

STATE OF NEW HAMPSHIRE INTER-DEPARTMENT COMMUNICATION

DATE: March 4, 2022

FROM: Joshua Brown
Wetlands Program Analyst

AT (OFFICE): Department of
Transportation

SUBJECT Dredge & Fill Application
Pittsfield, 43049

Bureau of
Environment

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

Forwarded herewith is the application package prepared by NH DOT District 6 for the subject major impact project. The project is located along NH Route 107 in the Town of Pittsfield, NH. The purpose of the project is to replace the poor condition existing culvert, improve the skew and hydraulics of the twin culverts to provide improved flow, attenuate potential flooding, and prevent further erosion along the headwall of the culverts.

This project was reviewed at the Natural Resource Agency Coordination Meeting on October 19, 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 Brian Schutt, District 6 (603-603-5770 or Brian.T.Schutt@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 # 675011) in the amount of \$530.80

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 Pittsfield (4 copies via certified mail)

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

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

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

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

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

Kevin Nyhan, BOE (via electronic notification)

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Pittsfield 43049
Culvert Replacement –
NH Route 107 Pittsfield, NH
FINAL Standard Dredge and Fill Application



February 2022

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- Attachment E – Section 106 Appendix B
- Attachment F – Corps Secondary Impacts Checklist
- Attachment G – Functional Assessment Photographs
- Attachment H – Construction Sequence
- Attachment I – Town of Pittsfield Coordination Email
- Attachment J – Streambed Simulation Material Notes

Project Plans

- General Plans and Details (2 Sheets)
- Wetland Impact Plans and Erosion Control Plans (3 Sheets)



STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION

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



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

APPLICANT'S NAME: NHDOT

TOWN NAME: Pittsfield

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

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

SECTION 1 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05; RSA 482-A:3, I(d)(2))	
Please use the Wetland Permit Planning Tool (WPPT) , the Natural Heritage Bureau (NHB) DataCheck Tool , the Aquatic Restoration Mapper , or other sources to assist in identifying key features such as: priority resource areas (PRAs) , protected species or habitats , coastal areas, designated rivers, or designated prime wetlands.	
Has the required planning been completed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Does the property contain a PRA? If yes, provide the following information:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<ul style="list-style-type: none"> • Does the project qualify for an Impact Classification Adjustment (e.g. NH Fish and Game Department (NHF&G) and NHB agreement for a classification downgrade) or a Project-Type Exception (e.g. Maintenance or Statutory Permit-by-Notification (SPN) project)? See Env-Wt 407.02 and Env-Wt 407.04. 	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<ul style="list-style-type: none"> • Protected species or habitat? <ul style="list-style-type: none"> ○ If yes, species or habitat name(s): None ○ NHB Project ID #: NHB20-3627 	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
• Bog?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
• Floodplain wetland contiguous to a tier 3 or higher watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
• Designated prime wetland or duly-established 100-foot buffer?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
• Sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Is the property within a Designated River corridor? If yes, provide the following information:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<ul style="list-style-type: none"> • Name of Local River Management Advisory Committee (LAC): <input style="width: 50px;" type="text"/> • A copy of the application was sent to the LAC on Month: <input style="width: 30px;" type="text"/> Day: <input style="width: 30px;" type="text"/> Year: <input style="width: 30px;" type="text"/> 	

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

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For dredging projects, is the subject property contaminated? • If yes, list contaminant: <input type="text"/>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Is there potential to impact impaired waters, class A waters, or outstanding resource waters?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
For stream crossing projects, provide watershed size (see WPPT or Stream Stats): 428 acres	
SECTION 2 - PROJECT DESCRIPTION (Env-Wt 311.04(i))	
Provide a brief description of the project and the purpose of the project, outlining the scope of work to be performed and whether impacts are temporary or permanent. DO NOT reply "See attached"; please use the space provided below.	
<p>The project includes the replacement of 27" twin culverts carrying a historically diverted portion of Berry Pond Brook under NH Route 107 and extends approximately 100 feet north and south of the culverts and 60 feet upstream and downstream of the culverts in Pittsfield, Merrimack County, New Hampshire. The purpose of the project is to replace the poor condition existing culvert, improve the skew and hydraulics of the twin culverts to provide improved flow, attenuate potential flooding, and prevent further erosion along the headwall of the culverts. Impacts include permanent impacts to the stream channel for realignment of the existing crossing. Permanent impacts include 1226 square feet and 347 linear feet of perennial stream channel as part of the proposed project. Four options were evaluated during project design. The preferred option, 66" x 51" pipe arch with 12" embedment, avoids and minimizes impacts to wetlands to the greatest extent practicable while improving the stream skew, flow, and aquatic organism passage.</p>	
SECTION 3 - PROJECT LOCATION	
Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.	
ADDRESS: <input type="text" value="NH 107 (413 Catamount Road)"/>	
TOWN/CITY: <input type="text" value="Pittsfield"/>	
TAX MAP/BLOCK/LOT/UNIT: <input type="text" value="Not applicable/ROW"/>	
US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: <input type="text" value="Berry Pond Brook"/> <input type="checkbox"/> N/A	
(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places):	
	<input type="text" value="43.287607° North"/>
	<input type="text" value="71.296986° 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: Brian Schutt, NHDOT District 6		
MAILING ADDRESS: PO Box 740		
TOWN/CITY: Durham	STATE: NH	ZIP CODE: 03824
EMAIL ADDRESS: Brian.T.Schutt@dot.nh.gov		
FAX: NA	PHONE: (603) 868-1133	
ELECTRONIC COMMUNICATION: By initialing here: [REDACTED], I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c))		
<input type="checkbox"/> N/A		
LAST NAME, FIRST NAME, M.I.: Kevin Ferguson, TRC		
COMPANY NAME: TRC		
MAILING ADDRESS: 670 North Commercial Street, Suite 203		
TOWN/CITY: Manchester	STATE: NH	ZIP CODE: 03101
EMAIL ADDRESS: kferguson@trccompanies.com		
FAX: NA	PHONE: 603-603-5770	
ELECTRONIC COMMUNICATION: By initialing here KF, I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b))		
If the owner is a trust or a company, then complete with the trust or company information.		
<input type="checkbox"/> Same as applicant		
NAME: Andrew O'Sullivan, NH DOT		
MAILING ADDRESS: 7 Hazen Drive		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03302
EMAIL ADDRESS: Andrew.M.OSullivan@dot.nh.gov		
FAX: (603) 271-7199	PHONE: (603) 271-3226	
ELECTRONIC COMMUNICATION: By initialing here [REDACTED], 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):

Env-Wt 400: Water courses were delineated according to Env-Wt 406.04, wetlands were delineated according to Env-Wt 406.05, and wetlands were classified on the attached Project Plans according to Env-Wt 406.06. The project is classified as a major impact under Env-Wt 407.03.

Env-Wt 500, Env-Wt 600, Env-Wt 700: N/A

Env-Wt 900: The proposed project was designed in accordance with Env-Wt 904.01 and will not cause degradation to the impacted perennial stream. Stream connectivity will be kept during construction with a clean water bypass. The new location and alignment of the culvert will increase flow, sediment transport, aquatic organism passage, and attenuate the 50 year and 100 year flood stages calculated during in the hydrological analysis. Appropriate best management practices including sedimentation and erosion controls will be implemented during the project. The proposed project was designed in accordance with Env-Wt 900 (903.04, 903.05, 904.01, 904.02, 904.04, 904.07, and 904.08) as applied to the stream crossings. Upon completion of the project the stream crossing will allow improved aquatic organism passage, hydraulic capacity, and geomorphic compatibility (for additional details see Standard Dredge and Fill Application Narrative below).

SECTION 8 - AVOIDANCE AND MINIMIZATION

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

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

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

SECTION 9 - MITIGATION REQUIREMENT (Env-Wt 311.02)

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

Mitigation Pre-Application Meeting Date: Month: 10 Day: 19 Year: 2021

N/A - Mitigation is not required

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

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

N/A – Compensatory mitigation is not required

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

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

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

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

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

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

JURISDICTIONAL AREA		PERMANENT			TEMPORARY		
		SF	LF	ATF	SF	LF	ATF
Wetlands	Forested Wetland			<input type="checkbox"/>			<input type="checkbox"/>
	Scrub-shrub Wetland			<input type="checkbox"/>			<input type="checkbox"/>
	Emergent Wetland			<input type="checkbox"/>			<input type="checkbox"/>
	Wet Meadow			<input type="checkbox"/>			<input type="checkbox"/>
	Vernal Pool			<input type="checkbox"/>			<input type="checkbox"/>
	Designated Prime Wetland			<input type="checkbox"/>			<input type="checkbox"/>
	Duly-established 100-foot Prime Wetland Buffer			<input type="checkbox"/>			<input type="checkbox"/>
Surface Water	Intermittent / Ephemeral Stream			<input type="checkbox"/>			<input type="checkbox"/>
	Perennial Stream or River	1226	347	<input type="checkbox"/>	101	20	<input type="checkbox"/>
	Lake / Pond			<input type="checkbox"/>			<input type="checkbox"/>
	Docking - Lake / Pond			<input type="checkbox"/>			<input type="checkbox"/>
	Docking - River			<input type="checkbox"/>			<input type="checkbox"/>
Banks	Bank - Intermittent Stream			<input type="checkbox"/>			<input type="checkbox"/>
	Bank - Perennial Stream / River			<input type="checkbox"/>			<input type="checkbox"/>
	Bank / Shoreline - Lake / Pond			<input type="checkbox"/>			<input type="checkbox"/>
Tidal	Tidal Waters			<input type="checkbox"/>			<input type="checkbox"/>
	Tidal Marsh			<input type="checkbox"/>			<input type="checkbox"/>
	Sand Dune			<input type="checkbox"/>			<input type="checkbox"/>
	Undeveloped Tidal Buffer Zone (TBZ)			<input type="checkbox"/>			<input type="checkbox"/>
	Previously-developed TBZ			<input type="checkbox"/>			<input type="checkbox"/>
	Docking - Tidal Water			<input type="checkbox"/>			<input type="checkbox"/>
TOTAL		1226	347		101	20	

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):	1327 SF	× \$0.40 =	\$ 530.80
Seasonal docking structure:	SF	× \$2.00 =	\$
Permanent docking structure:	SF	× \$4.00 =	\$
Projects proposing shoreline structures (including docks) add \$400 =			\$
Total =			\$ 530.80

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The application fee for minor or major impact is the above calculated total or \$400, whichever is greater = \$ 530.80

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: BTS
KCF
To the best of the signer's knowledge and belief, all required notifications have been provided.

Initials: BTS
KCF
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: BTS
KCF
The signer understands that:

- The submission of false, incomplete, or misleading information constitutes grounds for NHDES to:
 - Deny the application.
 - Revoke any approval that is granted based on the information.
 - 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: BTS
KCF
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): <u>Brian T. Schott</u>	PRINT NAME LEGIBLY: Brian T. Schott	DATE: 2/15/22
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER): _____	PRINT NAME LEGIBLY: _____	DATE: _____
SIGNATURE (AGENT, IF APPLICABLE): <u>Kevin Ferguson</u>	PRINT NAME LEGIBLY: Kevin Ferguson	DATE: 2/14/2022

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: Exempt, State Agency per RSA 482-A:3, I(a)(1)
-------------------------------------	--

TOWN/CITY: <input type="text"/>	DATE: <input type="text"/>
---------------------------------	----------------------------

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.

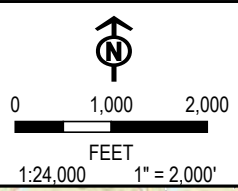
DIRECTIONS FOR APPLICANT:


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".



Coordinate System: NAD 1983 StatePlane New Hampshire FIPS 2800 Feet; Map Rotation: 0
 - Saved By: AWTHOMPSON on 12/9/2020, 12:42:23 PM; File Path: T:\PROJECTS\WSP\408572_Pittsfield\2-APR\Pittsfield_Bridge.aprx; Layout Name: Figure1_USGS_Locus_8x11P

 PROJECT LOCATION



PROJECT: WSP	
PITTSFIELD BRIDGE PITTSFIELD, NEW HAMPSHIRE	
TITLE: USGS LOCUS MAP	
DRAWN BY: A. THOMPSON	PROJ. NO.: 408572.0000
CHECKED BY: K. FERGUSON	FIGURE 1
APPROVED BY: V. CHASE	
DATE: DECEMBER 2020	
	
670 N Commercial Street Suite 203 Manchester, NH 03101	
FILE:	Pittsfield_Bridge

BASE MAP: USGS TOPO
 DATA SOURCES: TRC



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: NHDOT

TOWN NAME: Pittsfield

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.

FOUR OPTIONS WERE EVALUATED AS PART OF THE DESIGN PROCESS. THE FIRST THREE OPTIONS PRESENTED TO THE NATURAL RESOURCE AGENCY DID NOT MEET NATURAL STREAM BOTTOM CRITERIA. THE PREFERRED OPTION CONSISTS OF A SINGLE 66 INCH SPAN BY 51 INCH RISE PIPE ARCH WITH 12" EMBEDMENT AT A NEW LOCATION AND ALIGNMENT TO ACCOMMODATE THE EXISTING SKEW OF THE STREAM AND ELIMINATE EROSION AT THE EXISTING HEADWALL. THIS OPTION ALSO IMPROVES THE HYDRAULIC CAPACITY IN THE 50 AND 100 YEAR STORMS WHILE STILL PROVIDING SOME UPSTREAM ATTENUATION SO AS TO NOT COMPROMISE THE EXISTING 48" CULVERT JUST DOWNSTREAM.

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.

Not applicable. Tidal and non-tidal marshes are not located within the project area.

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

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

The existing culverts, through a historically diverted portion of Berry Pond Brook, connects Berry Pond Brook to the south of Catamount Road (NH 107), an unnamed tributary to Berry Pond Brook to the north of Catamount Road, and freshwater wetlands abutting the streams. The replacement of the culverts will improve the hydrologic connection between the abutting wetlands and upstream and downstream reaches of the stream.

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 include temporary and permanent impacts to the stream channel for realignment of the existing crossing. Temporary impact include 101 square feet and 20 linear feet and permanent impacts include 1226 square feet and 347 linear feet of perennial stream channel as part of the proposed project. Four options were evaluated during project design. The preferred option avoids and minimizes impacts to wetlands to the greatest extent practicable while improving the stream skew, flow, and aquatic organism passage. No exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, and habitat and reproduction areas for species of concern exist within or in the vicinity of the project. A natural stream bottom will be constructed along the realigned portion of the stream. Class B stone fill will be placed within the channel for stabilization and erosion control overlaid with streambed material. Cobbles and small stones measuring less than 10" shall be distributed throughout the culvert length, flattest side down, with the remaining embedment material placed around them. The embedment material shall be placed such that the flow of the water is generally concentrated in the center of the constructed channel rather than dispersed across the entire width of the channel. Slope improvements upstream and downstream of the culvert will include Class B stone fill on 2:1 slopes for stabilization and erosion control over-topped with loam, seed and erosion matting to maintain a natural bank.

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.

NH 107 serves as a roadway providing public commerce into and out of Pittsfield, NH. The replacement of the culverts for this project will improve the skew and hydraulics of the stream channel thereby protecting NH 107 from potential erosion and flood damage. The project as proposed avoids and minimizes impacts that eliminate, depreciate, or obstruct public commerce. The project will improve safety for the traveling public by eliminating steep slopes and guardrail. The project as proposed will have no effect on navigation or recreation.

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

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

The project is located on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, panel number 33013C0387E, effective April 19, 2010. The map indicates the project is located in Zone X which is located outside of the 100-year floodplain. The project as proposed would not impact floodplain wetlands as defined in Env-Wt 103.10.

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

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

The project as proposed will not impact forested wetlands and scrub-shrub marsh complexes.

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

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

The project as proposed will not impact any drinking water supply or groundwater aquifer levels. The project does not propose any increase to impervious surfaces, will not change recharge levels to Berry Pond Brook, and does not present an increase of contamination of groundwater to aquifer levels. Adequate sediment and erosion control measures and best management practices will be implemented during the construction of this project.

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.

Replacement of the existing culverts will improve the skew and hydraulics associated with the stream crossing. The project as proposed will improve the flow of the stream and prevent further erosion at the headwalls. The 100 year and 50 year flood stages from the stream simulation were used to design the proposed project.

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.

Not applicable. Shoreline is not located within the project area.

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.

Not applicable. Shoreline is not located within the project area.

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.

Not applicable. Shoreline is not located within the project area.

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.

Not applicable. Shoreline is not located within the project area.

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.

Not applicable. Shoreline is not located within the project area.

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.

Not applicable. Shoreline is not located within the project area.

