

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
WETLAND PERMIT APPLICATION
for
Scour Stabilization of Bridge 079/156 – Mill Brook Road over Mill Brook
Landaff, NH
Supplemental Narrative

The following information is offered as a supplement to the information provided in the Wetland Permit Application and Plans.

Purpose and Need:
Mill Brook through the crossing and in the project location experiences high velocities of 14.3 feet per second (FPS) during the 50-yr design storm, as detailed in the hydraulic analysis included in this wetland permit application. Severe channel degradation has occurred and has exposed the footings of the 30-foot span concrete arch bridge carrying Mill Brook Road over Mill Brook in Landaff, NH. The streambed upstream and downstream of the crossing appears to have degraded over time. Due to the alignment of the stream to the bridge, the northeast bank adjacent to the wingwall has significant erosion. The bridge cannot be replaced with a larger structure at this time, and the purpose of the project is to stabilize the bridge and abutments of this important piece of infrastructure.

Resources:
Stoney Ridge Environmental, LLC (SRE) completed the wetlands and stream delineations as well as functions and values assessments for NHDOT's Statewide Scour Protection Project. Wetlands were delineated in accordance with Env-Wt 406.01; SRE's methodology is described in the included Wetland Delineation and Invasive Species Report. The Mill Brook location in Landaff is Site 4 in the report. SRE describes Mill Brook as riverine, upper perennial with unconsolidated bottom composed of cobble-gravel and sand (R3UB1/2). The stream is "a shallow fast moving" system that flows west through the project area. There are multiple areas of adjacent wetland, which SRE classified as palustrine, forested, with needle leaved evergreen vegeation that is seasonally flooded/saturated (PFO4E). A summary narrative of the Functions and Values Assessment is part of the Wetland Delineation and Invasive Species Report included with this application.

Explanation as to methods, timing, and manner as to how the project will meet applicable standard permit conditions required in Env-Wt 307 (Env-Wt 311.03(b)(7))

Env-Wt 307.02 (US Army Corps of Engineers (USACE) Conditions). Appendix B is attached to this permit application. NHDOT seeks and requests to receive review and approval by the Army Corps of Engineers through their General Permit and via submittal of this State wetlands permit application to NHDES.

Env-Wt 307.03 (Protection of Water Quality Required). The contractor shall be responsible for implementing Erosion and Sediment control measures in accordance with the "New Hampshire Stormwater Manual, Volume 3 Erosion and Sediment Controls during Construction" by NHDES. Erosion and siltation control measures will be installed by the Contractor prior to start of any work and will be maintained during the duration of the construction activities. It is the Contractor's responsibility to not cause violations of surface water quality standards. Upon completion of the project, the project will cause no adverse effects on the quality or quantity of surface or groundwater entering or exiting the project site.

Env-Wt 307.04 (Protection of Fisheries and Breeding Areas Required). Mill Brook in this location is classified as a *documented* cold water fishery. All instream work will be performed during low flows prior

to October 1st. NHF&G was contacted regarding the proposed repairs in relation to the status of Mill Brook in this location, see attached correspondence.

Env-Wt 307.05 (Protection Against Invasive Species Required) Stoney Ridge Environmental performed a Wetland Delineation of the project area and noted the following: "The invasive species honeysuckle (*Lonicera spp.*) as well as a small stand of Japanese knotweed (*Fallopia japonica)* was observed within the project area. The locations of these invasive species are depicted on the [plan enclosed in the wetland report.]" Although the invasive plant populations are not located within the proposed work area or construction access route, the project contractor will be aware of and conform with the requirements in Env-Wt 307.05 and will follow the invasive plant BMPs should additional invasive species be identified during site work.

Env-Wt 307.06 (Protection of Rare, Threatened or Endangered Species and Critical Habitat) The NH Natural Heritage Bureau was contacted regarding the proposed project (see attached letter NHB22-11025, dated 03/15/2022). The database check determined that, there are no recorded occurrences for sensitive species near the project area.

An official Federally-listed species list was obtained from the US Fish and Wildlife Service (USFWS) using the Information for Planning and Conservation (IPAC) online tool. The list includes the Federally-threatened Northern Long Eared Bat (*Myotis septentrionalis*; NLEB) and the Monarch Butterfly (*Danaus plexippus*) as a candidate species. A copy of the species list is included with this permit application.

USF&W has reviewed the effects of the proposed project. In a letter dated October 4, 2021, USF&W determined that the Project is consistent with the scope of actions included in the FHWA, FRA, and FTA Programmatic Biological Opinion (BO) for Transportation Projects within the Range of the Indiana Bat and NLEB, revised on February 5, 2018, and is not likely to jeopardize the continued existence of the NLEB. A copy of the letter is included with this permit application.

Env-Wt 307.11 (Filling Activity Conditions). All fill material shall conform to the requirements listed in 307.11.

Env-Wt 307.12 (Restoring Temporary Impacts: Site Stabilization) Upon completion of the project all temporary impact areas will be restored per the requirements listed in Env-Wt 307.12. A Planting Plan has been developed and is provided in the plan set with this application. Plantings will be installed as detailed in areas of temporary disturbance along bank areas above the Ordinary High Water line. Plantings will only be placed within those areas identified for temporary impact that are at risk of soil alteration or disturbance- bank areas identified as temporary impact that are not identified for plantings are those in which the contractor will be able to move across the ground surface with minimal vegetation removal (cut flush to the surface as needed) or soil disturbance. Per Env-Wt 307.12, temporary impact areas that are disturbed will be planted as shown and will be monitored to confirm at least 75% successful establishment of wetlands vegetation after 2 growing seasons and nuisance species shall not invade after 1 growing season. Native excavate will be re-used as feasible to increase potential for re-colonization of native vegetation.

Env-Wt 307.13 (Property Line Setbacks): Per Env-Wt 307.13(e)(1), consent is not required to be obtained from affected abutters for bank stabilization projects.

Env-Wt 307.14 (Rock Removal). No rocks shall be removed from Mill Brook unless necessary, will not be blasted or removed unless necessary, and such rocks shall be used within 10-20 feet of their current location at a similar depth where feasible.

Env-Wt 307.15 (Use of Heavy Equipment in Wetlands) In order to construct the proposed project, heavy equipment will need to traverse the stream banks and enter Mill Brook. Access causeways will be established with a temporary stone fill over geotextile fabric to minimize disruption of native soils and vegetation. Fills shall be limited to the wetland impact areas shown on the attached project plans. Temporary access routes will be restored to pre-construction condition at the conclusion of the proposed project.

Env-Wt 307.16 (Adherence to Approved Plans Required) All work shall be in accordance with the plans prepared by Hoyle Tanner and approved by NHDES.

Env-Wt 307.18 (Reports) The contractor will be responsible for preparing a Storm Water Pollution Prevention Plan. This plan will be submitted to NHDES for approval prior to the contractor working within jurisdictional resources.

Statement of whether the applicant has received comments from the local conservation commission and, if so, how the applicant has addressed the comments (Env-Wt 311.06(h))

A copy of this wetland permit application was submitted by the NHDOT to the Town of Landaff for distribution to the Landaff Conservation Commission concurrent with submittal of the application to NHDES.

Avoidance and Minimization of Impacts to Resource Functions and Values

Impacts to the Mill Brook stream channel will be necessary to effectively stabilize the existing streambed and crossing structure as flow velocities at this location can reach 14.3 fps during a 50-year storm event (see attached Hydrologic and Hydraulic Analysis Summary). These projected flows would render vegetative, bio-engineering, and semi-natural form design impractical within areas below Orindary High Water. A Planting Plan has been developed and is included in this application plan set that addresses biostabilization along areas of temporary bank disturbance. The proposed project includes installation of a gabion wall. Effective stabilization of this crossing will improve water quality in Mill Brook by preventing downstream sedimentation caused by bank and bed erosion. Please see the completed Bank/Shoreline Stabilization Project Specific Worksheet included with this application package for the proposed project.

Temporary access areas are identified on the plans provided with this application and have been designed and located to result in the minimum amount of impact as is necessary to complete the project. A single access pathway will be created to access work areas on both sides of the stream.

