

**STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION**

DATE: July 2, 2021

FROM: Andrew O'Sullivan
Wetlands Program Manager

AT (OFFICE): Department of
Transportation

SUBJECT Dredge & Fill Application
Sutton, 42419

Bureau of
Environment

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

Forwarded herewith is the application package prepared by NH DOT Bureau of Highway Design for the subject major impact project. This project is classified as major per Env-Wt 407.03(a), the project impacts are over 10,000 SF. The project is located along the NH Interstate I-89 in the Town of Sutton, NH. The proposed work consists rehabilitating the roadway to improve pavement surface, reconstruct guardrail, replace closed drainage systems and drainage ditch lines, and rehabilitate culverts. This project impacts palustrine wetlands along the interstate system due to shoulder widening, underdrain replacement, catch basin replacement, and other rehabilitation and maintenance activities. The project includes rehabilitation of three tier 1 stream crossings as well.

This project was reviewed at the Natural Resource Agency Coordination Meeting on March 17, 2021. A copy of the minutes is 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 requests 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 includes a one-time in lieu fee payment of \$109,316.58 for impacts to 26,069 SF of palustrine wetland impacts to the NHDES ARM Fund. Details regarding the mitigation proposal and coordination can be found within the application.

The lead people to contact for this project are Tobey Reynolds, Bureau of Highway Design (271-2171 or Tobey.Reynolds@dot.nh.gov) or Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment (271-3226 or Andrew.OSullivan@dot.nh.gov).

A payment voucher has been processed for this application (Voucher #) in the amount of \$14,292.40.

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

AMO:sel

cc:

BOE Original

Town of Sutton (4 copies via certified mail)

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

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

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

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

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

Kevin Nyhan, BOE (via electronic notification)

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**PUBLIC HIGHWAYS
PROJECT-SPECIFIC WORKSHEET
FOR STANDARD APPLICATION**
Water Division/Land Resources Management
Wetlands Bureau



[Check the Status of your Application](#)

RSA/Rule: RSA 482-A/ Env-Wt 522

APPLICANT LAST NAME, FIRST NAME, M.I.: **Reynolds, Tobey, L., P.E.**

This worksheet summarizes the criteria and requirements for a Standard Permit for “Public Highways”, one of the 18 specific project types in Chapter Env-Wt 500. In addition to the project-specific criteria and requirements on this worksheet, all Standard Dredge and Fill Applications must meet the criteria and requirements listed in the Standard Dredge and Fill Application form (NHDES-W-06-012).

SECTION 1 - APPLICABILITY AND EXEMPTION (Env-Wt 527.01; Env-Wt 527.06(b))

This worksheet is for construction and maintenance projects for public highways in jurisdictional areas, but not for:

- Activities relating to stream crossings (which must be undertaken in accordance with Env-Wt 900);
- Public highway projects that impact tidal resources (which must be undertaken in accordance with Env-Wt 600); or
- Bank stabilization projects (which must be undertaken in accordance with Env-Wt 514).

Replacement of dislodged rocks on an existing rip-rap portion of a legally existing permitted road embankment to stabilize the structure may be done without a permit.

SECTION 2 - APPROVAL CRITERIA FOR PUBLIC HIGHWAY PROJECTS (Env-Wt 527.02)

An application for public highway project must meet the following approval criteria, subject to the rebuttable presumption in RSA 482-A:3, I-a that for applications proposed, sponsored, or administered by the New Hampshire Department of Transportation (NHDOT), NHDOT has exercised appropriate engineering judgment in the project’s design:

- The project meets the design criteria specified in Env-Wt 527.04;
- The project is consistent with RSA 482-A:1, RSA 483, RSA 483-B, RSA 485-A, and RSA 212-A;
- The purpose of the project is to improve or maintain public safety, consistent with federal and state safety standards;
- The project will not cause displacement of flood storage wetlands or cause diversion of stream flow impacting abutting landowner property; and
- For a project in the 100-year floodplain, the project will not increase flood stages off-site.