PART II: FUNCTIONAL ASSESSMENT	
REQUIREMENTS	Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).
FUNCTIONAL ASSESSMENT METHOD USED:	USACE Highway Methodology Workbook
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT:	VICKI CHASE
DATE OF ASSESSMENT:	3/31/2021
Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT:	<input checked="" type="checkbox"/>
For minor or major projects requiring a standard permit without mitigation, the applicant shall submit a wetland evaluation report that includes completed checklists and information demonstrating the RELATIVE FUNCTIONS AND VALUES OF EACH WETLAND EVALUATED. Check this box to confirm that the application includes this information, if applicable:	<input checked="" type="checkbox"/>
<p>Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.</p>	



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.: NHDOT		
PROJECT STREET ADDRESS: NH Route 107 (Catamount Road)	PROJECT TOWN: Pittsfield	
TAX MAP/LOT NUMBER: Not applicable/ROW		
SECTION 2 - PRIMARY PURPOSE OF THE PROJECT		
Env-Wt 311.07(b)(1)	Indicate whether the primary purpose of the project is to construct a water-access structure or requires access through wetlands to reach a buildable lot or the buildable portion thereof.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>If you answered “no” to this question, describe the purpose of the “non-access” project type you have proposed:</p> <p>The project includes the replacement of 27” twin culverts carrying a historically diverted portion of Berry Pond Brook under NH Route 107 and extends approximately 100 feet north and south of the culverts and 60 feet upstream and downstream of the culverts in Pittsfield, Merrimack County, New Hampshire. The purpose of the project is to replace the poor condition existing culvert, improve the skew and hydraulics of the twin culverts to provide improved flow, attenuate potential flooding, and prevent further erosion along the headwall of the culverts. Impacts include permanent impacts to the stream channel for realignment of the existing crossing. Permanent impacts include 1226 square feet and 347 linear feet of perennial stream channel as part of the proposed project. Four options were evaluated during project design. The preferred option avoids and minimizes impacts to wetlands to the greatest extent practicable while improving the stream skew, flow, and aquatic organism passage.</p>		

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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.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 311.07(b)(3)	Whether alternative designs or techniques, such as different layouts, construction sequencing, or alternative technologies could be used to avoid impacts to jurisdictional areas or their functions and values.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(1) Env-Wt 311.10(c)(2)	The results of the functional assessment required by Env-Wt 311.03(b)(10) were used to select the location and design for the proposed project that has the least impact to wetland functions.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(3)	Where impacts to wetland functions are unavoidable, the proposed impacts are limited to the wetlands with the least valuable functions on the site while avoiding and minimizing impacts to the wetlands with the highest and most valuable functions.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 313.01(c)(1) Env-Wt 313.01(c)(2) Env-Wt 313.03(b)(1)	No practicable alternative would reduce adverse impact on the area and environments under the department's jurisdiction and the project will not cause random or unnecessary destruction of wetlands.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 313.01(c)(3)	The project would not cause or contribute to the significant degradation of waters of the state or the loss of any PRAs.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 313.03(b)(3) Env-Wt 904.07(c)(8)	The project maintains hydrologic connectivity between adjacent wetlands or stream systems.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 311.10 A/M BMPs	Buildings and/or access are positioned away from high function wetlands or surface waters to avoid impact.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 311.10 A/M BMPs	The project clusters structures to avoid wetland impacts.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 311.10 A/M BMPs	The placement of roads and utility corridors avoids wetlands and their associated streams.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
A/M BMPs	The width of access roads or driveways is reduced to avoid and minimize impacts. Pullouts are incorporated in the design as needed.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
A/M BMPs	The project proposes bridges or spans instead of roads/driveways/trails with culverts.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A

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



WETLANDS PERMIT APPLICATION STREAM CROSSING WORKSHEET

Water Division/Land Resources Management
Wetlands Bureau



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

This worksheet can be used to accompany Wetlands Permit Applications when proposing stream crossings.

SECTION 1 - TIER CLASSIFICATIONS	
Determine the contributing watershed size at USGS StreamStats .	
Note: Plans for tier 2 and 3 crossings shall be designed and stamped by a professional engineer who is licensed under RSA 310-A to practice in New Hampshire.	
Size of contributing watershed at the crossing location: 428 acres	
<input type="checkbox"/> Tier 1: A tier 1 stream crossing is a crossing located on a watercourse where the contributing watershed size is less than or equal to 200 acres.	
<input checked="" type="checkbox"/> Tier 2: A tier 2 stream crossing is a crossing located on a watercourse where the contributing watershed size is greater than 200 acres and less than 640 acres.	
<input type="checkbox"/> Tier 3: A tier 3 stream crossing is a crossing that meets any of the following criteria: <ul style="list-style-type: none"> <input type="checkbox"/> On a watercourse where the contributing watershed is more than 640 acres. <input type="checkbox"/> Within a designated river corridor unless: <ul style="list-style-type: none"> a. The crossing would be a tier 1 stream based on contributing watershed size, or b. The structure does not create a direct surface water connection to the designated river as depicted on the national hydrography dataset as found on GRANIT. <input type="checkbox"/> Within a 100-year floodplain (see Section 2 below). <input type="checkbox"/> In a jurisdictional area having any protected species or habitat (NHB DataCheck). <input type="checkbox"/> In a prime wetland or within a duly-established 100-foot buffer, unless a waiver has been granted pursuant to RSA 482-A:11, IV(b) and Env-Wt 706. Review the Wetlands Permit Planning Tool (WPPT) for town prime wetland and prime wetland buffer maps to determine if your project is within these areas. 	
<input type="checkbox"/> Tier 4: A tier 4 stream crossing is a crossing located on a tidal watercourse.	
SECTION 2 - 100-YEAR FLOODPLAIN	
Use the FEMA Map Service Center to determine if the crossing is located within a 100-year floodplain. Please answer the questions below:	
<input checked="" type="checkbox"/> No: The proposed stream crossing <i>is not</i> within the FEMA 100-year floodplain.	
<input type="checkbox"/> Yes: The proposed project <i>is</i> within the FEMA 100-year floodplain. Zone = <input type="text"/> Elevation of the 100-year floodplain at the inlet: <input type="text"/> feet (FEMA El. or Modeled El.)	
SECTION 3 - CALCULATING PEAK DISCHARGE	
Existing 100-year peak discharge (Q) calculated in cubic feet per second (CFS): 112.7 CFS	Calculation method: HydroCAD - TR 20 Met
Estimated bankfull discharge at the crossing location: 18 CFS	Calculation method: HydroCAD - TR 20 Met

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➡ **Note: If tier 1, then skip to Section 10** ⬅

SECTION 4 - PREDICTED CHANNEL GEOMETRY BASED ON REGIONAL HYDRAULIC CURVES

For tier 2, tier 3 and tier 4 crossings only.

Bankfull Width: 4.6 feet Mean Bankfull Depth: 0.9 feet

Bankfull Cross Sectional Area: 5.6 square feet (SF)

SECTION 5 - CROSS SECTIONAL CHANNEL GEOMETRY: MEASUREMENTS OF THE EXISTING STREAM WITHIN A REFERENCE REACH

For tier 2, tier 3 and tier 4 crossings only.

Describe the reference reach location: Wooded area along channel, upstream of crossing

Reference reach watershed size: 428 acres

Parameter	Cross Section 1 Describe bed form Riffle (e.g. pool, riffle, glide)	Cross Section 2 Describe bed form Pool (e.g. pool, riffle, glide)	Cross Section 3 Describe bed form Glide (e.g. pool, riffle, glide)	Range
Bankfull Width	5.1 feet	5.1 feet	8.5 feet	5.1-8.5 feet
Bankfull Cross Sectional Area	6.1 SF	5.1 SF	6.8 SF	5.1-6.8 SF
Mean Bankfull Depth	1.2 feet	1.0 feet	0.8 feet	1.2-0.8 feet
Width to Depth Ratio	4.3	5.1	10.6	4.3-10.6
Max Bankfull Depth	1.4 feet	1.2 feet	1.4 feet	1.2-1.4 feet
Flood Prone Width	9.5 feet	25.1 feet	10.0 feet	9.5-25.1 feet
Entrenchment Ratio	1.9	4.9	1.2	1.2-4.9

Use **Figure 1** below to determine the measurements of the Reference Reach Attributes

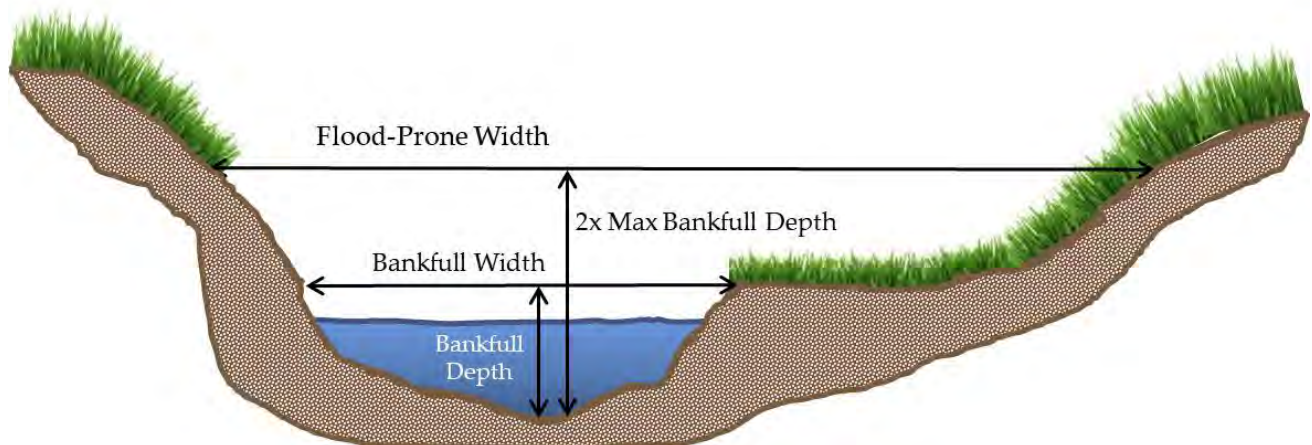


Figure 1: Determining the Reference Reach Attributes.

SECTION 6 - LONGITUDINAL PARAMETERS OF THE REFERENCE REACH AND CROSSING LOCATION

For tier 2, tier 3 and tier 4 crossings only.

Average Channel Slope of the Reference Reach: 3%

Average Channel Slope at the Crossing Location: 4%

SECTION 7 - PLAN VIEW GEOMETRY

Note: Sinuosity is measured a distance of at least 20 times bankfull width, or 2 meander belt widths.

For tier 2, tier 3 and tier 4 crossings only.

Sinuosity of the Reference Reach: 0.94	
Sinuosity of the Crossing Location: 0.97	
SECTION 8 - SUBSTRATE CLASSIFICATION BASED ON FIELD OBSERVATIONS	
<i>For tier 2, tier 3 and tier 4 crossings only.</i>	
% of reach that is bedrock:	0 %
% of reach that is boulder:	0 %
% of reach that is cobble:	5 %
% of reach that is gravel:	15 %
% of reach that is sand:	65 %
% of reach that is silt:	15 %
SECTION 9 - STREAM TYPE OF REFERENCE REACH	
<i>For tier 2, tier 3 and tier 4 crossings only.</i>	
Stream Type of Reference Reach:	B5a

Refer to Rosgen Classification Chart (**Figure 2**) below:

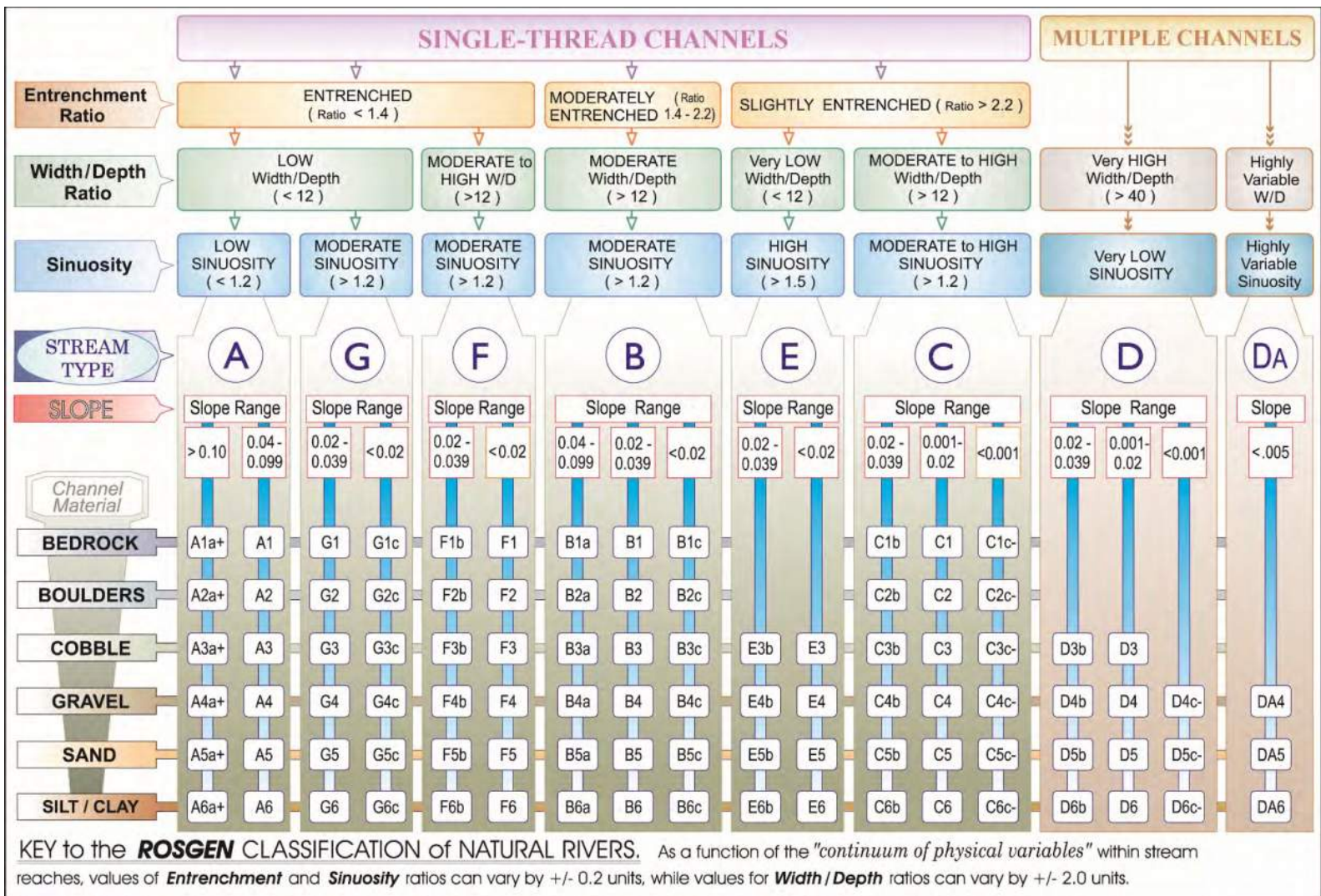


Figure 2: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 10 - CROSSING STRUCTURE METRICS					
Existing Conditions	Existing Structure Type:	<input type="checkbox"/> Bridge span <input type="checkbox"/> Pipe arch <input type="checkbox"/> Open-bottom culvert <input checked="" type="checkbox"/> Closed-bottom culvert <input type="checkbox"/> Closed-bottom culvert with stream simulation <input type="checkbox"/> Other: <input type="text"/>			
	Existing Crossing Span: (perpendicular to flow)	4.5 feet	Culvert Diameter: Twin 2.25 feet Inlet Elevation: El. 796.45 feet		
	Existing Crossing Length: (parallel to flow)	37 feet	Outlet Elevation: El. 795.16 feet Culvert Slope: 3.49%		
Proposed Conditions	Proposed Structure Type:	Tier 1	Tier 2	Tier 3	Alternative Design
	Bridge Span	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Pipe Arch	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>
	Closed-bottom Culvert	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
	Open-bottom Culvert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Closed-bottom Culvert with stream simulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proposed Structure Span:	5.5 feet	Culvert Diameter: 5.5 span/4.25 rise feet			

(perpendicular to flow)	Inlet Elevation: El. 797.2 feet
Proposed Structure Length: 62 feet (parallel to flow)	Outlet Elevation: El. 795.90 feet Culvert Slope: 2.1%
Proposed Entrenchment Ratio:* 1.7 For Tier 2, Tier 3 and Tier 4 Crossings Only. To accommodate the entrenchment ratio, floodplain drainage structures may be utilized.	

* Note: Proposed Entrenchment Ratio must meet the minimum ratio for each stream type listed in **Figure 3**, otherwise the applicant must address the Alternative Design criteria listed in Env-Wt 904.10.