SRE completed a Function and Values Assessment as part of the attached Wetland Delineation Report, and the system exhibits the functions listed below. Avoidance and minimization of impact to each function has been addressed in the following ways:

- Flood-Flow Alteration (primary): Effective stabilization of this crossing will facilitate conveyance of flood-flows in Mill Brook while protecting the bridge substructure and preventing downstream sedimentation caused by bank and bed erosion.
- Production Export: Vegetation clearing for construction access as proposed would have only a negligible and temporary impact on production export. Proposed permanent impacts are limited to currently eroded banks of a fast-flowing upper perennial stream, which are unsuitable as habitat for most food-producing plant species.

- Fish Habitat: The proposed scour stabilization measures would maintain current aquatic passage conditions for fish and improve water quality by preventing sedimentation caused streambank erosion.
- Sediment/Shoreline Stabilization (primary): Floodplain wetland at the site functions to create a gradient between the streambed and upland and naturally stabilizes the bank. However, the high flows in the stream and the presence of the existing crossing undermine this natural system. The proposed solution would necessarily impact this gradient transition, but the hardscape area has been minimized to cover only the streambank necessary to protect the substructure of the bridge and the existing roadbed.
- Wildlife Habitat: Impacts to wildlife habitat in the shoreland area of Mill Brook would be temporary in nature, and shoreland construction access routes would be returned to their pre-construction condition.

Pre-application coordination with NHDES included attendance at the NHDOT Natural Resource Agency Meeting on April 15, 2020 and a meeting with Karl Benedict and Lori Sommer on October 15, 2021. Copies of meeting minutes are included with this permit application. The proposed configuration for scour stabilization was discussed and avoidance and minimization efforts were incorporated into the project design.

Mitigation

Per Env-Wt 313.04(a)(1), (2), and (3)(a) mitigation is not required for the proposed project because: there will be no permanent impact to a PRA, and the project is limited to bank stabilization using rip-rap, bio-engineering methods, or other bank stabilization techniques to protect existing infrastructure such as highways, bridges, dams, or buildings.

Additionally, a pre-application and mitigation meeting was held October 15, 2021 with NHDES. At the meeting, Lori Sommer stated that bank stabilization projects with fill within the stream channel less than 200 LF mitigation would not be required as long as post-construction monitoring occurred to confirm that a functioning system results from the work. The project will not result in more than 200 LF of fill. Post-construction monitoring will occur as noted on plans for two years. A report will be submitted to NHDES annually summarizing the monitoring events. Therefore, no compensatory mitigation is being proposed for the project. A copy of the October 21, 2021 meeting minutes is included with this application.

US Army Corps of Engineers ®
New England District

New Hampshire General Permits (GPs)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

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

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*	X	
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	X	
2.2 Are there proposed impacts to SAS, special wetlands. Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) DataCheck Tool for information about resources located on the property at https://www2.des.state.nh.us/nhb_datacheck/. The book Natural Community Systems of New Hampshire also contains specific information about the natural communities found in NH.		X
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	N/A	
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?	N/A	
2.7 What is the area of the proposed fill in wetlands?	0SF	
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?	N/A	
3. Wildlife	Yes	No
3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require an NHB ID number & a USFWS IPAC determination.) NHB DataCheck Tool: https://www2.des.state.nh.us/nhb_datacheck/ USFWS IPAC website: https://ecos.fws.gov/ipac/location/index	X	

3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.		X
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the GC 21?	N/A	
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?	X	
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?	N/A	
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 11 GC 8(d) of the GP document**	X	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.
** If your project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

U.S. Army Corps of Engineers
New Hampshire Programmatic General Permit (PGP)
Appendix B Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

Scour Stabilization of Bridge 079/156 – Mill Brook Road over Mill Brook
Landaff, NH

Explanations for Checklist Answers

1.1 Mill Brook is located within the NHDES Assessment Unit Name of Mill Brook – Unnamed Brook. According to the 2018 303(d) list this waterbody is marginally impaired for fish consumption due to mercury. The proposed project will not add to these impairments.

2.1 The project is proposed to stabilize areas of scour and structure deterioration at an existing stream crossing. The stream and some associated floodplain will be affected by the project.

2.4 Riparian buffers will be affected by the project as required to gain construction access to the existing bridge; however, these impacts have been minimized to the extent practicable. Temporary bank impact areas that include soil disturbance and vegetation removal will be restored via installation of plantings.

3.1 The NH Natural Heritage Bureau was contacted regarding the proposed project (see attached letter NHB22-1025, dated 03/15/2022). The database check determined that there are no recorded occurrences for sensitive species near the project area.

An official Federally-listed species list was obtained from the US Fish and Wildlife Service (USFWS) using the Information for Planning and Conservation (IPAC) online tool. The list includes the Federally-threatened Northern Long Eared Bat (*Myotis septentrionalis*; NLEB) and the Monarch Butterfly (*Danaus plexippus*) as a candidate species. A copy of the species list is included with this permit application.

USF&W has reviewed the effects of the proposed project. In a letter dated October 4, 2021, USF&W determined that the Project is consistent with the scope of actions included in the FHWA, FRA, and FTA Programmatic Biological Opinion (BO) for Transportation Projects within the Range of the Indiana Bat and NLEB, revised on February 5, 2018, and is not likely to jeopardize the continued existence of the NLEB. A copy of the letter is included with this permit application.

4.1 The proposed scour stabilization project is located within the 100-year floodplain of Mill Brook but will not result in a loss of flood storage. The proposed project includes installation of a gabion wall to resist further scour and erosion on the streambank. Effective stabilization of this crossing will improve Mill Brook's ability to handle runoff waters by preventing downstream sedimentation caused by bank erosion.

5. A Request for Project Review was submitted in May 2020 to the New Hampshire Division of Historic Resources (NHDHR) for the entire NHDOT 41915 Scour Stabilization Project. A response was received acknowledging the presence of three historic properties in the combined Area of Potential Effects (APE) of the project but requesting no additional inventory. NHDHR had additional concerns regarding areas of archaeological sensitivity along proposed construction access routes but determined that there would be no adverse effects to subterranean resources provided that clearing of vegetation is limited to ground level and no tree stumping and excavation occurs whenever possible. A determination of No Adverse Effect was completed on July 7, 2020, and is attached.

Construction Sequence

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
WETLAND PERMIT APPLICATION
for
Scour Stabilization of Bridge 079/156 – Mill Brook Road over Mill Brook
Landaff, NH
Proposed Construction Sequence

1. All work will be done during low-flow or dry conditions during the growing season and prior to October 1 in accordance with Env-Wt 514.05(e)(1).
2. Install traffic control signage and concrete barriers as needed for construction access. Lane closures may be necessary to install water diversion structure(s). Occasional traffic control will be necessary as construction vehicles enter and leave the construction access area to construct the scour countermeasures.
3. Install temporary erosion control measures as detailed in the Stormwater Pollution Prevention Plan.
4. Construct access to the bridge northeast wingwall area.
5. Construct approved Contractor detailed water diversion structure(s) within the wetland impact areas. All work will be conducted in the dry.
6. Water diversion structure(s) will be designed to withstand storms during construction. It is anticipated that the water diversion structure(s) will consist of sandbags to divert water away from the work area and through the bridge. It is common practice for the contractor to monitor the weather and to stabilize and adjust the water diversion capacity as needed. Further details regarding the water diversion structures can be found in the Stormwater Pollution Prevention Plan, and any changes are noted with this living document.
7. Excavate to the limits and elevations shown on the plans or as directed by the Engineer as necessary to install the gabion retaining wall. Excavated materials will be retained on site to be re-used as feasible during bank planting to increase potential for re-colonization of native vegetation. Excavate not re-used will be deposited into construction hauling equipment for removal, proper treatment and disposal as detailed in the Stormwater Pollution Prevention Plan.
8. Place Concrete Class T, Foundation Seal on bedrock as required to provide a level bearing surface.
9. Install the gabion retaining wall and backfill with granular backfill.
10. Remove water diversion structure(s).
11. Install plantings in temporary bank impact areas as detailed on Planting Plan and Wetland Impact Plan sheets. Remove temporary access area.
12. Stabilize disturbed access areas and roadway slopes by loaming, seeding and installing erosion control matting as needed.
13. Remove temporary erosion control measures once stabilized.

Water diversion structure(s) will remain in-place for approximately one month until the gabion retaining wall scour countermeasure is installed and they are no longer required by the Contractor's means and methods to complete the work.