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

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SECTION 3 - APPLICATION REQUIREMENTS FOR PUBLIC HIGHWAY PROJECTS (Env-Wt 527.03)

Please provide the following information:

- A description of the scope of the project, the size of the impacts to aquatic resources, and the purpose of the project;
- The Sutton 41429 project is located along I-89 NB and SB from approximately MM 24.2 to MM 28.8 and includes the Exit 10 ramps and SB Rest Area. The purpose of this project is to rehabilitate the existing pavement; replace or rehabilitate aged drainage, guardrail and signs; and improve safety.
- Impacts to aquatic resources are the following:
- Forested Wetland: 732 sf permanent impact, 934 sf temporary impact (1,666 sf total)
- Scrub-Shrub Wetland: 15,108 sf permanent impact, 7,632 sf temporary impact (22,740 sf total)
- Emergent Wetland: 10,229 sf permanent impact, 58 sf temporary impact (10,287 sf total)
- Intermittent Stream: 541 sf permanent impact, 497 temporary impact (1,038 sf total)
- An accurate drawing with existing and proposed structure dimensions clearly annotated to:
- Document existing site conditions;
 - Detail the precise location of the project and show the impact of the proposed activity on jurisdictional areas;
 - Show existing and proposed contours at 2-foot intervals;
 - Show existing and proposed structure invert elevations on the plans; and
 - Use a scale based on standard measures of whole units, such as an engineering rule of one to 10, provided that if plans are not printed at full scale, a secondary scale shall be noted on the plans that identifies the half scale unit of measurement;
- All easements and right-of-way acquisition area outlines in relation to the project;
- The name of the professional engineer who developed the plans, whether an employee of the applicant or at a consulting firm; and
- An erosion control plan that shows:
- Existing and proposed contours at 2-foot intervals, with existing contours shown with a lighter line weight and proposed contours shown with a heavier line weight such as a bold font; and
 - The outermost limit of all work areas, including temporary phasing work, with perimeter controls.

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SECTION 4 - DESIGN REQUIREMENTS FOR PUBLIC HIGHWAY PROJECTS (Env-Wt 527.04)

In addition to meeting all applicable criteria established in Env-Wt 300, all projects must:

- Protect significant function wetlands, watercourses, and priority resource area(s);
- Minimize impacts to wetland and riparian function;
- Maintain wetland and stream hydrology and function to the remaining aquatic resources;
- Use on-site measures to compensate for any loss of flood storage where the project proposes:
 - Filling or placement of structures in a 100-year floodplain; or
 - Greater than 0.5 acre-feet of fill volume or a road crossing that affects floodplain conveyance;
- Use on-site minimization and water quality protection measures to prevent direct discharge to surface waters and wetlands, including retention of vegetated filter strips between the construction area and the aquatic resource areas to disperse runoff with no direct discharge to natural wetlands or surface waters; and
- Where temporary impacts will occur, include re-establishment of a similar ecosystem using vegetative species and spacing that are as similar as practicable to what was removed unless the applicant shows that the proposed vegetative composition will provide higher functions and values.

SECTION 5 - CONSTRUCTION REQUIREMENTS FOR PUBLIC HIGHWAY PROJECTS (Env-Wt 527.05)

In addition to complying with all applicable conditions in Env-Wt 307, the following construction requirements apply to public highway projects:

- The permit shall be contingent on review and approval by NHDES of final stream diversion and erosion control plans that detail the timing and method of stream flow diversion during construction and show temporary siltation, erosion, and turbidity control measures to be implemented; and
- The contractor responsible for completion of the work shall use techniques described in Env-Wq 1504.06, Env-Wq 1504.16, Env-Wq 1505.02, Env-Wq 1506, and Env-Wq 1508.

SECTION 6 - PUBLIC HIGHWAY PROJECTS PROJECT CLASSIFICATION (Env-Wt 527.07)

Public highway projects shall be classified based on the dimensions established in Env-Wt 407, subject to the adjustments and project exceptions established in Env-Wt 407.



**STANDARD DREDGE AND FILL
WETLANDS PERMIT APPLICATION**
Water Division/Land Resources Management
Wetlands Bureau
[Check the Status of your Application](#)



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

APPLICANT'S NAME: NH Department of Transportation **TOWN NAME:** Sutton

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): <input type="text"/> ○ NHB Project ID #: <input type="text" value="21-0158"/> 	<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 type="text"/> • A copy of the application was sent to the LAC on Month: <input type="text"/> Day: <input type="text"/> Year: <input type="text"/> 	

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For dredging projects, is the subject property contaminated? • If yes, list contaminant: 	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Is there potential to impact impaired waters, class A waters, or outstanding resource waters?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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For stream crossing projects, provide watershed size (see [WPPT](#) or Stream Stats):
 Three Tier 1 Crossings: 76.8ac, 38.4ac, 89.6ac

SECTION 2 - PROJECT DESCRIPTION (Env-Wt 311.04(i))
 Provide a **brief** description of the project and the purpose of the project, outlining the scope of work to be performed and whether impacts are temporary or permanent. DO NOT reply "See attached"; please use the space provided below.