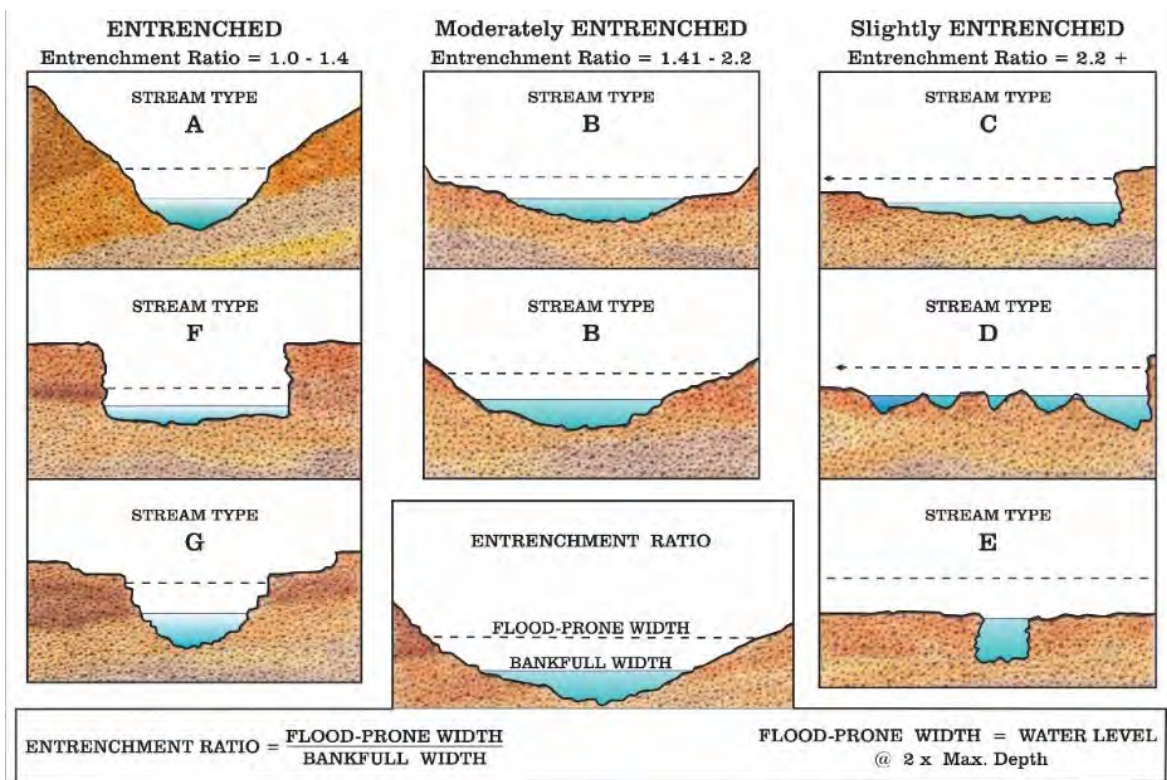


Figure 3: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 11 - CROSSING STRUCTURE HYDRAULICS		
	Existing	Proposed
100 year flood stage elevation at inlet:	802.04	801.65
Flow velocity at outlet in feet per second (FPS):	10.61	9.09
Calculated 100 year peak discharge (Q) for the <i>proposed</i> structure in CFS:		129.5
Calculated 50 year peak discharge (Q) for the <i>proposed</i> structure in CFS:		118.7
SECTION 12 - CROSSING STRUCTURE OPENNESS RATIO		
<i>For tier 2, tier 3 and tier 4 crossings only.</i>		
Crossing Structure Openness Ratio* = 0.24		
* Openness box culvert = (height x width)/length Openness round culvert = (3.14 x radius ²)/length		

SECTION 13 - GENERAL DESIGN CONSIDERATIONS

Env-Wt 904.01 requires all stream crossings to be designed and constructed according to the following requirements. Check each box if the project meets these general design considerations.

All stream crossings shall be designed and constructed so as to:

- Not be a barrier to sediment transport.
- Prevent the restriction of high flows and maintain existing low flows.
- Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.
- Not cause an increase in the frequency of flooding or overtopping of banks.
- Maintain or enhance geomorphic compatibility by:
 - a. Minimizing the potential for inlet obstruction by sediment, wood, or debris, and
 - b. Preserving the natural alignment of the stream channel.
- Preserve watercourse connectivity where it currently exists.
- Restore watercourse connectivity where:
 - a. Connectivity previously was disrupted as a result of human activity(ies), and
 - b. Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both.
- Not cause erosion, aggradation, or scouring upstream or downstream of the crossing.
- Not cause water quality degradation.

SECTION 14 - TIER-SPECIFIC DESIGN CRITERIA

Stream crossings must be designed in accordance with the tier specific design criteria listed in Part Env-Wt 904.

- The proposed project meets the tier specific design criteria listed in Part Env-Wt 904 and each requirement has been addressed in the plans and as part of the wetland application.

SECTION 15 - ALTERNATIVE DESIGN

NOTE: If the proposed crossing does not meet all of the general design considerations, the tier specific design criteria, or the minimum entrenchment ratio for each given stream type listed in **Figure 3**, then an alternative design plan and associated requirements must be addressed pursuant to Env-Wt 904.10.

- I have submitted an alternative design and addressed each requirement listed in Env-Wt 904.10.

NOTES ON CONFERENCE:**Finalize Meeting Minutes**

Finalized and approved the February 17, 2021 meeting minutes.

Pittsfield, #43049

Vicki Chase of TRC Environmental and Tim Higginson, PE of WSP presented the project, which is replacement of twin 27" culverts carrying Berry Pond Brook under NH 107 in Pittsfield.

V. Chase introduced the project, which is in the conceptual design phase. Berry Pond Brook flows west to east under NH 107. Historically the brook flowed west of its current location, but the watershed and stream channel have been manipulated. A small portion of the brook still flows to the west, but most of it was diverted to its current location.

Tim Higginson provided a description of the existing culverts, they have a concrete headwall on the upstream side and a stone headway on the downstream side, and are in near failing condition. The watershed measures 395 acres, and Berry Pond Brook flows through a 48" culvert downstream under True Road before making its way to White's Pond. The downstream culvert provides a design constraint as increased flows will overtop the culvert. Both the twin culverts and the downstream culvert were overtopped during the 2006 Mother's Day event.

Existing Twin 27" cmp Capacity = 69 cfs (Under Route 107)

Existing 48" cmp Capacity = 110 cfs. (Under True Road)

Proposed Culvert Design Goals

- Improve safety for the travelling public by replacing deteriorated culvert
- Eliminate guardrail for safety benefits
- Relocation of proposed culvert for proposed clean water bypass during construction
- Enlarging hydraulic opening while protecting downstream 48" culvert from high flows
- Accommodate constraints of shallow cover over crossing
- Low-cost replacement for District constructability

WSP has three design options. The scour stone designs currently being presented are a worst case scenario, and will be minimized through the use of a plunge pool. The pipes are slightly longer to accommodate the elimination of guardrail.

Option 1 – twin 30" RCP's south of existing channel – Capacity =78 cfs

Option 2 – 42" RCP single pipe parallel to existing culverts – size constrained by cover – Capacity =74 cfs

Option 3 - 34"x 53" RCP Elliptical (42" RCP equivalent) Capacity = 78 cfs

Resources V. Chase provided a brief overview of resources – Berry Brook Pond is a perennial Tier 2 stream, with a forested / palustrine emergent wetland on the upstream side. Resources were delineated in December. No water quality impairment, no FEMA floodplains, and no fisheries concerns were expressed by NHFG. Pennichuck Water Works owns property to the south. No rare species occurrences at the state level, and NLEBs and small whorled pogonia were listed as potentially occurring on the IPaC review. The habitat has been reviewed for SWP and will provide a memo saying that no SWP pogonia habitat will be affected by the project. Cultural resource coordination is underway.

Questions S. Large – Tier 2 crossing, will the proposed crossing pass the Q100? T. Higginson, the downstream crossing will not accommodate the Q100 storm. S. Large, is there a preferred alternative? T. Higginson – we are working with District to solicit input – no preferred alternative at this time.

Karl Benedict, NHDES– Tier 2 Stream crossings have to follow 904.04 [design criteria in 904.07] and the proposed crossings aren't meeting the requirements. The crossing needs stream simulation. Understanding that there is a downstream constraint, has there been an effort to coordinate on the downstream crossing? Likely will require mitigation. Suggests that it should be self-mitigating by meeting rules or mitigation will be required. **T. Higginson**, WSP has discussed with the District, the downstream structure is town-owned and they would have to have further discussions. **S. Large**, since it is a town-owned structure the most DOT will likely do is let the town know that the state is planning to replace the subject culvert. K. Benedict agrees, but thinks it would be helpful to get the town on board.

Lori Sommer, NHDES– A plate arch might provide the stream simulation. As designed the length of scour stone plus the pipe itself would have to be included in mitigation. **V. Chase** said that as depicted there are about 80 linear feet of impact [does not include the pipe itself]. **S. Large** said that DOT would want to discuss if the impacts through the pipe itself would require mitigation since it is not currently a natural channel. Lori agreed that it could be discussed.

S. Large asked if the watershed was able to be refined, and if the Tier 2 watershed size was certain. **V. Chase** said that according to WSP's analysis most of the stream goes through the subject culvert. **T. Higginson** said there is a flow splitter, some flow goes toward the old channel during higher storm events but under low flow it goes toward the subject culvert.

Carol Henderson, NHFG – no perches? What is the timeframe for construction? **T. Higginson** – no perches on either end. District hopes to replace the culvert in late summer of 2021.

Amy Lamb, NHNHBB – No comments.

Mike Hicks, USACE – No comments.

Pete Steckler, Nature Conservancy – agrees that a pipe arch would be more compatible, of the three presented the elliptical culvert comes closer to meeting the rules.

Jean Brochi, USEPA – No additional comments.

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

Bennington, #29486 (X-A004(156))

D. McNamara presented the project, history, and existing conditions of the site, as well as potential impacts and mitigation requirements. The project involves the replacement of an existing 10' x 7' x 30' precast concrete box culvert carrying Russell Brook under South Bennington Road, in Bennington, NH. The need for the project is based on the deteriorated condition of the culvert and the inclusion on the NH State red list, as well as the fact that existing crossing is undersized. The project was previously discussed on November 21, 2018. Since that time, the project was presented to the Town, and Alternative 1A was determined to be preferred, due to the short term closure. Wetlands delineation and the Stream Crossing Assessment were conducted in June and April of 2018, respectively. The NHB coordination was updated in 2020 and is current. It was also determined through e-mail correspondence that a wildlife shelf was not practical at this location.

The existing precast concrete box culvert is 10' wide by 7' high with a length of 30' under the roadway. The wingwalls extend parallel to the brook at the inlet and outlet which adds an additional 7.5' of

October 19, 2021. via Teams (virtual)

Pittsfield Culvert Replacement, #43049

Mitigation Discussion, Natural Resource Meeting Follow-Up

Attendees: Karl Benedict, Lori Sommers, Roger Appleton, Matt Urban, Andy O'Sullivan, Arin Mills

The focus of the meeting was to review proposed plans ahead of submission based on discussion and recommendation of DES at the Natural Resource Agency Meeting on March 17, 2021. Draft impact plans developed by WSP were discussed for proposed installation of a 66" wide x 51" high 62' length CMP pipe arch at a skewed orientation, south along NH 107 from the existing location.

Stream Simulation

The proposed design depicts the use of simulated streambed material both throughout the structure as well as the recreated stream channel upstream and downstream of the crossing. The proposed structure will be embedded 12" to allow for stream simulation material through the structure. The existing structure has no existing natural streambed material within either CMP. DES recommended removal and re-use of the existing streambed material where possible. DES also recommended inclusion of a cross section of the proposed pipe to depict simulated streambed material.

Bank Stabilization

The proposed design depicts the side slopes and embankment be topped with loam and seem. DES requests the inclusion of native plantings along banks where feasible. Roger said this could be evaluated where routine maintenance of the structure, such as mowing, will not be inhibited by plantings.

Limit of Work

DES asked for clarification on the need to extend the clearing at the outlet of the structure. Roger said he could confirm with the design engineer, and limit clearing of mature trees where possible. Roger anticipates the clearing is necessary based on the design calculations necessary for the structure.



WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau



[Check the Status of your Application](#)

RSA/Rule: RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

APPLICANT LAST NAME, FIRST NAME, M.I.: **NHDOT**

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the [Coastal Area Worksheet \(NHDES-W-06-079\)](#) for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the [Avoidance and Minimization Written Narrative \(NHDES-W-06-089\)](#) and the [Avoidance and Minimization Checklist \(NHDES-W-06-050\)](#) to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached to the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Residential, forested	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 10	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Vicki Chase	
DATE(S) OF SITE VISIT(S): 12/3/2020	DELINEATION PER ENV-WT 406 COMPLETED? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
CONFIRM THAT THE EVALUATION IS BASED ON: <input checked="" type="checkbox"/> Office and <input checked="" type="checkbox"/> Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if "other"): <input checked="" type="checkbox"/> USACE Highway Methodology. <input type="checkbox"/> Other scientifically supported method (enter name/ title):	

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SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: <input type="text"/>	LOCATION: (LAT/ LONG) <input type="text"/> / <input type="text"/>
WETLAND AREA: <input type="text"/>	DOMINANT WETLAND SYSTEMS PRESENT: <input type="text"/>
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? <input type="text"/>	COWARDIN CLASS: <input type="text"/>
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? <input type="checkbox"/> Yes <input type="checkbox"/> No if not, where does the wetland lie in the drainage basin? <input type="text"/>	IS THE WETLAND PART OF: <input type="checkbox"/> A wildlife corridor or <input type="checkbox"/> A habitat island? IS THE WETLAND HUMAN-MADE? <input type="checkbox"/> Yes <input type="checkbox"/> No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? <input type="checkbox"/> Yes <input type="checkbox"/> No	ARE VERNAL POOLS PRESENT? <input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? <input type="checkbox"/> Yes <input type="checkbox"/> No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? <input type="checkbox"/> Yes <input type="checkbox"/> No
PROPOSED WETLAND IMPACT TYPE: <input type="text"/>	PROPOSED WETLAND IMPACT AREA: <input type="text"/>

SECTION 4 - WETLANDS FUNCTIONS AND VALUES (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the “Functions/ Values” column refer to the following functions and values:

1. Ecological Integrity (from RSA 482-A:2, XI)
2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value)
3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat)
4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge)
6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient Removal)
8. Production Export (Nutrient) (from USACE Highway Methodology)
9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
12. Uniqueness/Heritage (from USACE Highway Methodology)
13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for a particular function and value (“Suitability” column) and indicate the rationale behind your determination (“Rationale” column). Please use the rationale reference numbers listed in Appendix A of USACE *The Highway Methodology Workbook Supplement*. Second, indicate which functions and values are principal (“Principal Function/value?” column). As described in *The Highway Methodology Workbook Supplement*, “functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective”. “Important Notes” are to include characteristics the evaluator used to determine the principal function and value of the wetland.

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FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
2	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
3	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
4	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
5	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
6	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
7	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
8	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
9	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
10	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
11	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
12	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
13	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]
14	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]	<input type="checkbox"/> Yes <input type="checkbox"/> No	[REDACTED]

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SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of “vernal pool” in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by the New Hampshire Fish and Game Department; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

“Important Notes” are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE “Vernal Pool Assessment” form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: <u>Perennial stream</u>	STREAM TYPE (ROSGEN): B5a
HAVE FISHERIES BEEN DOCUMENTED? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	DOES THE STREAM SYSTEM APPEAR STABLE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
OTHER KEY ON-SITE FUNCTIONS OF NOTE: <u>None</u>	

The following table can be used to compile data on stream resources. “Important Notes” are to include characteristics the evaluator used to determine principal function and value of each stream. The functions and values reference number are defined in Section 4.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Functions/Values: 3, 4, 5	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Perennial stream with adjacent forested wetland
2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	USACE Qualifier: 7, 8, 14, 16, 17	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Perennial stream in forested area
4	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	USACE Qualifier: 5, 6, 8, 9, 10, 13	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Stream diverts flood water from main channel of Berry Pond Brook
5	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	USACE Qualifier: 2, 4, 7	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Perennial stream in watertable
6	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No T&E documented
7	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	USACE Qualifier: 3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	None
8	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
9	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
10	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	USACE Qualifier: 3, 10	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
11	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	USACE Qualifier: 6, 9, 14	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
13	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	USACE Qualifier: 2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
14	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	USACE Qualifier: 6, 8	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

- Wildlife and vegetation diversity/abundance list.
- Photograph of wetland.
- Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.
- For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the [Coastal Area Worksheet \(NHDES-W-06-079\)](#) for more information.

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True Road
Area: 56.3 ac

Twin Culverts
Area: 394.6 ac



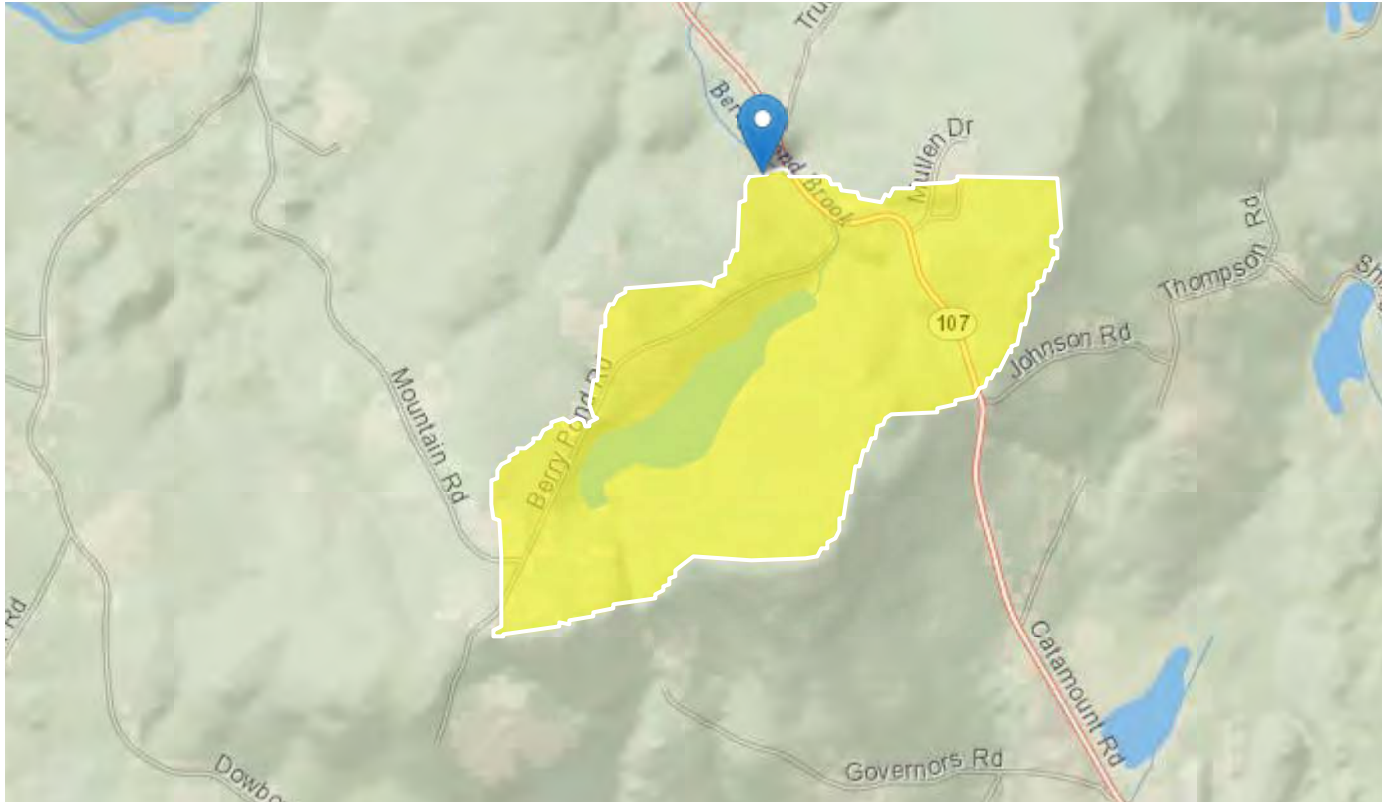
StreamStats Report

Region ID: NH

Workspace ID: NH20200625205103368000

Clicked Point (Latitude, Longitude): 43.28714, -71.29799

Time: 2020-06-25 16:51:19 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.67	square miles
APRAVPRE	Mean April Precipitation	3.816	inches
WETLAND	Percentage of Wetlands	7.3891	percent
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	147	feet per mi