Project Plans

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

WETLANDS PLANS
FEDERAL AID PROJECT

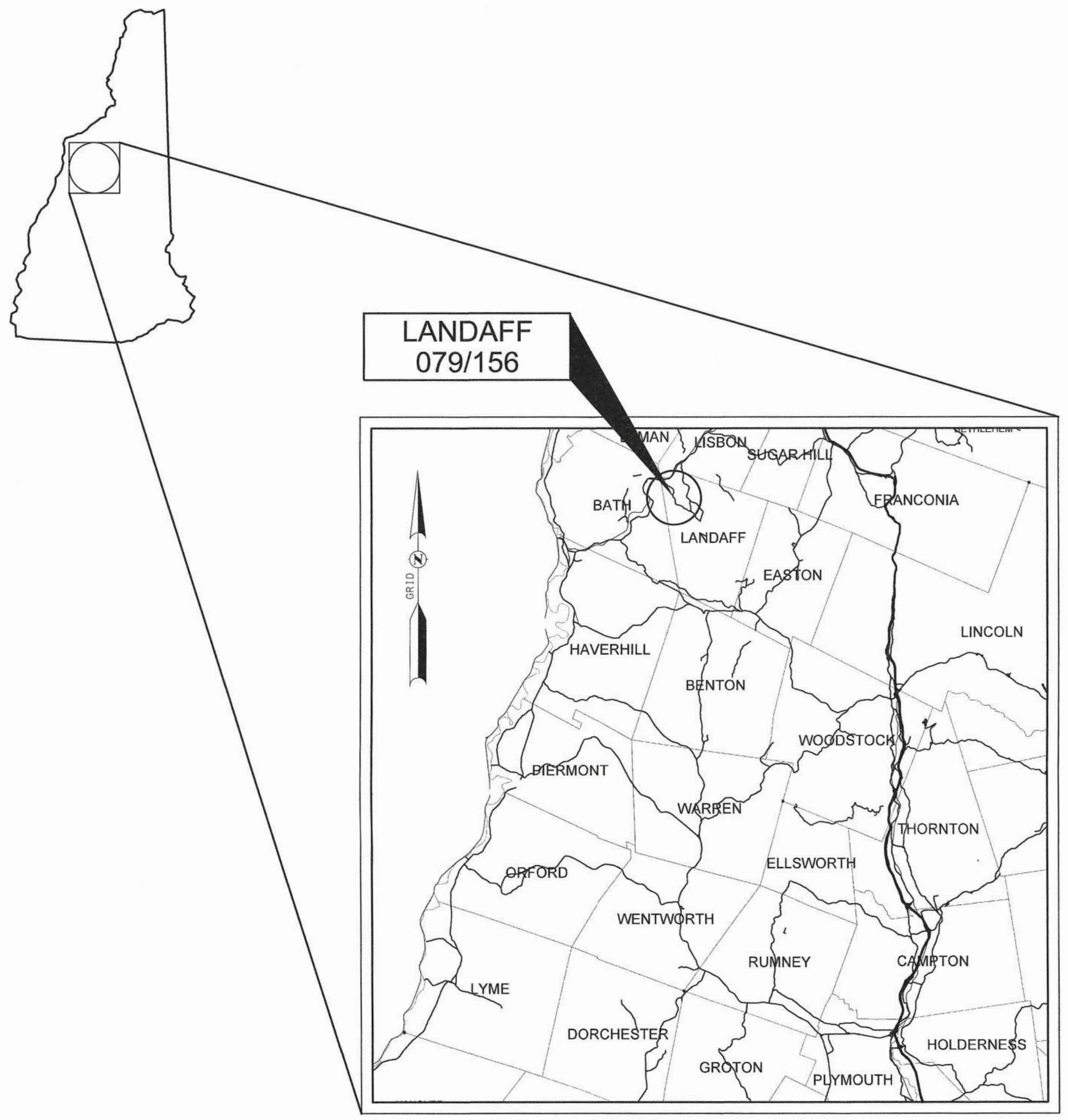
X-A004(779)
N.H. PROJECT NO. 41915A
SCOUR STABILIZATION

Jurisdictional Wetlands were delineated by Cynthia M Balcius CWS #61, CSS & CPESC on May 14, 15 and 16, 2019 utilizing the following standards:

1) United States Department of Agriculture, Natural Resources Conservation Service. 2018. *Field Indicators of Hydric Soils in the United States*, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
2) *Field Indicators for Identifying Hydric Soils In New England*. Version 4. April 2019. New England Hydric Soils Technical Committee.
3) *U.S. Army Corps of Engineers 2020: National Wetland Plant List, version 3.5 (http://wetland_plants.usace.army.mil)*. U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH.
4) *The National Wetland Plant List: 2016 wetland ratings.* Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X.
5) *Corps of Engineers Wetlands Delineation Manual*. January 1987. Wetlands Research Program Technical Report Y-87-1.
6) *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*: Northcentral and Northeast Region. January 2012, Version 2. U.S. Army Corps of Engineers. Environmental Laboratory ERDC/EL TR-12-1.
7) *Classification of Wetlands and Deepwater Habitats of the United States*. December 1979. L. Cowardin, V. Carter, F. Golet, and E. LaRoe. US Department of the Interior. Fish and Wildlife Service. FWS/OBS-79/31.

Stoney Ridge Environmental LLC, 233 Prospect Mountain Road, Alton, NH 03809
(p): 603-776-5825, (f) 603-776-5826, info@stoneyridgeenv.com

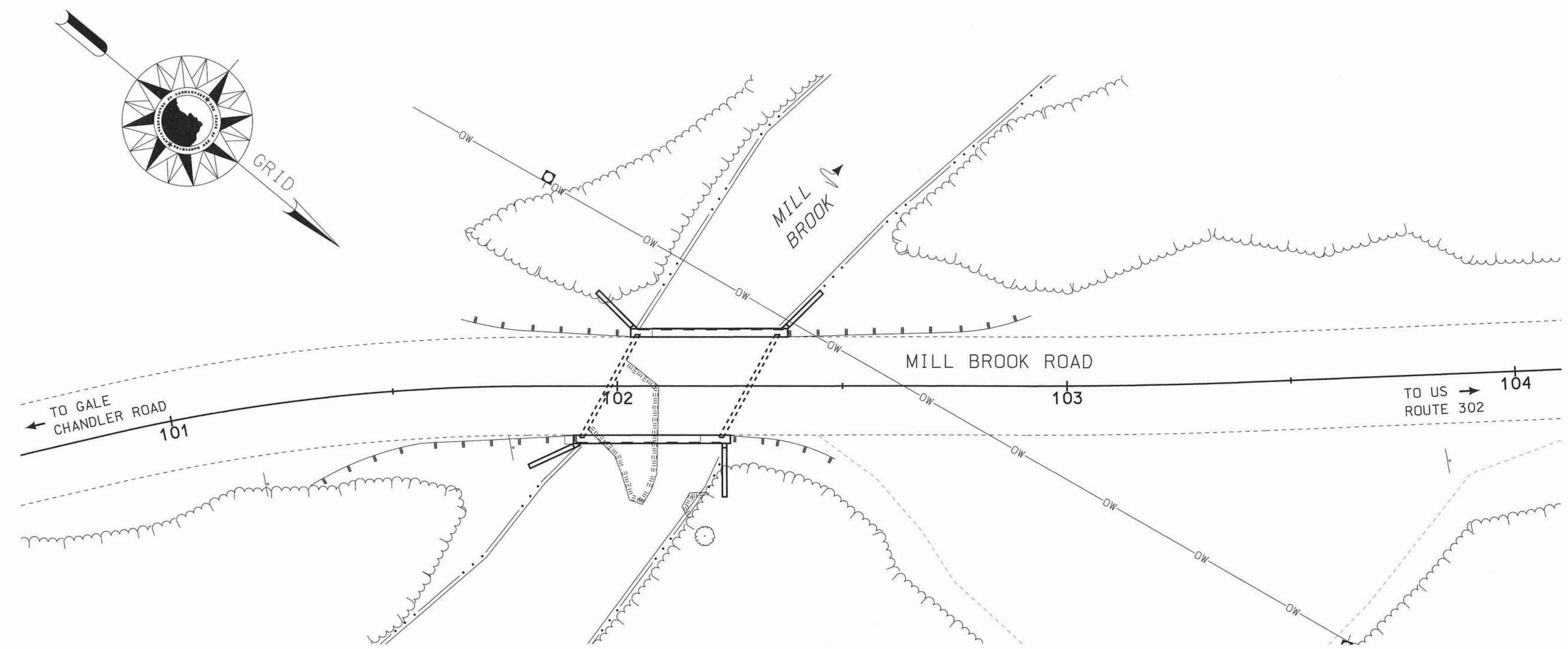
STATE OF NEW HAMPSHIRE
CYNTHIA M. BALCIUS
No. 061
CERTIFIED WETLAND SCIENTIST
4/28/22



LOCATION MAP

1 ½ 0 1 2 mi.