The Sutton 41429 project is located along I-89 NB and SB from approximately MM 24.2 to MM 28.8 and includes the Exit 10 ramps and SB Rest Area. The purpose of this project is to rehabilitate the existing pavement; replace or rehabilitate aged drainage, guardrail and signs; and improve safety.

The three tier 1 stream crossings will be rehabilitated through slip lining. Grading and outlet protection work at the culverts will result in permanent impacts. (See supplemental narrative, stream crossing details to address Env-Wt 900, and outlet protection detail for additional information).

Slope work for roadway and ramp widening results in permanent impacts to roadside ditches and other palustrine wetlands. Ditchlines impacted by the widening will be recreated adjacent to their current location.

All clearing will not include grubbing, which will allow the existing native vegetation to re-establish after construction and therefore have been accounted for as temporary impacts. Clearing will occur through use of machinery located on uplands; timber matting or temporary staging such as geotextile and crushed stone will be utilized to prevent the soils and vegetation from being disturbed when access and work within wetland areas and impacts are shown as temporary.

Access to drainage improvements will result in temporary impacts. Timber matting or temporary access/staging such as geotextile overlaid with crushed stone will be utilized to prevent the soils and vegetation from being disturbed when access is within wetlands jurisdiction.

Underdrain replacement that impacts man-made wetland ditches (PEM1Ex) are exempt from permitting per RSA 482-A:3 IV(b) and Env-Wi 308.01 (b) as well as NH ACOE General Permit section IX 22(d), and CFR 323.4(a)(1)(iii)(c)(1)(i)&(ii).

There are locations which qualify and will be permitted through the NHDES Routine Roadway Maintenance Registration process. RRMA locations are labeled on the plans as RRMA – DN XX.

SECTION 3 - PROJECT LOCATION

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

ADDRESS: Interstate 89, MM 24.2 to MM 28.8

TOWN/CITY: Sutton

TAX MAP/BLOCK/LOT/UNIT: N/A

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

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

SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 311.04(a))		
If the applicant is a trust or a company, then complete with the trust or company information.		
NAME: NH Department of Transportation		
MAILING ADDRESS: P.O. Box 483		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03302
EMAIL ADDRESS: Tobey.L.Reynolds@dot.nh.gov		
FAX: 603-271-7025	PHONE: 603-271-7421	
ELECTRONIC COMMUNICATION: By initialing here: TLR, I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c))		
<input checked="" type="checkbox"/> N/A		
LAST NAME, FIRST NAME, M.I.: [REDACTED]		
COMPANY NAME: [REDACTED]		
MAILING ADDRESS: [REDACTED]		
TOWN/CITY: [REDACTED]	STATE: [REDACTED]	ZIP CODE: [REDACTED]
EMAIL ADDRESS: [REDACTED]		
FAX: [REDACTED]	PHONE: [REDACTED]	
ELECTRONIC COMMUNICATION: By initialing here [REDACTED], I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b))		
If the owner is a trust or a company, then complete with the trust or company information.		
<input checked="" type="checkbox"/> Same as applicant		
NAME: [REDACTED]		
MAILING ADDRESS: [REDACTED]		
TOWN/CITY: [REDACTED]	STATE: [REDACTED]	ZIP CODE: [REDACTED]
EMAIL ADDRESS: Andrew.OSullivan@dot.nh.gov		
FAX: [REDACTED]	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):

In accordance with Env-Wt 400, the jurisdictional areas within the project limits have been delineated by Cindy Balcius (CWS), Michael Waterhouse, Diane DeVries, and Steven Moroni of Stoney Ridge Environmental, LLC in November and December of 2020. The jurisdictional areas are referenced on the attached wetlands impact plans. The project has been designed in accordance with Env-Wt 527 and Env-Wt 900 to the maximum extent practicable. The application includes a supplemental narrative detailing the project purpose and need, resources, alternatives, impacts and hydraulic information necessary to address Env-Wt 904.08. Unavoidable impacts to wetlands have been minimized to the maximum extent practicable. Project specific information is contained within this permit application.