Peak-Flow Statistics Parameters^[Peak Flow Statewide SIR2008 5206]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.67	square miles	0.7	1290
APRAVPRE	Mean April Precipitation	3.816	inches	2.79	6.23
WETLAND	Percent Wetlands	7.3891	percent	0	21.8
CSL10_85	Stream Slope 10 and 85 Method	147	feet per mi	5.43	543

Peak-Flow Statistics Disclaimers^[Peak Flow Statewide SIR2008 5206]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Peak-Flow Statistics Flow Report^[Peak Flow Statewide SIR2008 5206]

Statistic	Value	Unit
2 Year Peak Flood	24.2	ft ³ /s
5 Year Peak Flood	42.7	ft ³ /s
10 Year Peak Flood	58.8	ft ³ /s
25 Year Peak Flood	81.6	ft ³ /s
50 Year Peak Flood	101	ft ³ /s
100 Year Peak Flood	125	ft ³ /s
500 Year Peak Flood	184	ft ³ /s

Peak-Flow Statistics Citations

Olson, S.A.,2009, Estimation of flood discharges at selected recurrence intervals for streams in New Hampshire: U.S.Geological Survey Scientific Investigations Report 2008-5206, 57 p. (<http://pubs.usgs.gov/sir/2008/5206/>)

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Application Version: 4.3.11

1.0 Project Description

The New Hampshire Department of Transportation (NHDOT) proposes replacement of 27" twin culverts carrying a historically diverted portion of Berry Pond Brook under NH Route 107 and extends approximately 100 feet north and south of the culverts and 60 feet upstream and downstream of the culverts in Pittsfield, Merrimack County, New Hampshire (See USGS Locus Map). The purpose of the project is to replace the poor condition existing culvert, improve the skew and hydraulics of the twin culverts to provide improved flow, attenuate potential flooding, and prevent further erosion along the headwall of the culverts.

Wetland impacts associated with the culvert replacement under NH Route 107 include permanent and temporary impacts to the stream to install the new crossing. Impacts include 1226 square feet and 347 linear feet of permanent stream bed and channel impact and 101 square feet of temporary stream bed and channel impact (See Project Plans.)

2.0 Requirements for Application Evaluation

The following narrative responds to Section 7 of the Standard Dredge and Fill Application under Administrative Rule **Env-Wt 900 – Stream Crossings; Certified Culvert Maintainer Program**:

Env-Wt 903.04 Information Required for All Stream Crossing Standard Permit Applications:

(e) A narrative explaining why the cross-sections identified pursuant to (b)(7), above, are representative;

As noted on Sheet 2-Pittsfield Details Plan 1 provided in the attachments to this application, the replacement streambed/banks will simulate the existing streambed/banks both within the culvert replacement area and upstream/downstream locations within the project limit of disturbance. Simulated streambed material will be placed immediately upstream and downstream of the proposed culvert and shown on the attached design plans. All efforts will be made to replicate the existing stream channel and banks within the culvert and adjacent to the work area. If the streambed material is not available, the material used will consist of native cobble, boulders and stones from a nearby local gravel pit and mixed with the existing streambed materials. Angular, subangular, or sub-rounded rock (flat bottom) is preferred over round rock, meeting the following gradation:

SIMULATED STREAMBED MATERIAL GRADATION		
Classification	% by Weight	Sieve Sizes (in)
Silt	15%	See Item 647.29 – Wetland Humus specifications
Sand	65%	0.003” to 0.08” (smaller than head of a match)
Gravel	15%	0.08” to 2.5” (between head of match and tennis ball)
Cobble	5%	2.5” to 10.0” (between tennis ball and volleyball)
Boulder	0%	10.0” to 18.0” (Larger than volleyball)

(f) The design features used to improve aquatic organism passage and the expected distance, in linear feet, of downstream and upstream improvement for aquatic organism passage or fish passage;

The culvert embedment material noted in the attached plan set has been selected with the intent to create a natural stream channel within the culvert that simulates the nearby channel to encourage fish passage and resist scour during larger seasonal rain events.

(g) The hydraulic capacity of the proposed crossing, in terms of flood frequency event, and of the existing crossing, if any;

The proposed stream crossing is not located within a FEMA 100-year flood plain, however, during development of the project the flood frequency was calculated using digital hydrological simulation software (HydroCAD-TR 20 Met). The existing 100-year peak discharge calculated during the simulation was determined to be approximately 112.7 cubic feet per second (CFS). The estimated bankfull discharge at the crossing was calculated to be approximately 18 CFS. The calculated 100-year peak discharge calculated for the proposed structure is approximately 129.5 CFS and the 50-year peak discharge is approximately 118.7 CFS.

Env-Wt 903.05 Information Required for Certain Stream Crossing Standard Permit Applications:

(a) For tier 2 and tier 3 crossings, the following additional channel information at the crossing and for the design reference reach including:

(1) A longitudinal profile that is 7 to 10 bankfull widths long with grade controls, pools, and gradients shown; and

The attached plan set provides this information.

(2) Particle size distribution of the reference reach;

The attached stream crossing worksheet details the longitudinal profile of the stream reach.

(b) For tier 2, tier 3, and tier 4 crossings, streambed details, with figures, that show the following:

- (1) The distance from the top of the right bank to the top of the left bank;
The attached plan set provides this information.*
- (2) The streambed simulation materials and the extent, depth, and length of the streambed within the proposed crossing;
The attached plan set provides this information.*
- (3) Approximate elevations, spacing, diameters, and locations of structures for steps, bank stabilization, and other channel rocks for roughness; and
The attached plan set provides this information.*

Env-Wt 904.01 General Design Considerations:

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

- (1) Not be a barrier to sediment transport;*
- (2) Not restrict high flows and maintain existing low flows;*
- (3) Not obstruct or otherwise substantially disrupt the movement of aquatic organisms indigenous to the waterbody beyond the actual duration of construction;*

The proposed crossing has been designed to not be a barrier to sediment transport, not restrict high flows, maintains existing flows, and will not disrupt the movement of aquatic organisms. The crossing will improve the hydraulic capacity of the existing crossing and improve the alignment of the stream to have less flooding potential.

- (4) Not cause an increase in the frequency of flooding or overtopping of banks;*
- (5) Maintain or enhance geomorphic compatibility by:
 - a. Minimizing the potential for inlet obstruction by sediment, wood, or debris; and*
 - b. Preserving the natural alignment of the stream channel;**
- (6) Preserve watercourse connectivity where it currently exists;*
- (7) Restore watercourse connectivity where:
 - a. Connectivity previously was disrupted as a result of human activity(ies); and*
 - b. Restoration of connectivity will benefit aquatic organisms upstream or downstream of the crossing, or both;**
- (8) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing;
and*
- (9) Not cause water quality degradation.
 - (b) Work on stream crossings that requires any work in areas that are subject to flowing water shall maintain normal flows and prevent water quality degradation during the work by using best management practices, such as temporary by-pass pipes, culverts, or cofferdams.**

The re-alignment of the stream will benefit aquatic organisms upstream or downstream of the crossing by restoring connectivity within the stream channel. A clean water bypass will be utilized to preserve the watercourse connectivity during construction. Appropriate best management practices including

sedimentation and erosion controls will be implemented during the project (See Erosion and Sediment Control Plans).

Env-Wt 904.02 Conditions Applicable to All Stream Crossing Work:

(a) In-stream work shall be done only during:

- (1) Low flow or dry conditions, in non-tidal areas; or*
- (2) When the tide is seaward of the work area, in tidal areas; and*

(b) Work on stream crossings that requires any work in areas that are subject to flowing water shall maintain normal flows and prevent water quality degradation during the work by using best management practices, such as temporary by-pass pipes, culverts, or cofferdams.

The proposed project will be conducted during low flow and in dry conditions utilizing a clean water bypass to preserve watercourse connectivity.

Env-Wt 904.04 Tier 2 Stream Crossings:

(a) A tier 2 stream crossing shall be a crossing located on a watercourse where the contributing watershed is greater than 200 acres and less than 640 acres.

(b) Subject to (c), below, any new tier 2 stream crossing and any replacement tier 2 stream crossing that does not meet the criteria specified for replacement in Env-Wt 904.08 shall be a span structure, pipe arch embedded with stream simulation, open-bottom culvert with stream simulation, or closed-bottom culvert embedded with stream simulation.

(c) The applicant may propose an alternative design for a new tier 2 stream crossing by submitting a request as specified in Env-Wt 904.10.

(d) Compensatory mitigation shall not be required for:

- (1) Any new tier 2 stream crossing that meets the requirements of this section and Env-Wt 904.07;*
- (2) Any tier 2 stream crossing that is self-mitigating; or*
- (3) Any tier 2 stream crossing that is repaired, rehabilitated, or replaced pursuant to Env-Wt 904.08.*

(e) Plans for a tier 2 stream crossing shall be dated and bear the signature and seal of the professional engineer who prepared or had responsibility for and approved them, as required by RSA 310-A:18.

The contributing watershed at the stream crossing under NH 107 is approximately 395 acres as determined by the USGS topographic map. The proposed design involves installing a pipe arch embedded with simulated streambed material.

The proposed work falls under the definition of self-mitigating under Env-Wt 902.27 ““Self-mitigating” as applied to stream crossings means the design of the crossing incorporates measures or features to offset the loss of the affected resource’s functions and values in an area where the new functions and values are sustainable. Examples of self-mitigating measures or features include, but are not limited to, eliminating a barrier to aquatic organism passage, improving the hydraulic capacity of an under-sized crossing, and

improving geomorphic compatibility." Upon completion of the project the stream crossing will allow improved aquatic organism passage, hydraulic capacity, and geomorphic compatibility.

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

- (a) Unless otherwise specified, all design criteria in this section shall apply to new and replacement tier 2, tier 3, and tier 4 stream crossings.*
- (b) Tier 2 and tier 3 stream crossings shall be designed in accordance with the NH stream crossing guidelines, available as noted in Appendix B;*
- (c) Tier 2, tier 3, and tier 4 stream crossings shall be designed:*
 - (1) To meet the general design considerations specified in Env-Wt 904.01;*
 - (2) Of sufficient size to accommodate the greater of:*
 - a. The 100-year 24-hour design storm;*
 - b. Flows sufficient to:*
 - 1. Prevent an increase in flooding on upstream and downstream properties; and*
 - 2. Not affect flows and sediment transport characteristics in a way that could adversely affect channel stability; or*
 - c. Applicable federal, state, or local requirements;*
 - (3) With the bed forms and streambed characteristics necessary to cause water depths and velocities within the crossing structure at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the stream crossing;*
 - (4) To provide a vegetated bank on both sides of the watercourse or to provide a wildlife shelf of suitable substrate and access to allow for wildlife passage;*
 - (5) To preserve the natural alignment and gradient of the stream channel, so as to accommodate natural flow regimes and the functioning of the natural floodplain;*
 - (6) To simulate a natural stream channel;*
 - (7) So as not to alter sediment transport competence; and*
 - (8) To avoid and minimize impacts to the stream in accordance with Env-Wt 313.03.*
- (d) In addition to meeting the criteria specified in (c), above, new, repaired, rehabilitated, or replaced tier 4 stream crossing shall be designed:*
 - (1) Based on a hydraulic analysis that accounts for daily fluctuating tides, bidirectional flows, tidal inundation, and coastal storm surge;*
 - (2) To prevent creating a restriction on tidal flows; and*
 - (3) To account for tidal channel morphology and potential impacts due to sea level rise.*

The proposed stream crossing was designed in accordance with the NH stream crossing guidelines and the general design considerations of Env-Wt 904.01. The proposed 66" x 51" Pipe Arch has been hydraulically upsized to better pass the 50 and 100 year storm events but still designed to overtop NH Route 107 due to the 48" culvert downstream under True Road being over capacity also. This downstream 48" culvert is a design constraint as increased flows will continue to overtop True Road. The Town of Pittsfield was contacted to determine if the 48" culvert downstream is anticipated to be replaced. The Town currently has no plans to replace the downstream culvert under True Road (Attachment I). The tables below shows the existing and proposed hydraulics for both culverts.

Existing Condition

NH Route 107 - Existing Twin 27" Culverts			
Storm Year	Inflow (cfs)	Outflow (cfs)	Overtopping (cfs)
10	83.0	73.8	9.2
25	104.7	78.3	26.4
50	118.7	80.6	38.1
100	129.5	82.2	47.3

True Road - 48" Culvert		
Inflow (cfs)	Outflow (cfs)	Overtopping (cfs)
123.6	119.8	3.8
161.3	129.3	32.0
188.6	134.4	54.2
214.3	138.4	75.9

Proposed Condition

NH Route 107 - 66"x51" Pipe Arch			
Storm Year	Inflow (cfs)	Outflow (cfs)	Overtopping (cfs)
10	83.1	81.4	1.7
25	104.7	91.7	13.0
50	118.7	97.1	21.7
100	129.5	100.8	28.7

True Road - 48" Culvert		
Inflow (cfs)	Outflow (cfs)	Overtopping (cfs)
128.3	121.0	7.3
163.9	129.7	34.2
190.6	134.6	56.0
216.4	138.6	77.8

Env-Wt 904.08 Repair, Rehabilitation, or Replacement of Tier 1 or Tier 2 Existing Legal Crossings:

- (a) Repair, rehabilitation, or replacement of a tier 1 or tier 2 stream crossing shall be limited to stream crossings where:
 - (1) The contributing watershed is as specified for the tier; and
 - (2) The certification specified in (b), below is provided.
- (b) A project to repair, rehabilitate, or replace a tier 1 or tier 2 crossing shall qualify under this section only if a professional engineer certifies that:
 - (1) The existing stream crossing does not have a history of causing or contributing to flooding that damages the crossing, other human infrastructure, or protected species or habitat, or any combination thereof; and
 - (2) The proposed stream crossing will:
 - a. Meet or exceed the general criteria specified in Env-Wt 904.01;
 - b. Maintain or enhance the hydraulic capacity of the crossing;
 - c. Maintain or enhance the capacity of the crossing to accommodate aquatic organism passage, or both;
 - d. Maintain or enhance the connectivity of the stream reaches upstream or downstream of the crossing, or both; and
 - e. Not cause an increase in the frequency of flooding or overtopping of banks upstream or downstream of the crossing, or both.

(c) Rehabilitation of a culvert or other closed-bottom stream crossing structure pursuant to this section may be accomplished by concrete repair, slip lining, cured-in-place lining, or concrete invert lining, or any combination thereof, except that slip lining shall not occur more than once.

The project as proposed qualifies under this section as a Tier 2 stream crossing based on the contributing watershed. The existing stream crossing does not have a history of causing or contributing to flooding. The existing configuration has resulted in significant erosion along the headwall at NH107. The proposed stream crossing will replace existing undersized twin culverts and has exceeded the general criteria specified in Env-Wt 904.01, will enhance the hydraulic capacity, aquatic organism passage, hydraulic connectivity, and will not increase flood potential at the crossing.

The proposed work falls under the definition of replace in-kind provided in Env-Wt 902.26 ““Replacement” as applied to a stream crossing means the removal of all or a portion of an existing legal structure and the installation of a new structure or new portion of the structure that does not qualify as a repair or a replacement in-kind.” The new structure will be functionally equivalent to the existing structure and will improve the skew of the stream channel. Flow capacity and aquatic organism passage of the crossing will be improved following construction.

I Timothy Higginson, PE of WSP certify that all parts of Env-Wt 904.08 (b) above have been met.