GRAPHIC SCALE



TOWN OF LANDAFF
COUNTY OF GRAFTON

SCALE: 1" = 20'

FOR CONSTRUCTION AND ALIGNMENT DETAILS -
SEE CONSTRUCTION PLANS

INDEX OF SHEETS

DRAWN BY	TAG	DATE	3/21/22
CHECKED BY	EGW	DATE	3/21/22

STATE OF NEW HAMPSHIRE
EDWARD G. WEINGARTNER
No. 9140
LICENSED
PROFESSIONAL ENGINEER
4/29/2022

Hoyle, Tanner & Associates, Inc.

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR APPROVAL:

DIRECTOR OF PROJECT DEVELOPMENT DATE

APPROVED:

ASSISTANT COMMISSIONER AND CHIEF ENGINEER DATE

DRAWING NAME	DRAWING NAME	FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
092590_18	4191A5FSC	X-A004(779)	41915A	1	7

GENERAL

EDGE OF PAVEMENT — PROPOSED ROADWAY / existing roadway / (pavement removed outside slope lines)

TRAVELED WAY

DRIVEWAYS — (label surface type)

BUILDINGS — (building to be removed)

(label house or type of building)

FOUNDATION — (label type)

LEACH FIELD — leach field

BRIDGE CROSSINGS — STREAM / OVERPASS

STEPS AND WALK — (label type)

INTERMITTENT WATER COURSE

SHORE LINE — river/stream / pond / (label name of water body)

POTENTIAL WET AREA SYMBOL

BRUSH OR WOODS LINE

TREES (PLANS) — (deciduous) (coniferous) (stump)

TREE OR STUMP (CROSS-SECTIONS) — (show station, circumference in feet & type)

HEDGE — (label type)

MONITORING WELL — mon W

WELL — W

FLAG POLE — fp

ORIGINAL GROUND (TYPICALS)

ROCK OUTCROP

ROCK LINE (TYPICALS & SECTIONS ONLY)

GUARDRAIL (label type) — existing / PROPOSED — bgr / cgr

JERSEY BARRIER

CURB (LABEL TYPE)

STONE WALL

RETAINING WALL (LABEL TYPE) — (points toward retained ground)

FENCE (LABEL TYPE)

SIGNS — (single post) / (double post)

GAS PUMP — gp

FUEL TANK (ABOVE GROUND) — ft (label size & type)

STORAGE TANK FILLER CAP — fc

SEPTIC TANK — S

GRAVE — gr

MAILBOX — mb

VENT PIPE — vp

SATELLITE DISH ANTENNA — da

PHONE — ph

GROUND LIGHT/LAMP POST — gl / lp

BORING LOCATION — B

TEST PIT — TP

INTERSTATE NUMBERED HIGHWAY — 293

UNITED STATES NUMBERED HIGHWAY — 3

STATE NUMBERED HIGHWAY — 102

SHORELAND - WETLAND

WETLAND DESIGNATION AND TYPE — 2 / PUB2E

DELINEATED WETLAND — DW

ORDINARY HIGH WATER — OHW

TOP OF BANK — TOB

TOP OF BANK & ORDINARY HIGH WATER — TOBOHW

NORMAL HIGH WATER — NHW

WIDTH AT BANK FULL — WBF

PRIME WETLAND — PWET

PRIME WETLAND 100' BUFFER — PWET100

NON-JURISDICTIONAL DRAINAGE AREA — NJDA

COWARDIN DISTINCTION LINE — CDL

TIDAL BUFFER ZONE — TBZ

DEVELOPED TIDAL BUFFER ZONE — DTBZ

HIGHEST OBSERVABLE TIDE LINE — HOTL

MEAN HIGH WATER — MHW

MEAN LOW WATER — MLW

VERNAL POOL — VP

SPECIAL AQUATIC SITE — SAS

REFERENCE LINE — REF

WATER FRONT BUFFER — WB50

NATURAL WOODLAND BUFFER — NWB150

PROTECTED SHORELAND — PS250

INVASIVE SPECIES LABEL — I.S. I / I.S. II

INVASIVE SPECIES — INV

FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY — FP500

100 YEAR FLOODPLAIN BOUNDARY — FP100

FLOODWAY — FW

ENGINEERING

CONSTRUCTION BASELINE — 30 31 32

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

SLOPE LINE (FILL)

SLOPE LINE (CUT)

PROFILES AND CROSS SECTIONS:
ORIGINAL GROUND ELEVATION (LEFT) 72.5
FINISHED GRADE ELEVATION (RIGHT) 79.14

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	41915ASSI	41915A	2	7

DRAINAGE

MANHOLE

CATCH BASIN

DROP INLET

(existing) (PROPOSED)

DRAINAGE PIPE (existing)

DRAINAGE PIPE (PROPOSED)

(label size & type)

UNDERDRAIN (existing) W/ FLUSHING BASIN

UNDERDRAIN (PROPOSED) W/ FLUSHING BASIN

show direction of flow

(label size & type)

HEADER (existing & PROPOSED)

(with stone outlet protection)

END SECTION (existing & PROPOSED)

METAL or PLASTIC

RCP

OPEN DITCH (PROPOSED)

EROSION CONTROL/ STONE SLOPE PROTECTION

BOUNDARIES / RIGHT-OF-WAY

RIGHT-OF-WAY LINE (label type)

RR RIGHT-OF-WAY LINE

PROPERTY LINE

PROPERTY LINE (COMMON OWNER)

TOWN LINE BOW / CONCORD

COUNTY LINE COOS / GRAFTON

STATE LINE MAINE / NEW HAMPSHIRE

NATIONAL FOREST

CONSERVATION LAND

BENCH MARK / SURVEY DISK

BOUND (PROPOSED)

STATE LINE/ TOWN LINE MONUMENT

NHDOT PROJECT MARKER

IRON PIPE OR PIN

DRILL HOLE IN ROCK

TAX MAP AND LOT NUMBER

156 / 14

1642/341

6.80 Ac.±

PROPERTY PARCEL NUMBER

HISTORIC PROPERTY

UTILITIES

existing PROPOSED

TELEPHONE POLE

POWER POLE

JOINT OCCUPANCY

MISCELLANEOUS/UNKNOWN POLE

GUY POLE OR PUSH BRACE

(plot point at face not center of symbol)

LIGHT POLE

LIGHT ON POWER POLE

LIGHT ON JOINT POLE

POLE STATUS:
REMOVE, LEAVE, PROPOSED, OR TEMPORARY AS APPLICABLE e.g.:

R L P+04 25.0' T+04 25.0'

RAILROAD (label ownership)

RAILROAD SIGN

RAILROAD SIGNAL

UTILITY JUNCTION BOX

OVERHEAD WIRE (label type)

UNDERGROUND UTILITIES

WATER (on existing lines label size, type and note if abandoned)

SEWER

TELEPHONE

ELECTRIC

GAS

LIGHTING

INTELLIGENT TRANSPORTATION SYSTEM

FIBER OPTIC

WATER SHUT OFF

GAS SHUT OFF

HYDRANT

MANHOLES

SEWER MHS

TELEPHONE MHT

ELECTRICAL MHE

GAS MHG

UNKNOWN

TRAFFIC SIGNALS / ITS

existing PROPOSED

MAST ARM (existing) 30' MA (NOTE ANGLE FROM ℄)

OPTICOM RECEIVER

OPTICOM STROBE

TRAFFIC SIGNAL

PEDESTAL WITH PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON UNIT

SIGNAL CONDUIT

CONTROLLER CABINET

METER PEDESTAL

PULL BOX

LOOP DETECTOR (QUADRUPOLE) (label size)

LOOP DETECTOR (RECTANGULAR) (label size)

CAMERA POLE (CCTV)

FIBER OPTIC DELINEATOR

FIBER OPTIC SPLICE VAULT

ITS EQUIPMENT CABINET

VARIABLE SPEED LIMIT SIGN

DYNAMIC MESSAGE SIGN

ROAD AND WEATHER INFO SYSTEM

CONSTRUCTION NOTES

CURB MARK NUMBER – BITUMINOUS B–1

CURB MARK NUMBER – GRANITE G–1

CLEARING AND GRUBBING AREA A

DRAINAGE NOTE 1

EROSION CONTROL NOTE A

FENCING NOTE A

GUARDRAIL NOTE 1

ITS NOTE 1

LIGHTING NOTE A

TRAFFIC SIGNAL NOTE 1

SHEET 2 OF 2

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9–1–2016	41915ASSI	41915A	3	7