SECTION 8 - AVOIDANCE AND MINIMIZATION

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

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

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

SECTION 9 - MITIGATION REQUIREMENT (Env-Wt 311.02)

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

Mitigation Pre-Application Meeting Date: Month: 03 Day: 17 Year: 2021

N/A - Mitigation is not required

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

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

N/A – Compensatory mitigation is not required

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

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

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

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

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

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

JURISDICTIONAL AREA		PERMANENT			TEMPORARY		
		SF	LF	ATF	SF	LF	ATF
Wetlands	Forested Wetland	732		<input type="checkbox"/>	934		<input type="checkbox"/>
	Scrub-shrub Wetland	15,108		<input type="checkbox"/>	7,632		<input type="checkbox"/>
	Emergent Wetland	10,229		<input type="checkbox"/>	58		<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	541	75	<input type="checkbox"/>	497	38	<input type="checkbox"/>
	Perennial Stream or River			<input type="checkbox"/>			<input type="checkbox"/>
	Lake / Pond			<input type="checkbox"/>			<input type="checkbox"/>
	Docking - Lake / Pond			<input type="checkbox"/>			<input type="checkbox"/>
	Docking - River			<input type="checkbox"/>			<input type="checkbox"/>
Banks	Bank - Intermittent Stream			<input type="checkbox"/>			<input type="checkbox"/>
	Bank - Perennial Stream / River			<input type="checkbox"/>			<input type="checkbox"/>
	Bank / Shoreline - Lake / Pond			<input type="checkbox"/>			<input type="checkbox"/>
Tidal	Tidal Waters			<input type="checkbox"/>			<input type="checkbox"/>
	Tidal Marsh			<input type="checkbox"/>			<input type="checkbox"/>
	Sand Dune			<input type="checkbox"/>			<input type="checkbox"/>
	Undeveloped Tidal Buffer Zone (TBZ)			<input type="checkbox"/>			<input type="checkbox"/>
	Previously-developed TBZ			<input type="checkbox"/>			<input type="checkbox"/>
	Docking - Tidal Water			<input type="checkbox"/>			<input type="checkbox"/>
TOTAL		26,610	75		9,121	38	

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

<input type="checkbox"/> MINIMUM IMPACT FEE: Flat fee of \$400.	
<input type="checkbox"/> 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).	
<input checked="" type="checkbox"/> MINOR OR MAJOR IMPACT FEE: Calculate using the table below:	
Permanent and temporary (non-docking): 35,731 SF	× \$0.40 = \$ 14,293
Seasonal docking structure: SF	× \$2.00 = \$
Permanent docking structure: SF	× \$4.00 = \$
Projects proposing shoreline structures (including docks) add \$400 = \$	
Total = \$ 14,293	
The application fee for minor or major impact is the above calculated total or \$400, whichever is greater = \$ 14,293	

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

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

Initial each box below to certify:

Initials: TLR _____ _____	To the best of the signer's knowledge and belief, all required notifications have been provided.
------------------------------------	--

Initials: TLR _____ _____	The information submitted on or with the application is true, complete, and not misleading to the best of the signer's knowledge and belief.
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Initials: TLR _____ _____	The signer understands that: <ul style="list-style-type: none"> • The submission of false, incomplete, or misleading information constitutes grounds for NHDES to: <ol style="list-style-type: none"> 1. Deny the application. 2. Revoke any approval that is granted based on the information. 3. If the signer is a certified wetland scientist, licensed surveyor, or professional engineer licensed to practice in New Hampshire, refer the matter to the joint board of licensure and certification established by RSA 310-A:1. • The signer is subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641. • The signature shall constitute authorization for the municipal conservation commission and the Department to inspect the site of the proposed project, except for minimum impact forestry SPN projects and minimum impact trail projects, where the signature shall authorize only the Department to inspect the site pursuant to RSA 482-A:6, II.
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Initials: TLR _____ _____	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.
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SECTION 15 - REQUIRED SIGNATURES (Env-Wt 311.04(d); Env-Wt 311.11)