New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

To: Arin Mills
John O. Morton Building
7 Hazen Drive
Concord, NH 03302-0483

From: NH Natural Heritage Bureau

Date: 1/3/2022 (This letter is valid through 1/3/2023)

Re: Review by NH Natural Heritage Bureau of request dated 1/3/2022

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

NHB ID: NHB22-0016

Applicant: Arin Mills

Location: Pittsfield
Tax Map: DOT ROW, Tax Lot: DOT ROW
Address: NH 107 over Berry Pond Brook

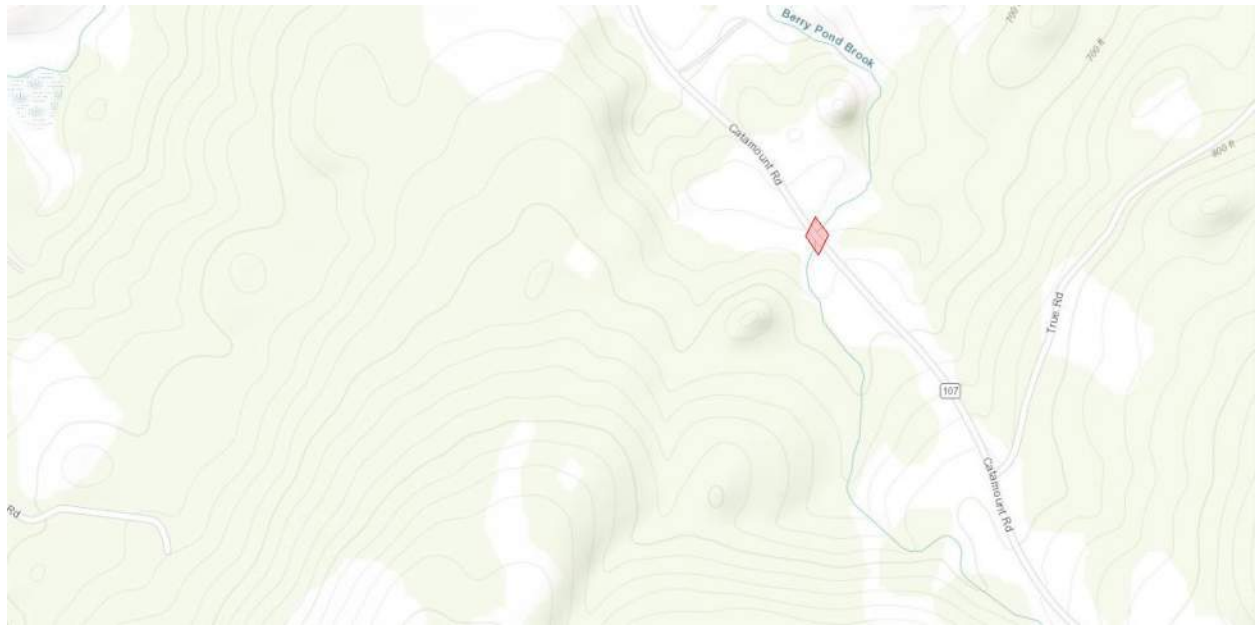
Proj. Description: Propose to replace existing twin culvert which carry NH 107 over Berry Pond Brook.
This is an update to review NHB20-3627.

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.

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

MAP OF PROJECT BOUNDARIES FOR: NHB22-0016





United States Department of the Interior



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

In Reply Refer To:
Consultation Code: 05E1NE00-2020-SLI-2021
Event Code: 05E1NE00-2022-E-03576
Project Name: Pittsfield 43049 Culvert Replacement

January 03, 2022

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

To Whom It May Concern:

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

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

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

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

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

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

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

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:

<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>;

<http://www.towerkill.com>; and

<http://>

www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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

Attachment(s):

- Official Species List
-

Official Species List

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

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2020-SLI-2021

Event Code: Some(05E1NE00-2022-E-03576)

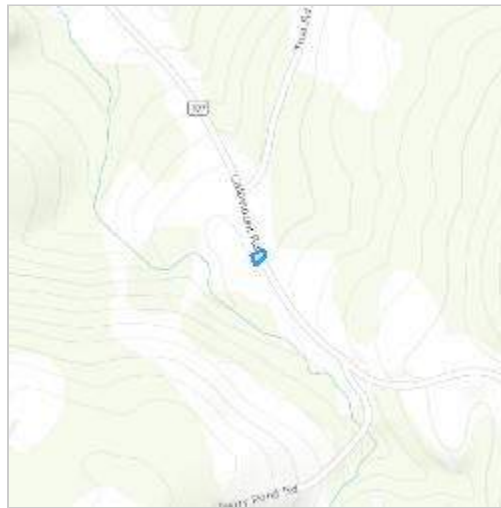
Project Name: Pittsfield 43049 Culvert Replacement

Project Type: TRANSPORTATION

Project Description: Replace a failing twin 24" CMP culverts which carries an un-named tributary to Berry Pond Brook under NH Route 107 in Pittsfield.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@43.28755572570906,-71.29700533648841,14z>



Counties: Merrimack County, New Hampshire

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

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

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

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

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

Mammals

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

Insects

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

Flowering Plants

NAME	STATUS
Small Whorled Pogonia <i>Isotria medeoloides</i> Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1890	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
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<http://www.fws.gov/newengland>

IPaC Record Locator: 737-24749927

December 21, 2020

Subject: Consistency letter for the 'Pittsfield 43049' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Kevin Ferguson:

The U.S. Fish and Wildlife Service (Service) received on December 21, 2020 your effects determination for the 'Pittsfield 43049' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause “take”^[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

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

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

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

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

- Small Whorled Pogonia, *Isotria medeoloides* (Threatened)

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

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

Action Description

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

1. Name

Pittsfield 43049

2. Description

The following description was provided for the project 'Pittsfield 43049':

The Town of Pittsfield, through the New Hampshire Department of Transportation proposes the replacement of twin culverts carrying Berry Brook under Route 107 in Pittsfield, NH.

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/43.28762570850006N71.29694223113086W>

**Determination Key Result**

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

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

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

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

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

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

Determination Key Result

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

Qualification Interview

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

No

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

No

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

Automatically answered

No

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

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

Yes

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

No

6. Will the action involve Tree Removal?

Yes

7. Will the action only remove hazardous trees for the protection of human life or property?

No

8. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

No

9. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

No

Project Questionnaire

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

1. Estimated total acres of forest conversion:

0

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

0

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

0

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

4. Estimated total acres of timber harvest

0

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

0

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

0

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

7. Estimated total acres of prescribed fire

0

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

0

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

0

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

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?
0

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENVIRONMENT

NOTE TO FILE

Date: May 24, 2021

From: Arin Mills
Senior Environmental Manager
Bureau of Environment

Project: Pittsfield Culvert Replacement, 43049

RE: Small Whorled Pogonia Field Review

The above referenced project is proposed to conduct replacement of twin culvert carrying a historically diverted portion of Berry Brook under NH route 107 in Pittsfield. The twin pipes will be replaced with a 66" x 51" arch pipe with 12" embedment.

On May 5, 2021 the project location was visited for evaluation of potential Small whorled pogonia habitat within the area of disturbance. The area surrounding both the inlet and outlet of the existing crossing is managed roadside, with sparse low shrub and grassy vegetation. The inlet side is immediately adjacent to a residence with associated managed lawn and retaining wall along the stream. The outlet is a cleared right-of-way adjacent to the road, with a mixed pine forest beyond. A review of the habitat for the species is old hardwood stands of beech, birch, maple, oak and hickory with an open understory, as determined by the US Fish & Wildlife Service. As the proposed culvert replacement is within and immediately adjacent to the roadway and managed right-of-way no habitat for the species is within the action area.. No individual plants were observed while onsite. No impacts to the species are anticipated.

Arin Mills
Environmental Manager
NH Department of Transportation



Photo 1: Inlet looking North down NH Route 107



Photo 2: Outlet looking North down NH Route 107



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>

January 4, 2021

To Whom It May Concern:

This project was reviewed for the presence of federally listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

<https://www.fws.gov/newengland/endangeredspecies/index.html> (accessed January 2021)

Based on information currently available to us, no federally listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required. No further Endangered Species Act coordination is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact us at 603-223-2541 or www.fws.gov/newengland if we can be of further assistance.

Sincerely,

David Simmons
Acting Field Supervisor
New England Field Office

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Date Reviewed: 5/11/2021
(Desktop or Field Review Date)

Project Name: Pittsfield

State Number: 43049

FHWA Number: N/A

Environmental Contact: Arin Mills
Email Address: Arin.J.Mills@dot.nh.gov

DOT Project Manager: Nancy Spaulding/Roger Appleton

Project Description: Proposed culvert replacement project which carries an un-named tributary to Berry Brook under NH Route 107. This project will replace the existing twin 24" CMP culverts which are showing signs of deterioration and District has determined is high priority for repair as it threatens the stability of the roadway. The work will be complete by District forces.

There are stone walls on both the inlet and outlet side of the crossing as well as a concrete and stone wall along the west side of the stream channel inlet that is likely armoring the stream channel from erosion. There is also a stone wall parallel to 107 on the east side. *Photos: V:\Towns\Pittsfield\40349\Environment*

The proposed design is a 66" w x 51" h x 62' long arch pipe with 12" of embedment. The proposed design will change the skew of the crossing to the roadway by moving it south along NH 107 from the current placement. The existing pipes will be removed, as well as the MRM and concrete headwalls. The stone wall sections at the outlet will be removed.

Please select the applicable activity/activities:

Highway and Roadway Improvements	
<input checked="" type="checkbox"/>	1. Modernization and general highway maintenance that may require additional highway right-of-way or easement , including: g. placement of riprap and/or other erosion control measures to prevent erosion of waterway banks and bridge piers, provided no excavation is required Choose an item.
<input type="checkbox"/>	2. Installation of rumble strips or rumble stripes
<input type="checkbox"/>	3. Installation or replacement of pole-mounted signs
<input type="checkbox"/>	4. Guardrail replacement, provided any extension does not connect to a bridge older than 50 years old (unless it does already), and there is no change in access associated with the extension
Bridge and Culvert Improvements	
<input checked="" type="checkbox"/>	5. Culvert replacement (excluding stone box culverts), when the culvert is less than 60" in diameter and excavation for replacement is limited to previously disturbed areas
<input type="checkbox"/>	6. Bridge deck preservation and replacement, as long as no character defining features are impacted
<input type="checkbox"/>	7. Non-historic bridge and culvert maintenance, renovation, or total replacement, that may require minor additional right-of-way or easement , including: Choose an item.
<input type="checkbox"/>	8. Historic bridge maintenance activities within the limits of existing right-of-way, including: Choose an item. Choose an item.

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

<input checked="" type="checkbox"/>	9. Stream and/or slope stabilization and restoration activities (including removal of debris or sediment obstructing the natural waterway, or any non-invasive action to restore natural conditions)
Bicycle and Pedestrian Improvements	
<input type="checkbox"/>	10. Construction of pedestrian walkways, sidewalks, sidewalk tip-downs, small passenger shelters, and alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons
<input type="checkbox"/>	11. Installation of bicycle racks
<input type="checkbox"/>	12. Recreational trail construction
<input type="checkbox"/>	13. Recreational trail maintenance when done on existing alignment
<input type="checkbox"/>	14. Construction of bicycle lanes and shared use paths and facilities within the existing right-of-way
Railroad Improvements	
<input type="checkbox"/>	15. Modernization, maintenance, and safety improvements of railroad facilities within the existing railroad or highway right-of-way, <u>provided no historic railroad features are impacted</u> , including, but not limited to: Choose an item. Choose an item.
<input type="checkbox"/>	16. In-kind replacement of modern railroad features (i.e. those features that are less than 50 years old)
<input type="checkbox"/>	17. Modernization/modification of railroad/roadway crossings provided that all work is undertaken within the limits of the roadway structure (edge of roadway fill to edge of roadway fill) and no associated character defining features are impacted
Other Improvements	
<input type="checkbox"/>	18. Installation of Intelligent Transportation Systems
<input type="checkbox"/>	19. Acquisition or renewal of scenic, conservation, habitat, or other land preservation easements where no construction will occur
<input type="checkbox"/>	20. Rehabilitation or replacement of existing storm drains.
<input type="checkbox"/>	21. Maintenance of stormwater treatment features and related infrastructure

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

The purpose of the project is to replace the existing culvert, which is in a poor, deteriorating condition; improve the skew and hydraulics of the twin culverts to provide improved flow; attenuate potential flooding; and prevent further erosion along the headwall of the culverts. The project includes the replacement of 27" twin corrugated metal pipe culverts carrying a previously diverted portion of Berry Pond Brook under NH Route 107. The stream configuration and existing culvert locations date to 1928 at the earliest; however, substantial modifications occurred over time including pipe replacement, headwall reconstruction, and corresponding sitework in 1984. The roadway guardrails were installed in 2006. In its entirety, the project conservatively extends approximately 100 feet north and south of the culverts and 60 feet upstream and downstream of the culverts in Pittsfield, Merrimack County. All project activities occur in previously disturbed areas. The replacement culvert will be a single corrugated metal pipe arch culvert measuring 66" x 51". Slope improvements upstream and downstream of the culvert will include removal of the existing guardrail, the addition of loam and seed as well as stone fill for stabilization and erosion control. Some of this work will occur outside of right-of-way. On the east side of NH Route 107 and north of the crossing is a stone retaining wall that was added as a roadway embankment north and south of the existing culvert. This stone retaining wall does not appear to be part of a historic alignment, but instead is associated with a previous roadway project. These stonewall remnants will be removed during the slope stabilization portion of this project.

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

Coordination Efforts:


Has an RPR been submitted to NHDOT for this project?	No	NHDHR R&C # assigned?	Click here to enter text.
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Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Please identify public outreach effort contacts; method of outreach and date:	<p>Letters were sent on December 21, 2020 to Pittsfield Department of Public Works, Pittsfield Conservation Commission, Pittsfield Historical Society, Pittsfield Planning Board, Pittsfield Fire Department, and Pittsfield Police Department. Emails were sent on December 9, 2020 to Conservation Land Stewardship program CLS/LCIP, NHF&G Fisheries, Office of Strategic Initiatives, New Hampshire Land and Community Heritage Investment Program, and Land and Water Conservation Fund. A public officials meeting is not anticipated for this project. There has only been email responses received from the Conservation Land Stewardship program CLS/LCIP, NHF&G Fisheries and Office of Strategic Initiatives. There were no concerns listed in these responses for the project.</p>
---	--

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

<input type="checkbox"/>	No Potential to Cause Effects	<input checked="" type="checkbox"/>	No Historic Properties Affected
This finding serves as the Section 106 Memorandum of Effect. No further coordination is necessary.			
<input type="checkbox"/>	This project does not comply with Appendix B. Review will continue under Stipulation VII of the Programmatic Agreement. Please contact NHDOT Cultural Resources Staff to determine next steps.		
<p>NHDOT comments:</p> <div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div data-bbox="180 947 824 1096">  _____ NHDOT Cultural Resources Staff </div> <div data-bbox="911 936 1474 1096"> <p>5/24/2021</p> _____ Date </div> </div>			

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

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

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

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

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

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



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

Appendix B

New Hampshire General Permits (GPs) Required Information and Corps Secondary Impacts Checklist

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

All Projects:

- New Hampshire Department of Environmental Services (DES) Wetlands Permit Application.
- Request for Project Review Form by the New Hampshire Division of Historical Resources (DHR) <https://www.nh.gov/nhdhr/review/rpr.htm>.
- Photographs of wetland/waterway to be impacted.
- Purpose of the project.
- Legible, reproducible plans no larger than 11”x17” with bar scale. Provide locus map and plan views of the entire property.
- Typical cross-section views of all wetland and waterway fill areas and wetland replication areas.
- In navigable waters, show mean low water (MLW) and mean high water (MHW) elevations. Show the high tide line (HTL) elevations when fill is involved. In other waters, show ordinary high water (OHW) elevation.
- On each plan, show the following for the project:
 - Vertical datum and the NAVD 1988 equivalent with the vertical units as U.S. feet. In coastal waters this may be mean higher high water (MHHW), mean high water (MHW), mean low water (MLW), mean lower low water (MLLW) or other tidal datum with the vertical units as U.S. feet. MLLW and MHHW are preferred. Provide the correction factor detailing how the vertical datum (e.g., MLLW) was derived using the latest National Tidal Datum Epoch for that area, typically 1983-2001.
 - Horizontal state plane coordinates in U.S. survey feet based on the Traverse Mercator Grid system for the State of New Hampshire (Zone 2800) NAD 83.
 - Project limits with existing and proposed conditions.
 - Limits of any Federal Navigation Project in the vicinity of the project area and horizontal State Plane Coordinates in U.S. survey feet for the limits of the proposed work closest to the Federal Navigation Project;
 - Volume, type, and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below the OHW in inland waters and below the HTL in coastal waters.
 - Delineation of all waterways and wetlands on the project site,;
- Use Federal delineation methods and include Corps wetland delineation data sheets (GC 2).
- For activities involving discharges of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized, and either a statement describing how impacts to waters of the U.S. are to be compensated for (or a conceptual or detailed mitigation plan) or a statement explaining why compensatory mitigation should not be required for the proposed impacts. Please contact the Corps for guidance.