EROSION CONTROL STRATEGIES

1. ENVIRONMENTAL COMMITMENTS:
   1.1. THESE GUIDELINES DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH ANY CONTRACT PROVISIONS, OR APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
   1.2. THIS PROJECT WILL BE SUBJECT TO THE US EPA'S NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER CONSTRUCTION GENERAL PERMIT AS ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THIS PROJECT IS SUBJECT TO REQUIREMENTS IN THE MOST RECENT CONSTRUCTION GENERAL PERMIT (CGP).
   1.3. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NHDES WETLAND PERMIT, THE US ARMY CORPS OF ENGINEERS PERMIT, WATER QUALITY CERTIFICATION AND THE SPECIAL ATTENTION ITEMS INCLUDED IN THE CONTRACT DOCUMENTS.
   1.4. ALL STORM WATER, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION (DECEMBER 2008) (BMP MANUAL) AVAILABLE FROM THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES).
   1.5. THE CONTRACTOR SHALL COMPLY WITH RSA 485-A:17, AND ALL, PUBLISHED NHDES ALTERATION OF TERRAIN ENV-WQ 1500 REQUIREMENTS (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" AND MAY 1" 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", OR WHICH ARE DISTURBED AFTER OCTOBER 15", 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", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
      (C) AFTER NOVEMBER 30" 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-WQ 1505.02 AND ENV-WQ 1505.05.
      (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WQ 1505.05) AND INCLUDING THE REQUIREMENTS OF NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30".

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" THROUGH NOVEMBER 30", 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-WQ 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-WQ 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-WQ 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-WQ 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-WQ 1506.12 FOR AN ACTIVE FLOCCULANT TREATMENT SYSTEM TO TREAT AND RELEASE WATER CAPTURED IN STORM WATER BASINS. THE CONTRACTOR SHALL ALSO RETAIN THE SERVICES OF AN ENVIRONMENTAL CONSULTANT WHO HAS DEMONSTRATED EXPERIENCE IN THE DESIGN OF FLOCCULANT TREATMENT SYSTEMS. THE CONSULTANT WILL ALSO BE RESPONSIBLE FOR THE IMPLEMENTATION AND MONITORING OF THE SYSTEM.

TABLE 1
GUIDANCE ON SELECTING TEMPORARY SOIL STABILIZATION MEASURES

APPLICATION AREAS	DRY MULCH METHODS				HYDRAULICALLY APPLIED MULCHES[2]				ROLLED EROSION CONTROL BLANKETS[3]			
	HMT	WC	SG	CB	HM	SMM	BFM	FRM	SNSB	DNSB	DNSCB	DNCB
SLOPES[1]												
STEEPER THAN 2:1	NO	NO	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES
2:1 SLOPE	YES'	YES'	YES	YES	NO	NO	YES	YES	NO	YES	YES	YES
3:1 SLOPE	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO
4:1 SLOPE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO
WINTER STABILIZATION	4T/AC	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES
CHANNELS												
LOW FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
HIGH FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

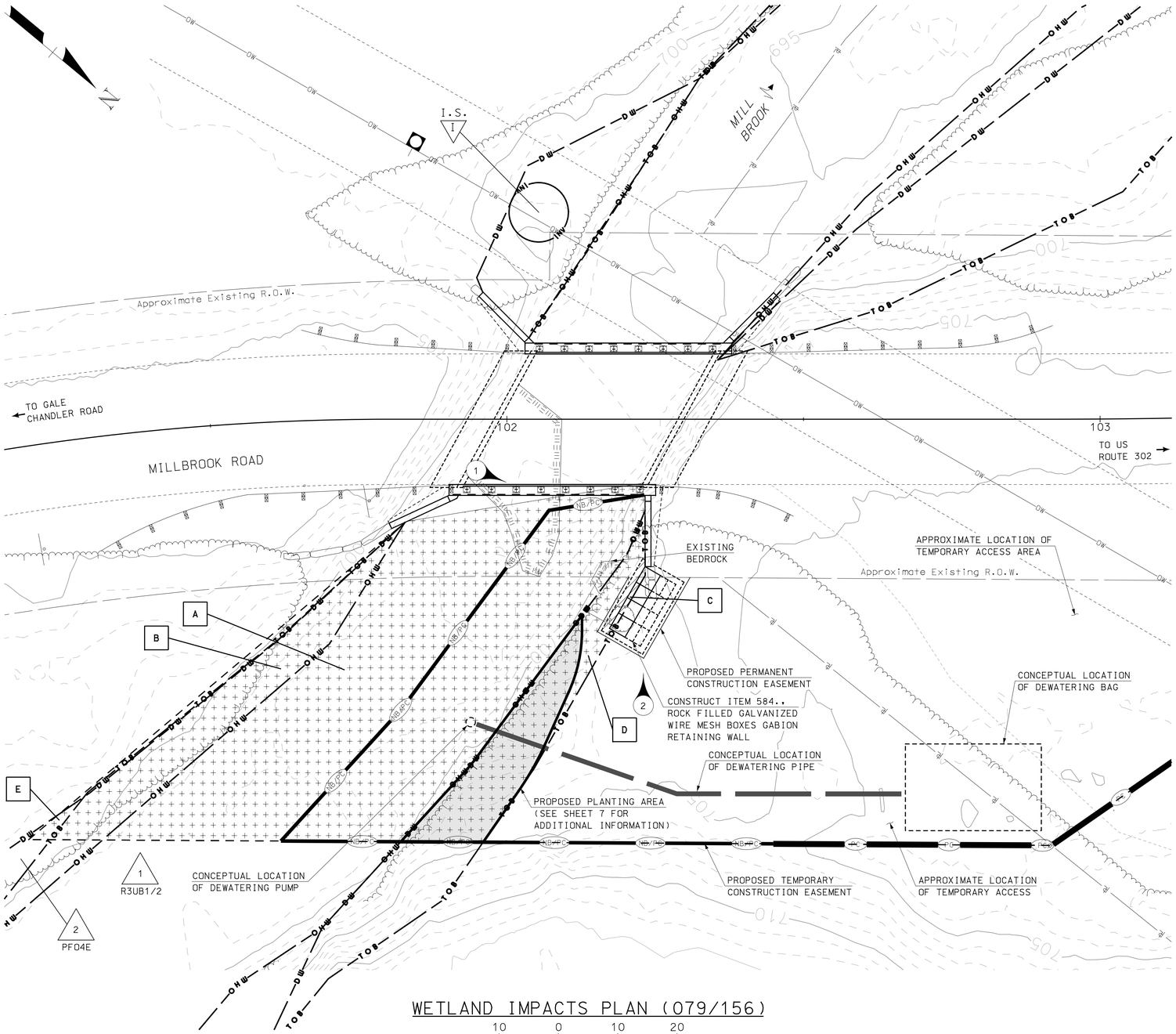
ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNSCB	2 NET STRAW-COCONUT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

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

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	41915Aerosstrat	41915A	4	7



WETLAND IMPACTS PLAN (079/156)

10 0 10 20

SCALE IN FEET

EROSION CONTROL PLAN LEGEND

PC — PERIMETER CONTROL

- SILT FENCE
- EROSION CONTROL MIX BERM
- EROSION CONTROL MIX SOX
- TURBIDITY CURTAIN
- SHEET PILE
- COFFER DAM

NB/PC — NATURAL BUFFER/PERIMETER CONTROL

- SILT FENCE
- EROSION CONTROL MIX BERM
- EROSION CONTROL MIX SOX
- TURBIDITY CURTAIN
- SHEET PILE
- COFFER DAM

WETLAND CLASSIFICATION CODES

R3UB1/2	RIVERINE, UPPER PERENNIAL, UNCONSOLIDATED BOTTOM, COBBLE– GRAVEL, SAND
PF04E	PALUSTRINE, FORESTED, WITH NEEDLE LEAVED EVERGREEN VEGITATION, SEASONALLY FLOODED/SATURATED

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 IMPACT LOCATION
- —TOB— TOP OF BANK
- —OHW— ORDINARY HIGH WATER
- —DW— DELINEATED WETLANDS