SIGNATURE (OWNER): <i>Tobey Reynolds</i>	PRINT NAME LEGIBLY: Tobey Reynolds	DATE: 6/29/2021
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER): _____	PRINT NAME LEGIBLY: _____	DATE: _____
SIGNATURE (AGENT, IF APPLICABLE): _____	PRINT NAME LEGIBLY: _____	DATE: _____

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

As required by RSA 482-A:3, I(a)(1), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

TOWN/CITY CLERK SIGNATURE: _____	PRINT NAME LEGIBLY: State Agency Exempt per RSA 482-A:3, I(a)
TOWN/CITY: 4 copies certified mail	DATE: _____

DIRECTIONS FOR TOWN/CITY CLERK:

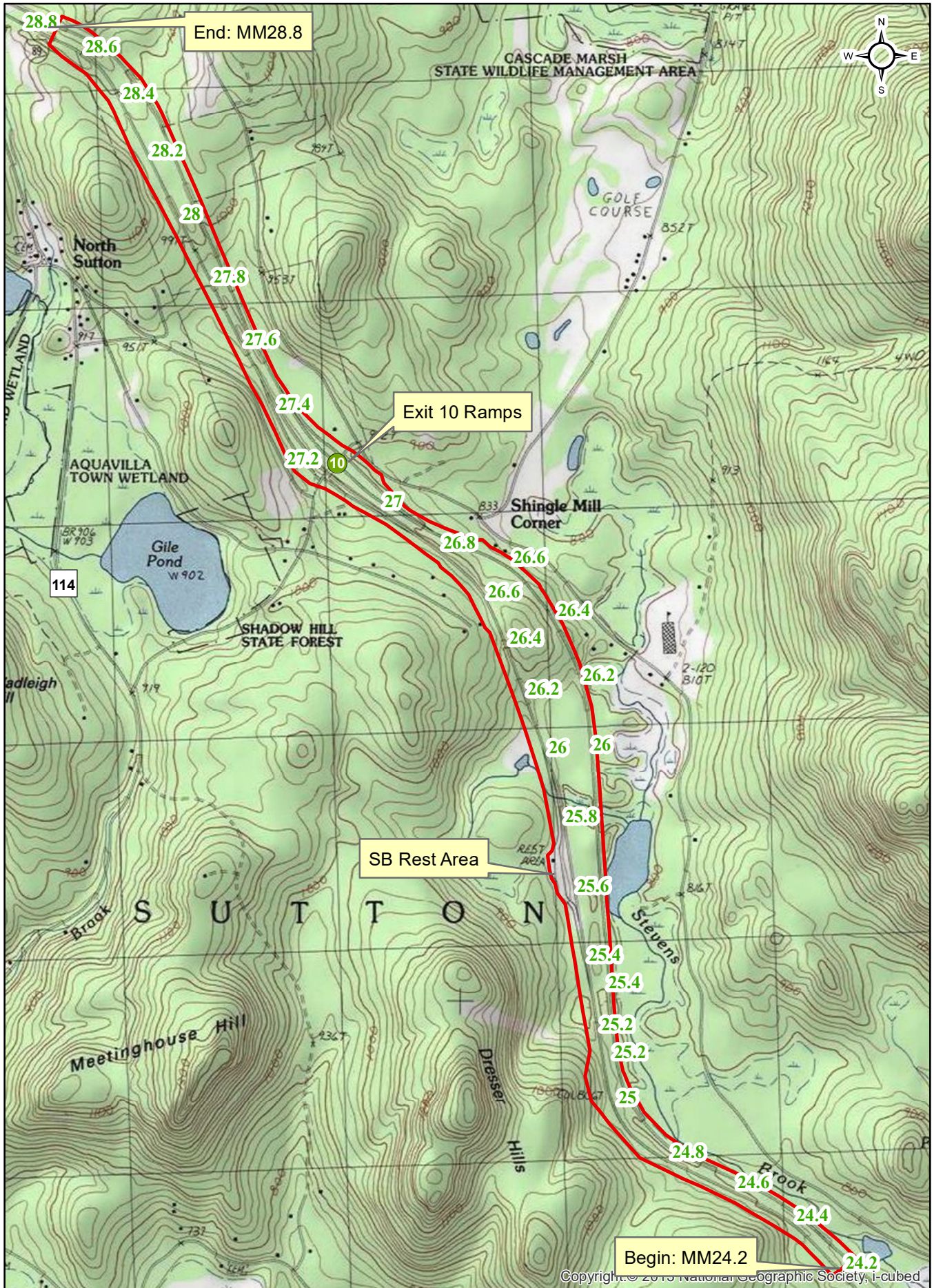
Per RSA 482-A:3, I(a)(1)