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**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 ¹	
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?	N/A	
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 ²	

3.2 Would work occur in any area identified as either “Highest Ranked Habitat in N.H.” or “Highest Ranked Habitat in Ecological Region”? (These areas are colored magenta and green, respectively, on NH Fish and Game’s map, “2010 Highest Ranked Wildlife Habitat by Ecological Condition.”) Map information can be found at: <ul style="list-style-type: none"> • PDF: https://wildlife.state.nh.us/wildlife/wap-high-rank.html. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html. 		X
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the GC 21?	X ³	
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 ⁴

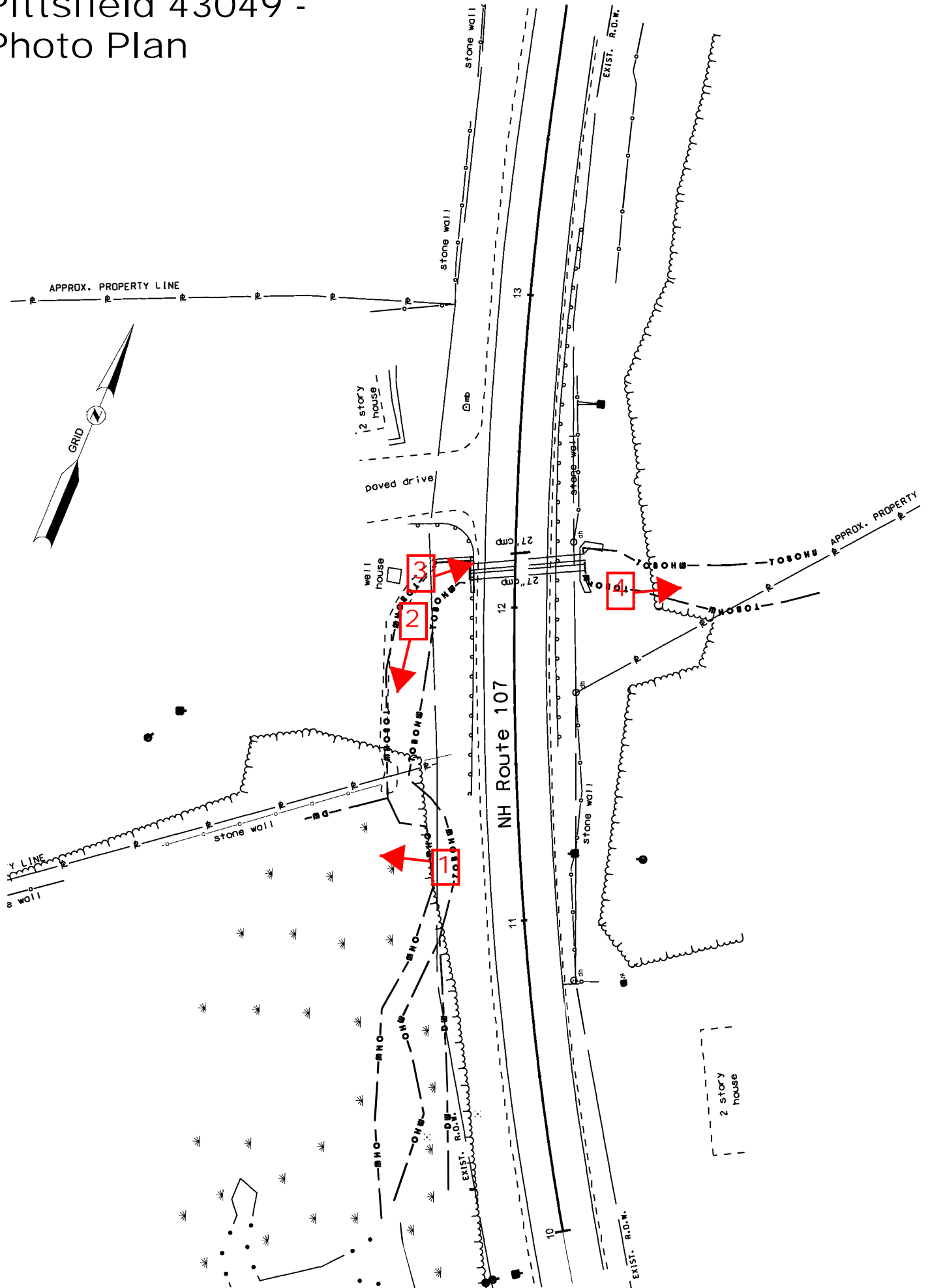
*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.

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

Supporting Notes:

1. The project as proposed will not remove the riparian buffer adjacent to the stream. Access to the project from NH 107 will be along the roadside where the existing vegetation consists of a maintained grassy area. Minimal tree cutting is proposed which will result in the removal of vegetation along a portion of the stream edge. The impacts to the riparian area will be negligible and the disturbance will not be permanent. Upon completion of the project all disturbed riparian areas will be stabilized and seeded with a native seed mix.
2. Consultation with the US Fish and Wildlife Service (USFWS) indicated the proposed action is within the range of the northern long-eared bat (*Myotis septentrionalis*) (NLEB) and small-whorled pogonia (*Isotria medeoloides*) (Attachment D). The project is located within 1,000 feet of suitable habitat for bats and tree trimming and removal are anticipated with this project. No tree removal will occur during the active pup season of June and July. The project area is not located within 0.5 miles of a known bat hibernaculum. On May 5, 2021 the project location was visited for evaluation of potential small whorled pogonia habitat within the area of disturbance. The area surrounding both the inlet and outlet of the existing crossing is managed roadside, with sparse low shrub and grassy vegetation. The inlet side is immediately adjacent to a residence with associated managed lawn and retaining wall along the stream. The outlet is a cleared right-of-way adjacent to the road, with a mixed pine forest beyond. A review of the habitat for the species is old hardwood stands of beech, birch, maple, oak and hickory with an open understory, as determined by the US Fish & Wildlife Service. As the proposed culvert replacement is within and immediately adjacent to the roadway and managed right-of-way, no habitat for the species is within the action area. No individual plants were observed while onsite. No impacts to the species are anticipated. Therefore, no impact to federally listed species are anticipated during the proposed project. Consultation with New Hampshire Natural Heritage Bureau (NHNHB) indicated there are no records of sensitive species or habitats near the project area (Attachment C).
3. In reference to General Condition 21 "Bank Stabilization", the project has been designed to use the least intrusive method to stabilize the stream channel following construction, details in Env-Wt 514.02 Approval Criteria for All Bank/Shoreline Stabilization Projects were utilized during project design. In reference to General Condition 22 "Waterway/Wetland Work and Crossings", the culvert replacement will not interfere with the natural stream processes and will improve existing hydraulic characteristics. Natural flow of aquatic life will be improved upon completion of the project.
4. The project falls under the Programmatic Agreement among the Federal Highway Administration (FHWA), the New Hampshire State Historic Preservation Office (NHSHPO), the Advisory Council on Historic Preservation (ACHP), and the New Hampshire Department of Transportation (NHDOT) regarding the Federal Aid Highway Program in New Hampshire dated August 7, 2018. Therefore, the Appendix B Certification under the Section 106 agreement was completed for the project and no RPR was sent to the NH Division of Historical Resources (Attachment E).

Pittsfield 43049 - Photo Plan



PITTSFIELD 43049
PITTSFIELD, NEW HAMPSHIRE

Photograph: 1
Date: 3/26/2021
Direction: West
Description:
Conditions observed at
forested wetland
W-VPC-1.



Photograph: 2
Date: 3/26/2021
Direction: Southwest
Description:
Conditions observed at
perennial stream S-VPC-1
west of NH 107.



PITTSFIELD 43049
PITTSFIELD, NEW HAMPSHIRE

Photograph: 3

Date: 3/26/2021

Direction: Northeast

Description:

Conditions observed at the culvert inlet west of NH 107.



Photograph: 4

Date: 12/4/2020

Direction: Northeast

Description:

Conditions observed at perennial stream S-VPC-1 east of NH 107.



Pittsfield 43049

DRAFT Standard Dredge and Fill Wetland Application

Construction Sequence

The following construction sequence will be used during construction of the proposed project:

1. Culvert placement shall be done during low flow periods.
2. Install detour signing and close roadway to traffic. Provide access to driveway at 413 Catamount Road throughout construction.
3. Install perimeter controls along limit of work as shown on plans.
4. Remove existing guardrail.
5. Construct new culvert while maintain existing stream channel as clean water bypass. Grade and construct upstream and downstream channel. Provide for sumps with temporary pumping as required for construction. Dewatering operations shall be pumped to sediment control basins, sediment bags, or similar measures.
6. Direct flow through new culvert.
7. Remove existing twin 27" culverts and fill in remaining stream channel. Loam and seed all slopes.
8. Pave roadway and open to traffic. Remove detour signing.

*Approximately 5 days to complete.

From: [Appleton, Roger](#)
To: [Mills, Arin](#); [Higginson, Timothy](#)
Subject: Pittsfield Town Coordination
Date: Friday, May 21, 2021 3:37:44 PM

Arin/Tim,

I was able to catch up with the Town of Pittsfield Superintendent of Public Works (Noel Gourley) on Wednesday of this week while I was on 107 looking at another project in Pittsfield. We discussed the towns plans for the 48" pipe under True Road, the Town currently has no plans to do anything with the pipe under True Road. I hope this email and brief correspondence is sufficient for NHDES.

Thanks,

Roger Appleton, P.E.

Assistant District 6 Engineer
NH DOT District Six
271 Main Street, PO Box 740
Durham, NH, 03824
(603) 868-1133
Roger.L.appleton@dot.nh.gov



STREAMBED SIMULATION MATERIAL NOTES:

1. THE SIMULATED STREAMBED MATERIAL IS TO BE PLACED IMMEDIATELY UPSTREAM AND DOWNSTREAM OF PROPOSED CULVERT, AS SHOWN ON THE DESIGN PLANS. ALL EFFORTS SHALL BE MADE TO REPLICATE THE EXISTING STREAM CHANNEL AND BANKS WITHIN THE CULVERT AND ADJACENT TO THE WORK AREA.
2. IF THE STREAMBED MATERIAL IS NOT AVAILABLE, THE MATERIAL USED SHALL CONSIST OF NATIVE COBBLES BOULDERS AND STONES FOUND FROM A NEARBY LOCAL GRAVEL PIT AND MIXED WITH THE EXISTING STREAMBED MATERIAL. ANGULAR, SUBANGULAR, OR SUB-ROUNDED ROCK (FLAT-BOTTOM) IS PREFERRED OVER ROUND ROCK, MEETING THE FOLLOWING GRADATION:

SIMULATED STREAMBED MATERIAL GRADATION		
Classification	% by Weight	Sieve Sizes (in)
Silt	15%	See Item 647.29 – Wetland Humus specifications
Sand	65%	0.003" to 0.08" (smaller than head of a match)
Gravel	15%	0.08" to 2.5" (between head of match and tennis ball)
Cobble	5%	2.5" to 10.0" (between tennis ball and volleyball)
Boulder	0%	10.0" to 18.0" (Larger than volleyball)

3. THE EXISTING STREAMBED MATERIAL SHALL BE REMOVED DRAINED AND STOCKPILED FOR REUSE.
4. STONE MATERIALS UNDER 18" SHALL BE PRE-BLENDED OUTSIDE THE PROJECT AREA AND MIXED AT A RATIO OF 3" TO 18" AT 55% AND LESS THAN 2" AT 45% RESPECTIVELY. THE PRE-BLENDING SHALL BE DONE IN A WAY THAT WILL PREVENT THE STREAMBED MIX FROM BEING CONTAMINATED BY WORK SITE OR CULVERT BEDDING MATERIALS.
5. THE STREAMBED MATERIAL SHALL PLACED ON TOP OF STONE FILL CLASS B AS SHOWN IN THE CHANNEL DETAIL. THEN THE STREAMBED MATERIAL SHALL BE WORKED INTO THE TOP 1'-0" FILLING VOIDS, FOLLOWED BY THE DEPTH OF STREAMBED MATERIAL SPECIFIED. ALL STREAMBED MATERIAL SHALL BE PLACED AND LOCKED TIGHTLY TOGETHER TO PREVENT MOVEMENT DURING HIGH FLOWS.

CULVERT EMBEDMENT MATERIAL NOTES:

1. THE INTENT OF THE CULVERT EMBEDMENT MATERIAL IS TO CREATE A NATURAL STREAM CHANNEL WITHIN THE CULVERT THAT SIMULATES THE NEARBY CHANNEL TO ENCOURAGE FISH PASSAGE AND RESIST SCOUR DURING LARGER SEASONAL RAIN EVENTS.



2. CARE SHALL BE TAKEN DURING PLACEMENT OF EMBEDMENT MATERIAL TO AVOID DAMAGE OR DEFORMATION TO THE PIPE ARCH.
3. A 3-INCH CUSHION OF EXISTING SANDY GRAVEL STREAMBED MATERIAL IS RECOMMENDED TO PROTECT THE CULVERT BOTTOM FROM DAMAGE DUE TO PLACEMENT OF COBBLES AND SMALL STONES.
4. IF EXISTING STREAMBED MATERIAL IS NOT AVAILABLE FOR REUSE, EMBEDMENT MATERIAL SHALL CONSIST OF THE ABOVE SIMULATED STREAMBED MATERIAL GRADATION.
5. COBBLES AND SMALL STONES MEASURING LESS THAN 10" SHALL BE DISTRIBUTED THROUGHOUT THE CULVERT LENGTH, FLATTEST SIDE DOWN, WITH THE REMAINING EMBEDMENT MATERIAL PLACED AROUND THEM. THE EMBEDMENT MATERIAL SHALL BE PLACED SUCH THAT THE FLOW OF THE WATER IS GENERALLY CONCENTRATED IN THE CENTER OF THE CONSTRUCTED CHANNEL RATHER THAN DISPERSED ACROSS THE ENTIRE WIDTH OF THE CHANNEL.

REVISIONS AFTER PROPOSAL

STATION

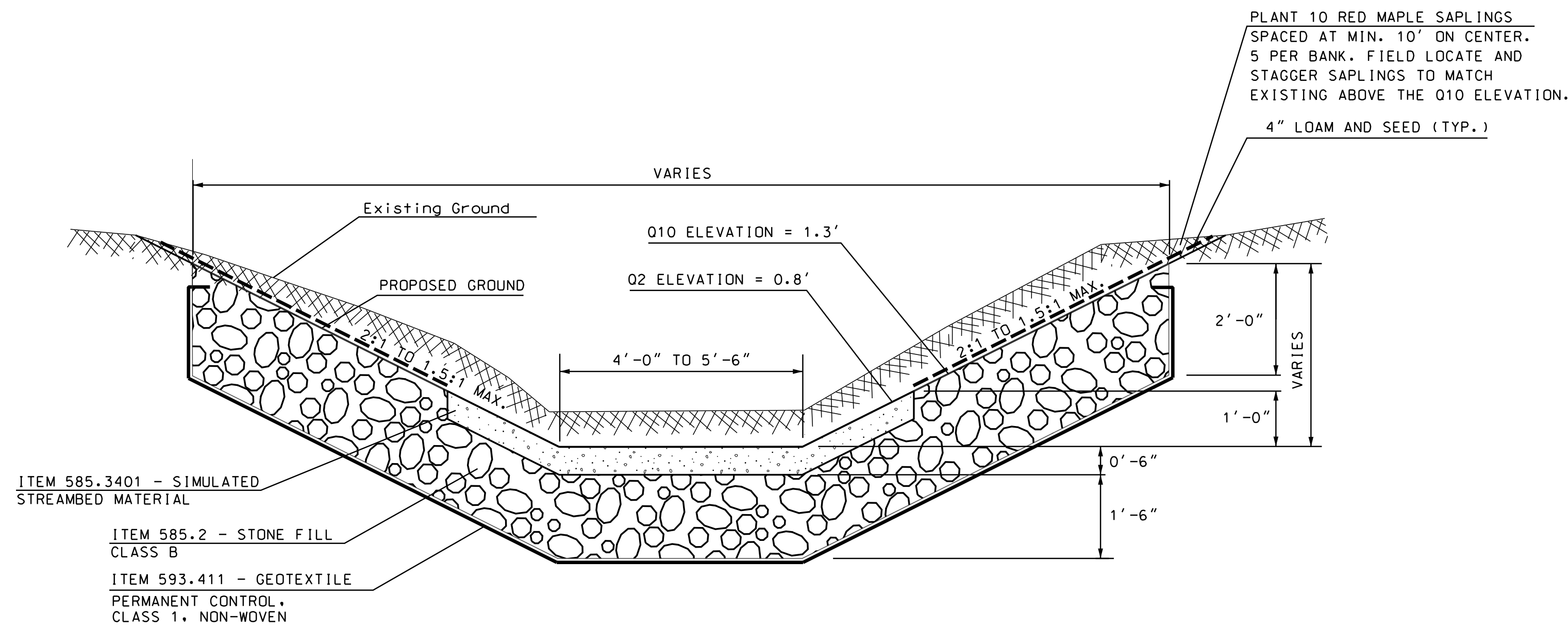
DATE

NUMBER

DATE 09/30/2021

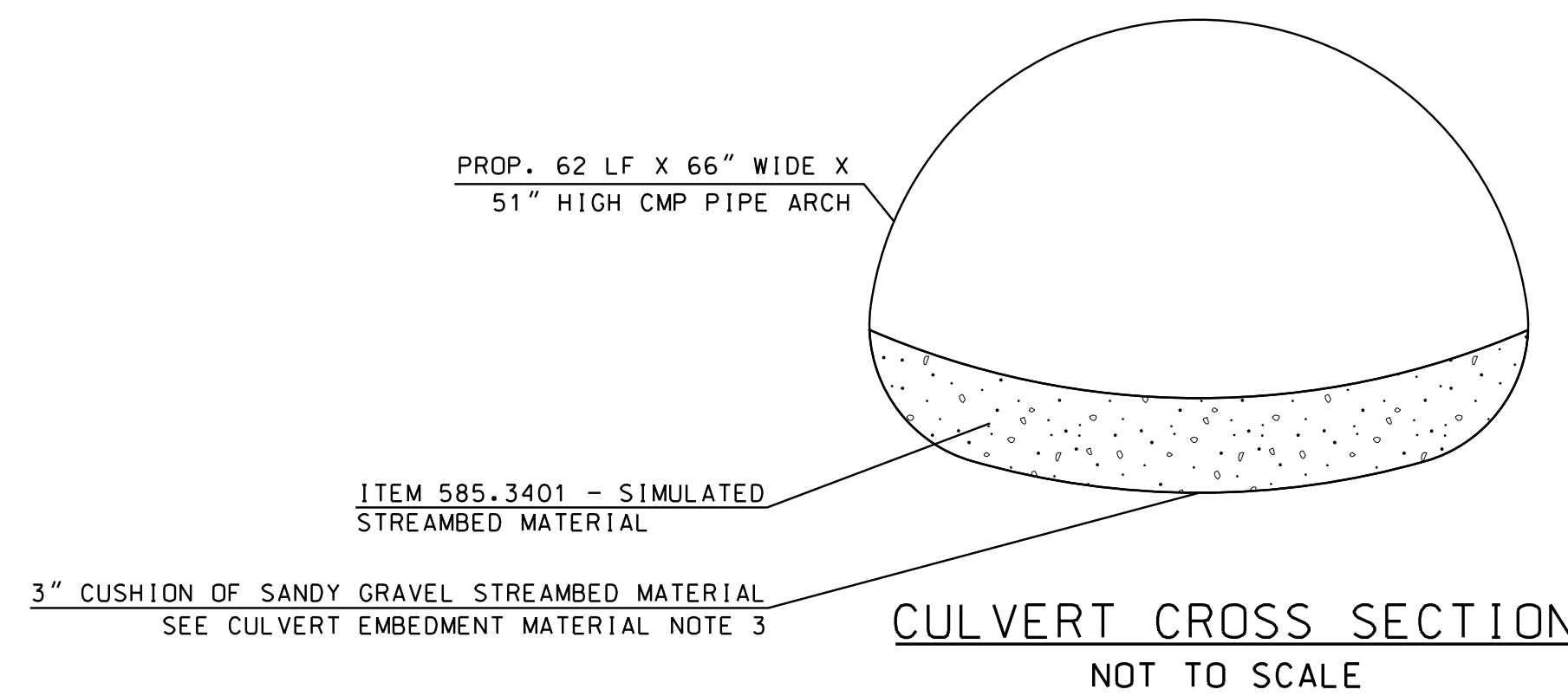
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NEW DESIGN
SHEET CHECKED
AS BUILT DETAILS