WETLAND IMPACT SUMMARY

WETLAND NUMBER	WETLAND CLASS–IFICATION	LOCATION	AREA IMPACTS					
			PERMANENT				TEMPORARY	
			N.H.W.B. (NON–WETLAND)		N.H.W.B. & A.C.O.E. (WETLAND)			
			SF	LF	SF	LF	SF	LF
1	R3UB1/2	A					2464	73
	BANK	B					447	77
	BANK	C	23	14				
	BANK	D					432	44
2	PF04E	E					15	
		TOTAL	23	14			3358	194

PERMANENT IMPACTS: 23 SF/14 LF
TEMPORARY IMPACTS: 3358 SF/194 LF

TOTAL IMPACTS: 3381 SF/208 LF

ACCESS FOR BRIDGE CONSTRUCTION

1. ITEM 500.0203, ACCESS FOR BRIDGE CONSTRUCTION, SHALL CONSIST OF THE DESIGN, CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ANY TEMPORARY ACCESS BY THE CONTRACTOR. SEE SPECIAL PROVISIONS FOR ADDITIONAL DETAILS.
2. TEMPORARY FILLS SHALL ONLY OCCUR WITHIN AREAS AS INDICATED ON THIS PLAN AND WITHIN EASEMENTS. ALL TEMPORARY FILLS SHALL BE REMOVED UPON PROJECT COMPLETION WITH THE EXCEPTION OF THAT NECESSARY FOR PLANTING INSTALLATION AS DETAILED ON THE PLANTING PLAN SHEET INCLUDED IN THIS PLAN SET.
3. ITEM 646.31, TURF ESTABLISHMENT WITH MULCH AND TACKIFIERS AND ITEM 647.1, HUMUS SHALL BE USED TO LANDSCAPE AND RESTORE THE AREA DISTURBED BY THE TEMPORARY ACCESS ONCE IT IS REMOVED.

GENERAL WETLAND IMPACT NOTES

1. AFTER COMPLETION OF IN–WATER WORK, REMOVE ALL WATER DIVERSION STRUCTURES AND RESTORE ALL DISTURBED AREAS TO PRE–CONSTRUCTION CONDITIONS. RESTORATION OF DISTURBED AREAS BEYOND THE LIMITS AS SHOWN ON THESE PLANS TO SUIT CONTRACTOR'S MEANS AND METHODS SHALL BE SUBSIDIARY TO ITEM 503.103.
2. THE CONTOURS SHOWN ON THIS PLAN WERE CREATED USING AERIAL 3D LIDAR (LIGHT DETECTION AND RANGING) TECHNOLOGY AQUIRED FROM THE NH GRANITE DATABASE. THE CONTRACTOR SHALL VERIFY ALL ELEVATIONS.

NOTES

1. SCALE IS ACCURATE AT ALL PLAN SIZES.
2. FOR REFERENCE PHOTOS SEE SHEET 6.

X — APPROXIMATE LOCATION OF REFERENCE PHOTO.

Hoyle, Tanner & Associates, Inc.

HTA PROJECT NO.	MODEL
092590_18	41915Wetplan 079_156

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
	41915A Wetplan 079_156	AS SHOWN

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LANDAFF BRIDGE NO. 079/156 STATE PROJECT 41915A

LOCATION MILLBROOK ROAD OVER MILL BROOK

WETLAND IMPACTS PLAN BR NO 079/156

BRIDGE SHEET - OF -

REVISIONS AFTER PROPOSAL

	BY	DATE		BY	DATE
DESIGNED	JAD/KMH	06/19	CHECKED	STJ	06/19
DRAWN	TAG	03/22	CHECKED	EGW	03/22
QUANTITIES	KMH	03/22	CHECKED	EGW	03/22
ISSUE DATE			FEDERAL PROJECT NO.		
REV. DATE					

FILE NUMBER 136-3-1

SHEET NO. 5

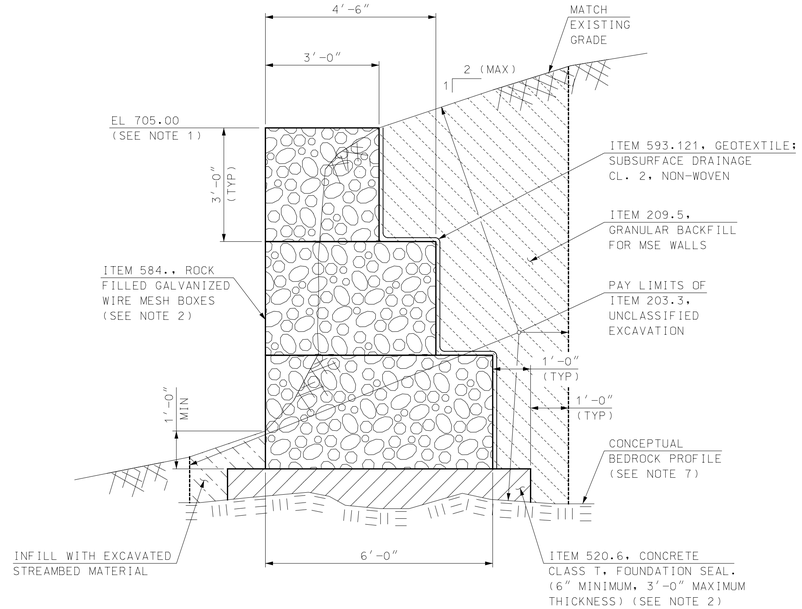
TOTAL SHEETS 7

1

SCOUR AREA LOOKING NORTH

2

SCOUR AREA LOOKING WEST



GABION RETAINING WALL SECTION

SCALE: 1/2″ = 1′-0″

NOTES
1. TOP OF WALL ELEVATION BASED ON LIDAR CONTOURS AND LIMITED SURVEY POINTS. CONTRACTOR TO VERIFY ELEVATIONS PRIOR TO START OF CONSTRUCTION.
2. GABION RETAINING WALL TO BE PLACED ON FOUNDATION SEAL ON BEDROCK. HEIGHT OF WALL BASED ON LIMITED SURVEY INFORMATION, WITH ANTICIPATED BEDROCK ELEVATION OF 695′. IF BEDROCK IS FOUND TO BE AT AN ELEVATION LESS THAN 9′ BELOW TOP OF WINGWALL ELEVATION AT END OF WINGWALL, A 6′ HIGH WALL WITH 4.5′ WIDE BASE PLACED ON ITEM 520.6 MAY BE USED INSTEAD.
3. QUANTITY ESTIMATES ARE BASED ON A 9′-0″ HIGH BY 6′-0″ WIDE WALL AS-DETAILED.
4. APPROXIMATE 2-YEAR STORM EVENT WATER DEPTH:
   - 2.5′ UPSTREAM
   - 2.4′ DOWNSTREAM
5. ORDINARY HIGH WATER ELEVATION:
   701′ MINIMUM
   703′ MAXIMUM
6. BANK IMPACT ELEVATIONS:
   703′ MINIMUM
   704′ MAXIMUM
7. BEDROCK PROFILE UNKNOWN. SHOWN SCHEMATICALLY FOR INTENT OF DESIGN PURPOSES ONLY.

NOTE
1 FOR LOCATION OF REFERENCE PHOTOS, SEE SHEET 5.

Hoyle, Tanner & Associates, Inc.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LANDAFF | BRIDGE NO. 079/156 | STATE PROJECT 41915A

LOCATION MILLBROOK ROAD OVER MILL BROOK

SCOUR TREATMENT DETAILS BR NO 079/156

BRIDGE SHEET - OF -

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
		DESIGNED	JAD/KMH	06/19	CHECKED	STJ	06/19
		DRAWN	TAG	03/22	CHECKED	EGW	03/22
		QUANTITIES	KMH	03/22	CHECKED	EGW	03/22
		ISSUE DATE			FEDERAL PROJECT NO.		
		REV. DATE					

HTA PROJECT NO.	MODEL
092590_18	41915ADetls

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
	41915ADetls 079_156	AS SHOWN

SHEET NO. 6

TOTAL SHEETS 7

FILE NUMBER 136-3-1

LANDSCAPING NOTES:

SCIENTIFIC NAME	COMMON NAME	QUANTITY	SIZE/TYPE	SPACING
ALNUS INCANA SSP. RUGOSE	SPECKLED ALDER	63	1-2" LS	2-3' APART

1. EFFORT SHALL BE MADE TO USE NATIVE GROWN OR LOCALLY-SOURCED SPECIES WHERE AVAILABLE.
2. SPECKLED ALDER LIVE STAKES WILL BE INSTALLED 2-3' APART IN A TRIANGULAR SPACING, APPROXIMATING 2-4 STAKES PER SQUARE YARD.
3. NATIVE EXCAVATE FROM BANK AREAS, IF AVAILABLE, SHALL BE STOCKPILED AND RE-USED WHERE FEASIBLE IN PLANTING SITE PREPARATION TO AID IN GROWTH OF NATIVE VEGETATION.
4. ONCE THE AREA HAS BEEN FULLY PLANTED THE UNDERSTORY SHALL BE SEEDED WITH ITEM 647.1 - HUMUS AND ITEM 646.31 - TURF ESTABLISHMENT WITH MULCH AND TACKIFIERS.
5. SILKY DOGWOOD (CORNUS AMOMUM), WILLOW (SALIX SPP.) OR VIBURNUM LIVE STAKES MAY BE USED AS A REPLACEMENT FOR SPECKLED ALDER LIVE STAKES DEPENDING ON PRODUCT AVAILABILITY.
6. TUBELINGS OR PLUGS MAY BE USED INSTEAD OF LIVE STAKES DEPENDING ON PRODUCT AVAILABILITY.

LIVE STAKE PLANTING NOTES:

1. INSPECT PLANTS TO ENSURE THEY ARE IN GOOD CONDITION PRIOR TO PLANTING.
2. STAKES SHOULD BE 1-2" IN DIAMETER AND 2-3' LONG.
3. REMOVE ANY SIDE BRANCHES, LEAVING BARK INTACT.
4. CUT THE BASAL ENDS AT AN ANGLE OR POINT FOR EACH INSERTION INTO SOIL. TOP SHOULD BE CUT SQUARE.
5. INSTALL MATERIALS THE SAME DAY THEY ARE PREPARED.
6. ORIENT BUDS UPWARD.
7. USE IRON BAR OR POWER AUGER 1" DIAMETER TO MAKE PILOT HOLE - DO NOT TAMP IN LIVE STAKES UNLESS SOIL IS FIRST LOOSENED.
8. INSTALL 2/3TH OF LENGTH OF LIVE STAKE INTO THE GROUND AND FIRMLY PACK SOIL AROUND STAKE.
9. REMOVE AND REPLACE ANY STAKES THAT SPLIT DURING INSTALLATION.

TUBELING/PLUG PLANTING NOTES:

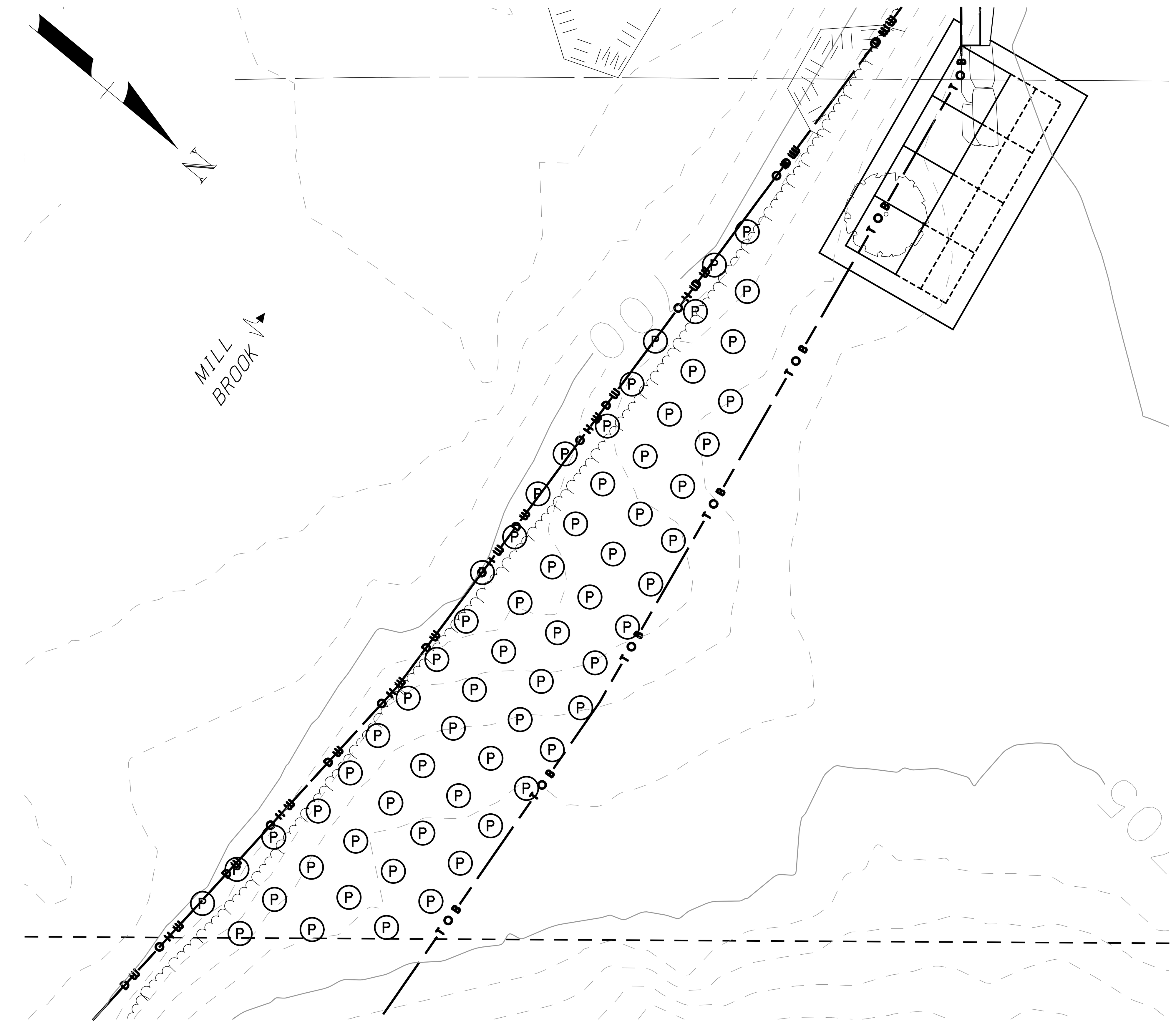
1. INSPECT PLANTS TO ENSURE THEY ARE IN GOOD CONDITION PRIOR TO PLANTING.
2. INSTALL MATERIALS THE SAME DAY THEY ARE PREPARED FOR PLANTING.
3. PLANTS SHOULD HAVE BEEN PROPAGATED FOR A SUFFICIENT TIME AS TO DEVELOP ROOTS SUFFICIENT TO HOLD SOIL.
4. PLANTS SHOULD BE BETWEEN 8-24" IN HEIGHT.
5. EXCAVATE HOLE TWICE THE DIAMETER OF THE TUBELING/PLUG.
6. REMOVE FROM CONTAINER.
7. CENTER PLANT IN HOLE, INSTALL PLANT TO SUFFICIENT DEPTH THAT ROOT CROWN IS COVERED.
8. REPLACE AND TAMP SOIL AS NEEDED TO STABILIZE PLANT.
9. PLANTS TO BE 2-3' APART.

SITE PREPARATION NOTES:

1. LOCATE STAGING AREAS OUTSIDE OF WORK AREAS TO THE EXTENT FEASIBLE.
2. PLANTING SHOULD BE DONE DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED PRACTICES. PLANTS SHALL NOT BE INSTALLED IN FROZEN OR HIGH FLOW CONDITIONS.
3. PLANTS SHALL NOT REMAIN ON-SITE AND UNPLANTED FOR LONGER THAN A THREE-DAY PERIOD AFTER DELIVERY.
4. GRADE SITE FOR PLANTINGS AS NEEDED.
5. PLACE PERMEABLE FABRIC LAYER OR NON-PLASTIC EROSION CONTROL MATTING, AS NEEDED, TO STABILIZE SLOPE DURING WORK (SUBSIDIARY TO PLANTINGS).
6. MINIMIZE TRAVEL ACROSS, AND SUBSEQUENT COMPACTION OF, SOILS.
7. INSTALL PLANTINGS TO FINISHED GRADE, APPLY ITEM 647.1 - AND ITEM 646.31 - TURF ESTABLISHMENT WITH MULCH AND TACKIFIERS.
8. WATER BY FLOODING TWICE IN FIRST TWO HOURS AFTER PLANTING.
9. RAISE AND REPLANT ANY PLANTS THAT SETTLE MORE THAN 3" AFTER PLANTING AND WATERING.