DESCRIPTION	STATION	DATE	NUMBER



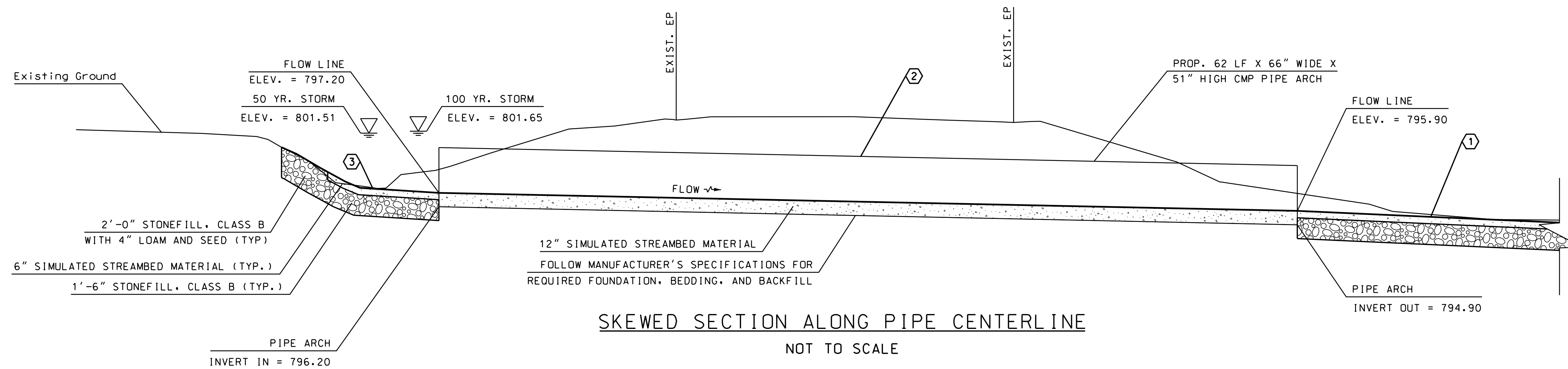
SIMULATED STREAMBED LINED CHANNEL

DRAINAGE NOTE 1 AND 3
NOT TO SCALE



CULVERT CROSS SECTION

NOT TO SCALE



SKEWED SECTION ALONG PIPE CENTERLINE

NOT TO SCALE

CULVERT EMBEDMENT MATERIAL NOTES:

1. THE INTENT OF THE CULVERT STREAMBED EMBEDMENT MATERIAL IS TO CREATE A NATURAL STREAM CHANNEL WITHIN THE CULVERT THAT SIMULATES THE EXISTING NEARBY CHANNEL TO ENCOURAGE FISH PASSAGE AND RESIST SCOUR DURING LARGER SEASONAL RAIN EVENTS.
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4. IF EXISTING STREAMBED MATERIAL IS NOT AVAILABLE FOR REUSE, EMBEDMENT MATERIAL SHALL CONSIST OF THE SIMULATED STREAMBED MATERIAL GRADATION SHOWN IN THE TABLE.
5. COBBLES AND SMALL STONES MEASURING LESS THAN 10" SHALL BE DISTRIBUTED THROUGHOUT THE CULVERT LENGTH, FLATTEST SIDE DOWN, WITH THE REMAINING EMBEDMENT MATERIAL PLACED AROUND THEM. THE EMBEDMENT MATERIAL SHALL BE PLACED SUCH THAT THE FLOW OF THE WATER IS GENERALLY CONCENTRATED IN THE CENTER OF THE CONSTRUCTED CHANNEL RATHER THAN DISPERSED ACROSS THE ENTIRE WIDTH OF THE CHANNEL.

STREAMBED SIMULATION MATERIAL NOTES:

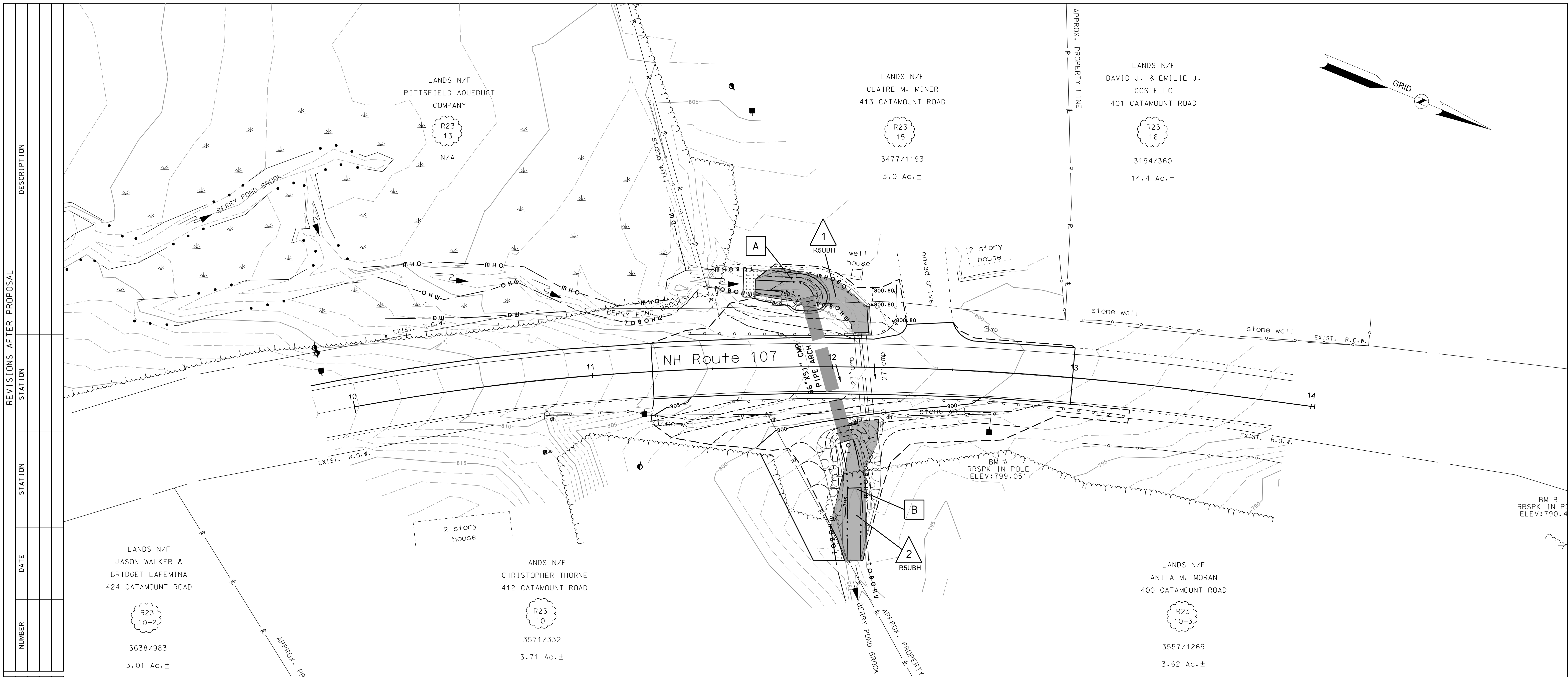
1. THE SIMULATED STREAMBED MATERIAL IS TO BE PLACED IMMEDIATELY UPSTREAM AND DOWNSTREAM OF PROPOSED CULVERT, AS SHOWN ON THE DESIGN PLANS. ALL EFFORTS SHALL BE MADE TO REPLICATE THE EXISTING STREAM CHANNEL AND BANKS WITHIN THE CULVERT AND ADJACENT TO THE WORK AREA.
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SIMULATED STREAMBED MATERIAL GRADATION		
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Silt	15%	Less than 0.003"
Sand	65%	0.003" to 0.08" (smaller than head of a match)
Gravel	15%	0.08" to 2.5" (between head of match and tennis ball)
Cobble	5%	2.5" to 10.0" (between tennis ball and volleyball)
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3. THE EXISTING STREAMBED MATERIAL SHALL BE REMOVED DRAINED AND STOCKPILED FOR REUSE WHERE FEASIBLE.
4. STONE MATERIALS UNDER 10" SHALL BE PRE-BLENDED OUTSIDE THE PROJECT AREA AND MIXED AT A RATIO OF 3" TO 18" AT 55% AND LESS THAN 2" AT 45% RESPECTIVELY. THE PRE-BLENDING SHALL BE DONE IN A WAY THAT WILL PREVENT THE STREAMBED MIX FROM BEING CONTAMINATED BY WORK SITE OR CULVERT BEDDING MATERIALS.
5. THE STREAMBED MATERIAL SHALL BE PLACED ON TOP OF STONE FILL CLASS B AS SHOWN IN THE CHANNEL DETAIL AND SHALL BE WORKED INTO THE TOP 1'-0" FILLING VOIDS, FOLLOWED BY THE DEPTH OF STREAMBED MATERIAL SPECIFIED. ALL STREAMBED MATERIAL SHALL BE PLACED AND LOCKED TIGHTLY TOGETHER TO PREVENT MOVEMENT DURING HIGH FLOWS.



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
PITTSFIELD DETAILS PLAN 1			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
MODELGEN02	43049	2	2



SDR PROCESSED	DATE	09/30/2021
	DATE	
	DATE	
	DATE	
NEW DESIGN	DATE	
	DATE	
SHEET CHECKED	DATE	
	DATE	
AS BUILT DETAILS	DATE	
	DATE	

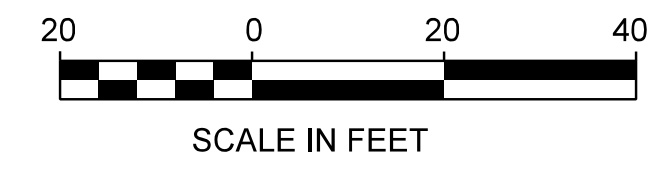
WETLAND CLASSIFICATION	
R5UBH	RIVERINE, UNKNOWN PERENNIAL, UNCONSOLIDATED BOTTOM, PERMANENTLY FLOODED

WETLAND IMPACT SUMMARY								
WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA				TEMPORARY IMPACTS	
			PERMANENT IMPACTS				SF	LF
			N.H.W.B. (NON-WETLAND)	N.H.W.B. & A.C.O.E. (WETLAND)		SF		
1	R5UBH	A		562	167	69	5	
2	R5UBH	B		664	180	32	15	

PERMANENT IMPACTS: 1226 SF
 TEMPORARY IMPACTS: 101 SF
 TOTAL IMPACTS: 1327 SF

LEGEND

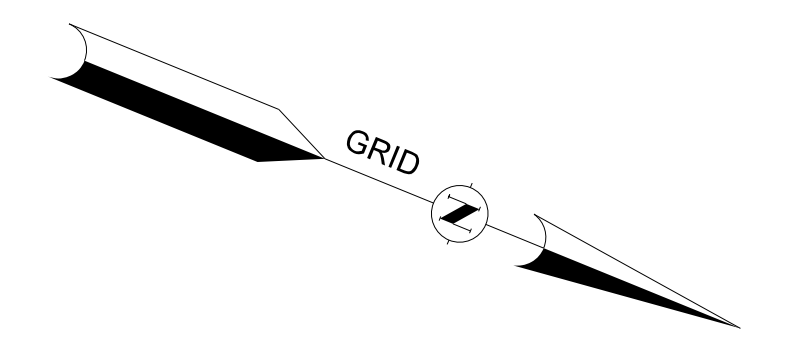
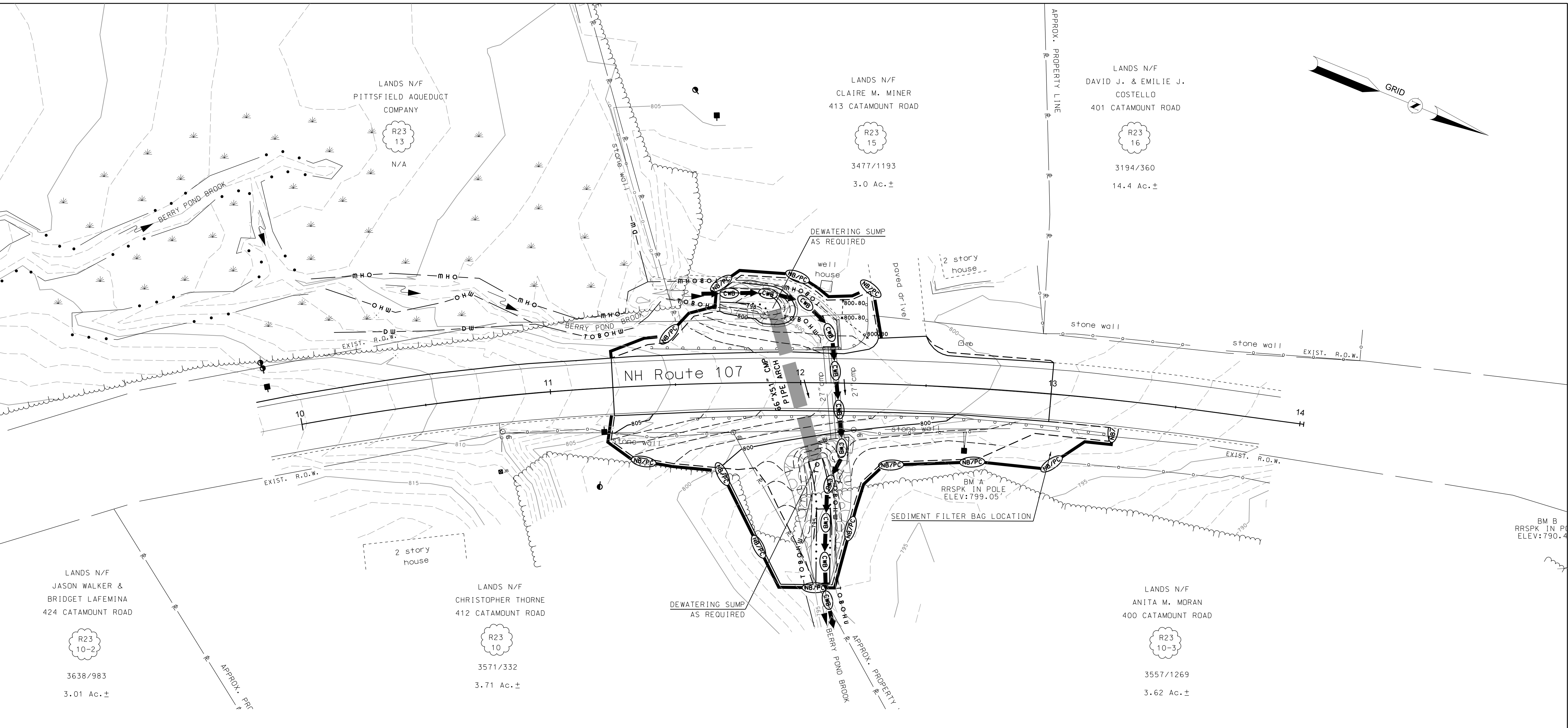
TYPE OF WETLAND IMPACT	SHADING/HATCHING	SYMBOL	DESCRIPTION
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	Diagonal hatching	# in triangle	WETLAND DESIGNATION NUMBER
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	Solid grey	# in square	WETLAND IMPACT LOCATION
TEMPORARY IMPACTS	Dotted pattern	# in diamond	WETLAND MITIGATION AREA
		Empty square	MITIGATION



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
PITTSFIELD WETLAND IMPACT PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WetlandImpact001	43049	1	3

WETLANDS DELINEATED BY TRC WETLANDS SCIENTIST VICKI CHASE ON 12/03/2020

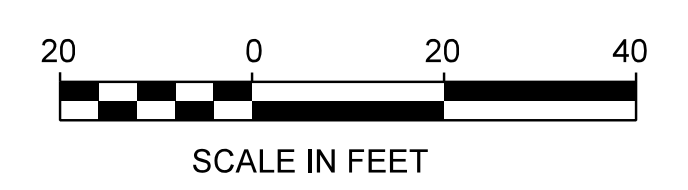
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	SHEET CHECKED	-
	AS BUILT DETAILS	-
REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION
	STATION	
	DATE	
	NUMBER	



EROSION CONTROL PLAN LEGEND	
	PERIMETER CONTROL SILT FENCE EROSION CONTROL MIX BERM EROSION CONTROL MIX SOX TURBIDITY CURTAIN SHEET PILE COFFER DAM
	NATURAL BUFFER/PERIMETER CONTROL SILT FENCE EROSION CONTROL MIX BERM EROSION CONTROL MIX SOX TURBIDITY CURTAIN SHEET PILE COFFER DAM
	CHANNEL PROTECTION STONE CHECK DAMS STRAW WATTLES CHANNEL MATTING CLASS D EROSION STONE CLASS C STONE
	CLEAN WATER BYPASS PUMP THROUGH PIPE DRAIN THROUGH PIPE OR CHANNEL

ESTIMATED CONSTRUCTION SEQUENCING

1. CULVERT REPLACEMENT SHALL BE DONE DURING LOW FLOW PERIODS.
2. INSTALL DETOUR SIGNING AND CLOSE ROADWAY TO TRAFFIC. PROVIDE ACCESS TO DRIVEWAY AT 413 CATAMOUNT ROAD THROUGHOUT CONSTRUCTION.
3. INSTALL PERIMETER CONTROLS ALONG LIMIT OF WORK AS SHOWN ON PLANS.
4. REMOVE EXISTING GUARDRAIL.
5. CONSTRUCT NEW CULVERT WHILE MAINTAINING EXISTING STREAM CHANNEL AS CLEAN WATER BYPASS. GRADE AND CONSTRUCT UPSTREAM AND DOWNSTREAM CHANNEL. PROVIDE FOR SUMPS WITH TEMPORARY PUMPING AS REQUIRED FOR CONSTRUCTION. DEWATERING OPERATIONS SHALL BE PUMPED TO SEDIMENT FILTER BAG, OR SIMILAR MEASURE.
6. DIRECT FLOW THROUGH NEW CULVERT.
7. REMOVE EXISTING TWIN 27" CULVERTS AND FILL IN REMAINING EXISTING STREAM CHANNEL. LOAM AND SEED ALL SLOPES.
8. PAVE ROADWAY AND OPEN TO TRAFFIC. REMOVE DETOUR SIGNING. APPROX. 5 DAYS TO COMPLETE



STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION		BUREAU OF HIGHWAY DESIGN	
PITTSFIELD			
EROSION CONTROL PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
43049ENV01WSP	43049	2	3

EROSION CONTROL STRATEGIES

1. ENVIRONMENTAL COMMITMENTS:

- 1.1. THESE GUIDELINES DO NOT RELIEVE THE DISTRICT FROM COMPLIANCE WITH ANY CONTRACT PROVISIONS, OR APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
- 1.2. THIS PROJECT WILL NOT 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 NOT SUBJECT TO REQUIREMENTS IN THE MOST RECENT CONSTRUCTION GENERAL PERMIT (CGP).
- 1.3. THE DISTRICT'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).

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.
- 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 SECTION 645 OF THE NHDOT SPECIFICATIONS FOR ROAD AND BRIDGES CONSTRUCTION.
- 2.4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
 - (A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
 - (B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
 - (C) A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED;
 - (D) TEMPORARY SLOPE STABILIZATION CONFORMING TO TABLE 1 HAS BEEN PROPERLY INSTALLED
- 2.5. ALL STOCKPILES SHALL BE CONTAINED WITH A PERIMETER CONTROL. IF THE STOCKPILE IS TO REMAIN UNDISTURBED FOR MORE THAN 14 DAYS, MULCHING WILL BE REQUIRED.
- 2.6. A WATER TRUCK SHALL BE AVAILABLE TO CONTROL EXCESSIVE DUST AT THE DIRECTION OF THE CONTRACT ADMINISTRATOR.
- 2.7. TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL REMAIN UNTIL THE AREA HAS BEEN PERMANENTLY STABILIZED.
- 2.8. CONSTRUCTION PERFORMED ANY TIME BETWEEN NOVEMBER 30th AND MAY 1st OF ANY YEAR SHALL BE CONSIDERED WINTER CONSTRUCTION AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS.
 - (A) ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED IN ACCORDANCE WITH TABLE 1.
 - (B) ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
 - (C) AFTER NOVEMBER 30th INCOMPLETE ROAD SURFACES, WHERE WORK HAS STOPPED FOR THE SEASON, SHALL BE PROTECTED IN ACCORDANCE WITH TABLE 1.
 - (D) WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE PROJECT IS WITHOUT STABILIZATION AT ONE TIME, UNLESS A WINTER CONSTRUCTION PLAN HAS BEEN APPROVED BY NHDOT THAT MEETS THE REQUIREMENTS OF ENV-WO 1505.02 AND ENV-WO 1505.05.
 - (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WO 1505.05) AND INCLUDING THE REQUIREMENTS OF NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30th.

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

3. PLAN ACTIVITIES TO ACCOUNT FOR SENSITIVE SITE CONDITIONS:

- 3.1. CLEARLY FLAG AREAS TO BE PROTECTED IN THE FIELD AND PROVIDE CONSTRUCTION BARRIERS TO PREVENT TRAFFICKING OUTSIDE OF WORK AREAS.
- 3.2. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS.
- 3.3. PROTECT AND MAXIMIZE EXISTING NATIVE VEGETATION AND NATURAL FOREST BUFFERS BETWEEN CONSTRUCTION ACTIVITY AND SENSITIVE AREAS.
- 3.4. WHEN WORK IS PERFORMED IN AND NEAR WATER COURSES, STREAM FLOW DIVERSION METHODS SHALL BE IMPLEMENTED PRIOR TO ANY EXCAVATION OR FILLING.
- 3.5. WHEN WORK IS PERFORMED WITHIN 50 FEET OF SURFACE WATERS (WETLAND, OPEN WATER OR FLOWING WATER), PERIMETER CONTROL SHALL BE ENHANCED CONSISTENT WITH SECTION 2.1.2.1. OF THE 2012 NPDES CONSTRUCTION GENERAL PERMIT.

4. MINIMIZE THE AMOUNT OF EXPOSED SOIL:

- 4.1. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS. MINIMIZE THE AREA OF EXPOSED SOIL AT ANY ONE TIME. PHASING SHALL BE USED TO REDUCE THE AMOUNT AND DURATION OF SOIL EXPOSED TO THE ELEMENTS AND VEHICLE TRACKING.
- 4.2. UTILIZE TEMPORARY MULCHING OR PROVIDE ALTERNATE TEMPORARY STABILIZATION ON EXPOSED SOILS IN ACCORDANCE WITH TABLE 1.
- 4.3. THE MAXIMUM AMOUNT OF DISTURBED EARTH SHALL NOT EXCEED A TOTAL OF 5 ACRES FROM MAY 1st THROUGH NOVEMBER 30th, OR EXCEED ONE ACRE DURING WINTER MONTHS, UNLESS THE DISTRICT DEMONSTRATES TO THE DEPARTMENT THAT THE ADDITIONAL AREA OF DISTURBANCE IS NECESSARY TO MEET THE DISTRICTS CRITICAL PATH METHOD SCHEDULE (CPM), AND THE DISTRICT HAS ADEQUATE RESOURCES AVAILABLE TO ENSURE THAT ENVIRONMENTAL COMMITMENTS WILL BE MET.

5. CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT:

- 5.1. DIVERT OFF SITE RUNOFF OR CLEAN WATER AWAY FROM THE CONSTRUCTION ACTIVITY TO REDUCE THE VOLUME THAT NEEDS TO BE TREATED ON SITE.
- 5.2. DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM DISTURBED AREAS, SLOPES, AND AROUND ACTIVE WORK AREAS AND TO A STABILIZED OUTLET LOCATION.
- 5.3. CONSTRUCT IMPERMEABLE BARRIERS AS NECESSARY TO COLLECT OR DIVERT CONCENTRATED FLOWS FROM WORK OR DISTURBED AREAS.
- 5.4. STABILIZE, TO APPROPRIATE ANTICIPATED VELOCITIES, CONVEYANCE CHANNELS OR PUMPING SYSTEMS NEEDED TO CONVEY CONSTRUCTION STORMWATER TO BASINS AND DISCHARGE LOCATIONS PRIOR TO USE.
- 5.5. DIVERT OFF-SITE WATER THROUGH THE PROJECT IN AN APPROPRIATE MANNER SO NOT TO DISTURB THE UPSTREAM OR DOWNSTREAM SOILS, VEGETATION OR HYDROLOGY BEYOND THE PERMITTED AREA.

6. PROTECT SLOPES:

- 6.1. INTERCEPT AND DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM UNPROTECTED AND NEWLY ESTABLISHED AREAS AND SLOPES TO A STABILIZED OUTLET OR CONVEYANCE.
- 6.2. CONSIDER HOW GROUNDWATER SEEPAGE ON CUT SLOPES MAY IMPACT SLOPE STABILITY AND INCORPORATE APPROPRIATE MEASURES TO MINIMIZE EROSION.
- 6.3. CONVEY STORMWATER DOWN THE SLOPE IN A STABILIZED CHANNEL OR SLOPE DRAIN.
- 6.4. THE OUTER FACE OF THE FILL SLOPE SHOULD BE IN A LOOSE RUFFLED CONDITION PRIOR TO TURF ESTABLISHMENT. TOPSOIL OR HUMUS LAYERS SHALL BE TRACKED UP AND DOWN THE SLOPE, DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE-RAKED, OR HAND-WORKED TO PRODUCE A RUFFLED SURFACE.

7. ESTABLISH STABILIZED CONSTRUCTION EXITS:

- 7.1. INSTALL AND MAINTAIN CONSTRUCTION EXITS, ANYWHERE TRAFFIC LEAVES A CONSTRUCTION SITE ONTO A PUBLIC RIGHT-OF-WAY.
- 7.2. SWEEP ALL CONSTRUCTION RELATED DEBRIS AND SOIL FROM THE ADJACENT PAVED ROADWAYS AS NECESSARY.

8. PROTECT STORM DRAIN INLETS:

- 8.1. DIVERT SEDIMENT LADEN WATER AWAY FROM INLET STRUCTURES TO THE EXTENT POSSIBLE.
- 8.2. INSTALL SEDIMENT BARRIERS AND SEDIMENT TRAPS AT INLETS TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.
- 8.3. CLEAN CATCH BASINS, DRAINAGE PIPES, AND CULVERTS IF SIGNIFICANT SEDIMENT IS DEPOSITED.
- 8.4. DROP INLET SEDIMENT BARRIERS SHOULD NEVER BE USED AS THE PRIMARY MEANS OF SEDIMENT CONTROL AND SHOULD ONLY BE USED TO PROVIDE AN ADDITIONAL LEVEL OF PROTECTION TO STRUCTURES AND DOWN-GRADIENT SENSITIVE RECEPTORS.

9. SOIL STABILIZATION:

- 9.1. WITHIN THREE DAYS OF THE LAST ACTIVITY IN AN AREA, ALL EXPOSED SOIL AREAS, WHERE CONSTRUCTION ACTIVITIES ARE COMPLETE, SHALL BE STABILIZED.
- 9.2. IN ALL AREAS, TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED IN ACCORDANCE WITH THE STABILIZATION REQUIREMENTS (SECTION 2.2) OF THE 2012 CGP. (SEE TABLE 1 FOR GUIDANCE ON THE SELECTION OF TEMPORARY SOIL STABILIZATION MEASURES.)
- 9.3. EROSION CONTROL SEED MIX SHALL BE SOWN IN ALL INACTIVE CONSTRUCTION AREAS THAT WILL NOT BE PERMANENTLY SEEDED WITHIN TWO WEEKS OF DISTURBANCE AND PRIOR TO SEPTEMBER 15, OF ANY GIVEN YEAR. IN ORDER TO ACHIEVE VEGETATIVE STABILIZATION PRIOR TO THE END OF THE GROWING SEASON.
- 9.4. SOIL TACKIFIERS MAY BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND REAPPLIED AS NECESSARY TO MINIMIZE SOIL AND MULCH LOSS UNTIL PERMANENT VEGETATION IS ESTABLISHED.

10. RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES:

- 10.1. TEMPORARY SEDIMENT BASINS (CGP-SECTION 2.1.3.2) OR SEDIMENT TRAPS (ENV-WO 1506.10) SHALL BE SIZED TO RETAIN, ON SITE, THE VOLUME OF A 2-YEAR 24-HOUR STORM EVENT FOR ANY AREA OF DISTURBANCE OR 3,600 CUBIC FEET OF STORMWATER RUNOFF PER ACRE OF DISTURBANCE, WHICHEVER IS GREATER. TEMPORARY SEDIMENT BASINS USED TO TREAT STORMWATER RUNOFF FROM AREAS GREATER THAN 5-ACRES OF DISTURBANCE SHALL BE SIZED TO ALSO CONTROL STORMWATER RUNOFF FROM A 10-YEAR 24 HOUR STORM EVENT. ON-SITE RETENTION OF THE 10-YEAR 24-HOUR EVENT IS NOT REQUIRED.
- 10.2. CONSTRUCT AND STABILIZE DEWATERING INFILTRATION BASINS PRIOR TO ANY EXCAVATION THAT MAY REQUIRE DEWATERING.
- 10.3. TEMPORARY SEDIMENT BASINS OR TRAPS SHALL BE PLACED AND STABILIZED AT LOCATIONS WHERE CONCENTRATED FLOW (CHANNELS AND PIPES) DISCHARGE TO THE SURROUNDING ENVIRONMENT FROM AREAS OF UNSTABILIZED EARTH DISTURBING ACTIVITIES.

11. ADDITIONAL EROSION AND SEDIMENT CONTROL GENERAL PRACTICES:

- 11.1. USE TEMPORARY MULCHING, PERMANENT MULCHING, TEMPORARY VEGETATIVE COVER, AND PERMANENT VEGETATIVE COVER TO REDUCE THE NEED FOR DUST CONTROL. USE MECHANICAL SWEEPERS ON PAVED SURFACES WHERE NECESSARY TO PREVENT DUST BUILDUP. APPLY WATER, OR OTHER DUST INHIBITING AGENTS OR TACKIFIERS, AS APPROVED BY THE NHDES.
- 11.2. ALL STOCKPILES SHALL BE CONTAINED WITH TEMPORARY PERIMETER CONTROLS. INACTIVE SOIL STOCKPILES SHOULD BE PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY EROSION CONTROL SEED MIX AND MULCH, SOIL BINDER) OR COVERED WITH ANCHORED TARPS.
- 11.3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED IN ACCORDANCE WITH SECTION 645 OF NHDOT SPECIFICATIONS. WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.25 IN. OF RAIN PER 24-HOUR PERIOD.
- 11.4. THE DISTRICT 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 DISTRICT 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 DISTRICT 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 CPSC 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 DISTRICT SHALL COMPLY WITH RSA 485:A:17 AND ENV-WO 1500: ALTERATION OF TERRAIN FOR CONSTRUCTION AND USE ALL CONVENTIONAL BMP STRATEGIES.
- 12.2. SLOPES STEEPER THAN 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING.
- 12.3. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT ALONE.
- 12.4. AREAS WHERE HAUL ROADS ARE CONSTRUCTED AND STORMWATER CANNOT BE TREATED THE DEPARTMENT WILL CONSIDER INFILTRATION.
- 12.5. FOR HAUL ROADS ADJACENT TO SENSITIVE ENVIRONMENTAL AREAS OR STEEPER THAN 5%, THE DEPARTMENT WILL CONSIDER USING EROSION STONE, CRUSHED GRAVEL, OR CRUSHED STONE BASE TO HELP MINIMIZE EROSION ISSUES.
- 12.6. ALL AREAS THAT CAN BE STABILIZED SHALL BE STABILIZED PRIOR TO OPENING UP NEW TERRITORY.
- 12.7. DETENTION BASINS SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE A 2 YEAR STORM EVENT.

13. STRATEGIES SPECIFIC TO OPEN AREAS BETWEEN 5 AND 10 ACRES:

- 13.1. THE DISTRICT SHALL COMPLY WITH RSA 485:A:17 AND ENV-WO 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES WILL BE UTILIZED.
- 13.2. DETENTION BASINS WILL BE CONSTRUCTED TO ACCOMMODATE THE 2-YEAR 24-HOUR STORM EVENT AND CONTROL A 10-YEAR 24-HOUR STORM EVENT.
- 13.3. SLOPES STEEPER THAN A 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE DISTRICT 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 DISTRICT 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 DISTRICT SHALL COMPLY WITH RSA 485:A:17 AND ENV-WO 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES AND BETWEEN 5 AND 10 ACRES WILL BE UTILIZED.
- 14.2. THE DEPARTMENT ANTICIPATES THAT SOIL BINDERS WILL BE NEEDED ON ALL SLOPES STEEPER THAN 3:1, IN ORDER TO MINIMIZE EROSION AND REDUCE THE AMOUNT OF SEDIMENT IN THE STORMWATER TREATMENT BASINS.
- 14.3. THE DISTRICT WILL BE REQUIRED TO HAVE AN APPROVED DESIGN IN ACCORDANCE WITH ENV-WO 1506.12 FOR AN ACTIVE FLOCCULANT TREATMENT SYSTEM TO TREAT AND RELEASE WATER CAPTURED IN STORM WATER BASINS. THE DISTRICT 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	DNCSB	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	DNCSB	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				
PITTSFIELD WETLAND IMPACT PLANS				
REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	43049erosstrat	43049	3	3