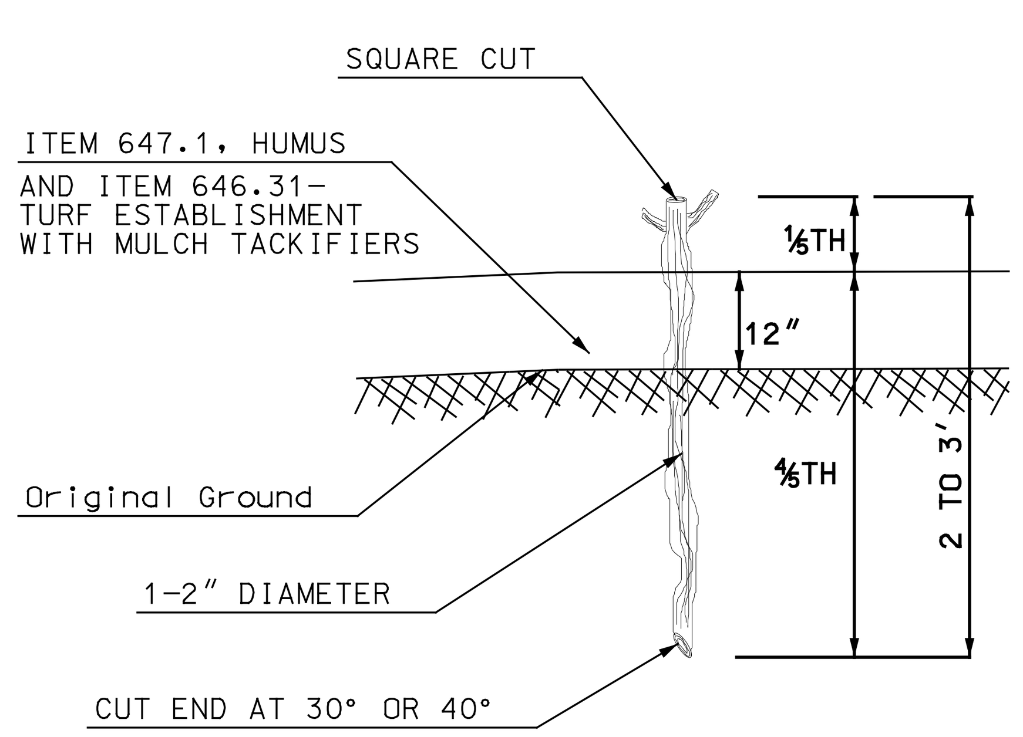
MONITORING NOTES:

1. MONITORING OF THE PLANTING AREAS SHALL OCCUR TWICE DURING THE FIRST GROWING SEASON.
2. PER ENV-WT 307.12, TEMPORARY IMPACT AREAS THAT ARE DISTURBED WILL BE PLANTED AS SHOWN WILL BE MONITORED TO CONFIRM AT LEAST 75% SUCCESSFUL ESTABLISHMENT OF WETLANDS VEGETATION AFTER 2 GROWING SEASONS AND NUISANCE SPECIES SHALL NOT INVADE AFTER 1 GROWING SEASON.
3. MONITORING REPORTS SHALL BE PREPARED BY NHDOT AND SUBMITTED TO NHDES ANUALLY.



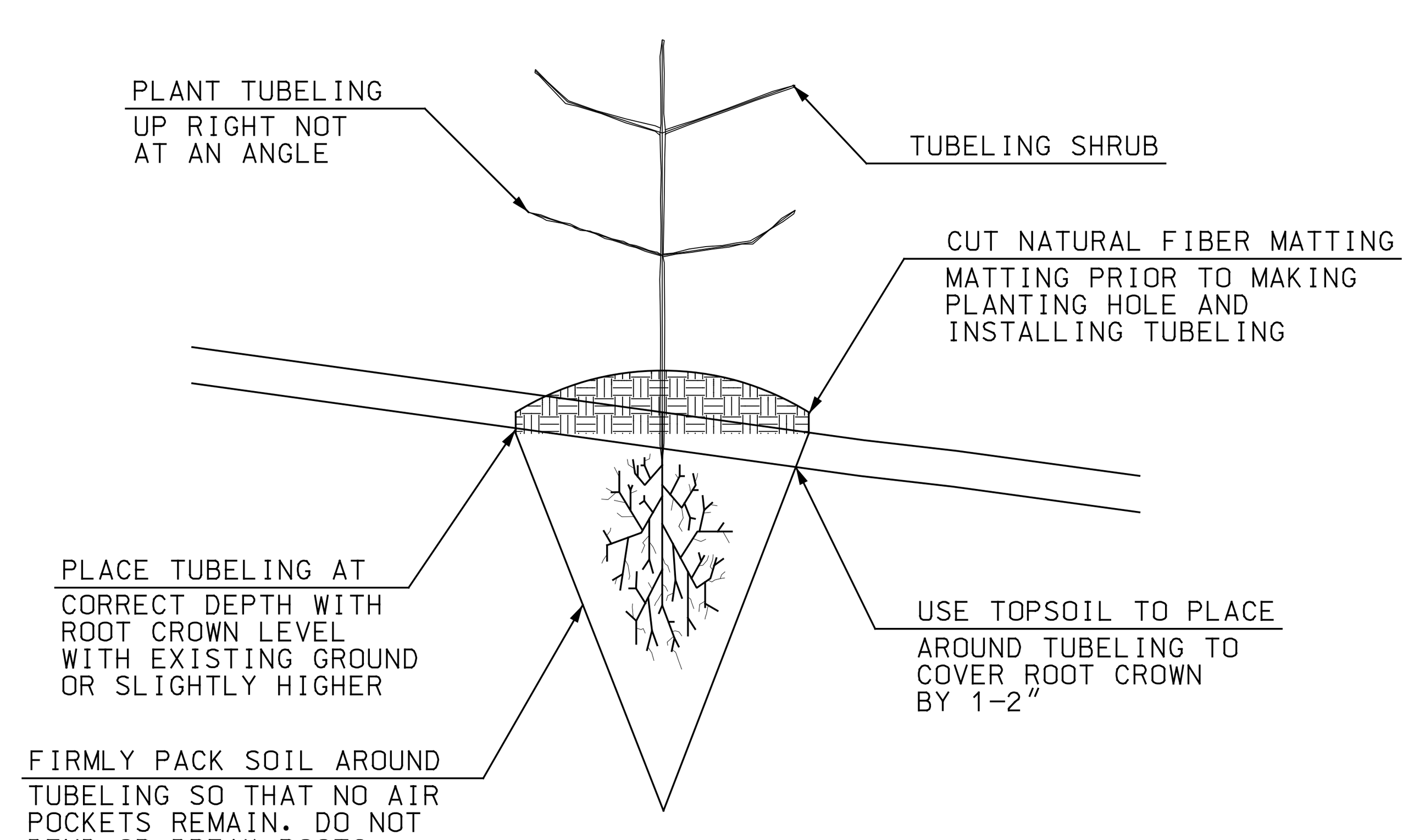
UPSTREAM PLANTING

SCALE: 1" = 5'



LIVE STAKE DETAIL

NOT TO SCALE



TUBELING DETAIL

NOT TO SCALE

LEGEND

(P) LIVE STAKE OR TUBELING

Hoyle, Tanner & Associates, Inc.

HTA PROJECT NO.	MODEL
092590_18	41915APlant 079_156

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
	41915ADetls 079_156	AS SHOWN

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN LANDAFF BRIDGE NO. 079/156 STATE PROJECT 41915A

LOCATION MILLBROOK ROAD OVER MILL BROOK

PLANTING PLAN BR NO 079/156

REVISIONS AFTER PROPOSAL

	BY	DATE		BY	DATE
DESIGNED	TAG	03/22	CHECKED	KRP	03/22
DRAWN	TAG	03/22	CHECKED	EGW	03/22
QUANTITIES	KMH	03/22	CHECKED	EGW	03/22

ISSUE DATE

REV. DATE

FEDERAL PROJECT NO.

BRIDGE SHEET - OF -

FILE NUMBER 136-3-1

SHEET NO. 7

TOTAL SHEETS 7