1. IMMEDIATELY sign the original application form and four copies in the signature space provided above.
2. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
3. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board.
4. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

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

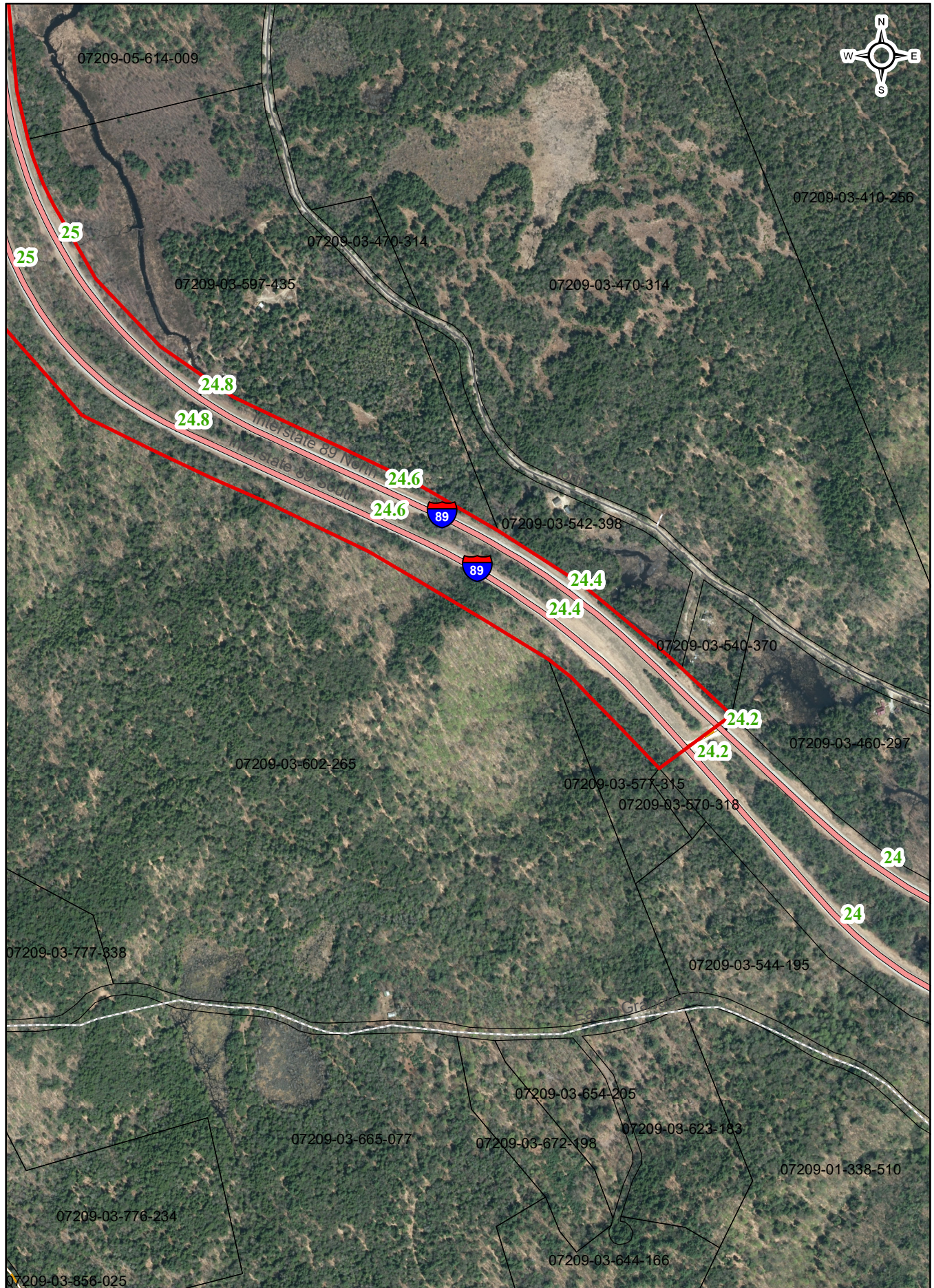
Sutton 42419



0 0.25 0.5 1 Miles 1:24,000


Sutton 42419

Sutton 42419 Tax Map 1

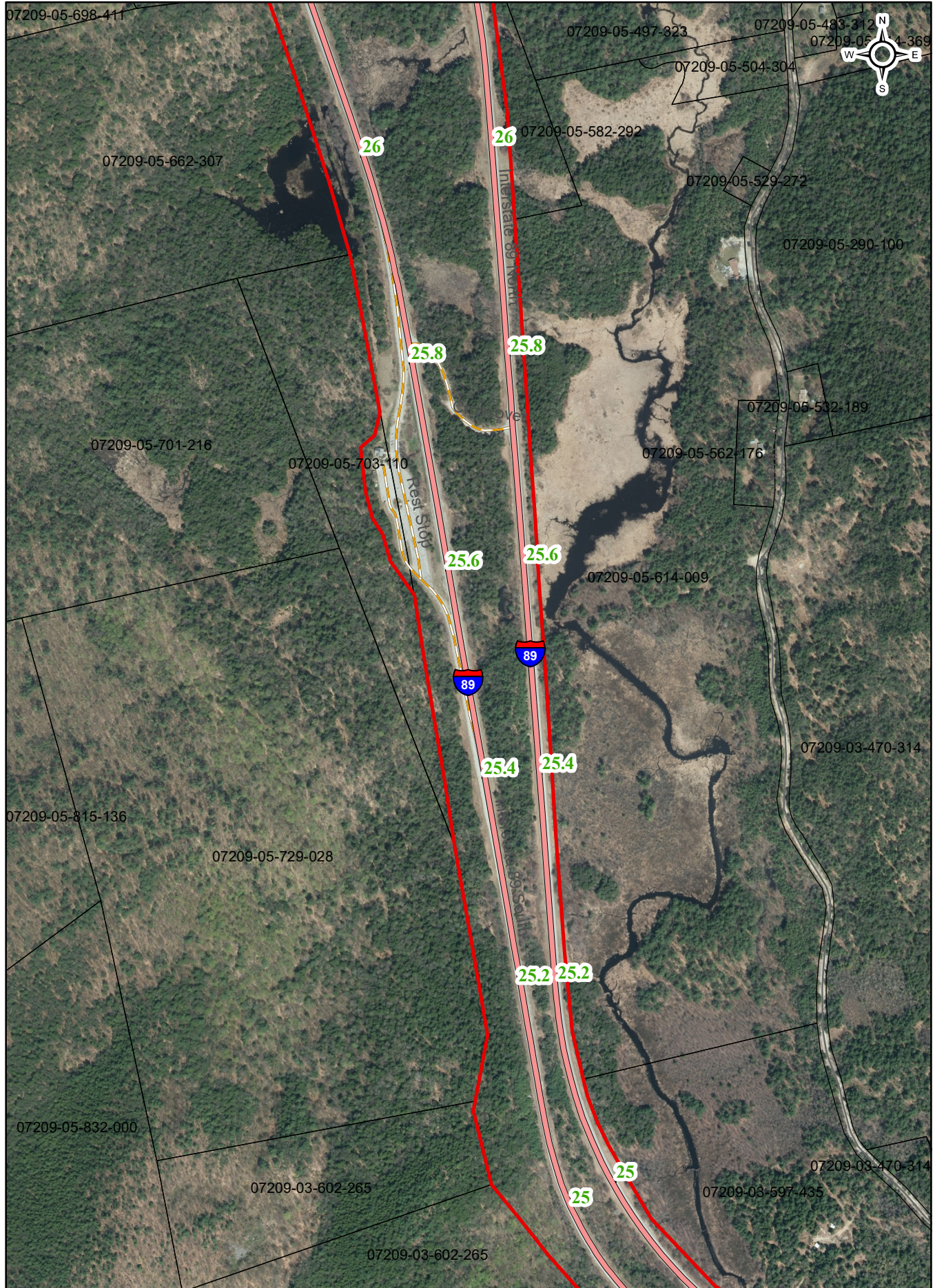


0 250 500 1,000 Feet

1:8,000


 Sutton 42419 Project Area

Sutton 42419 Tax Map 2

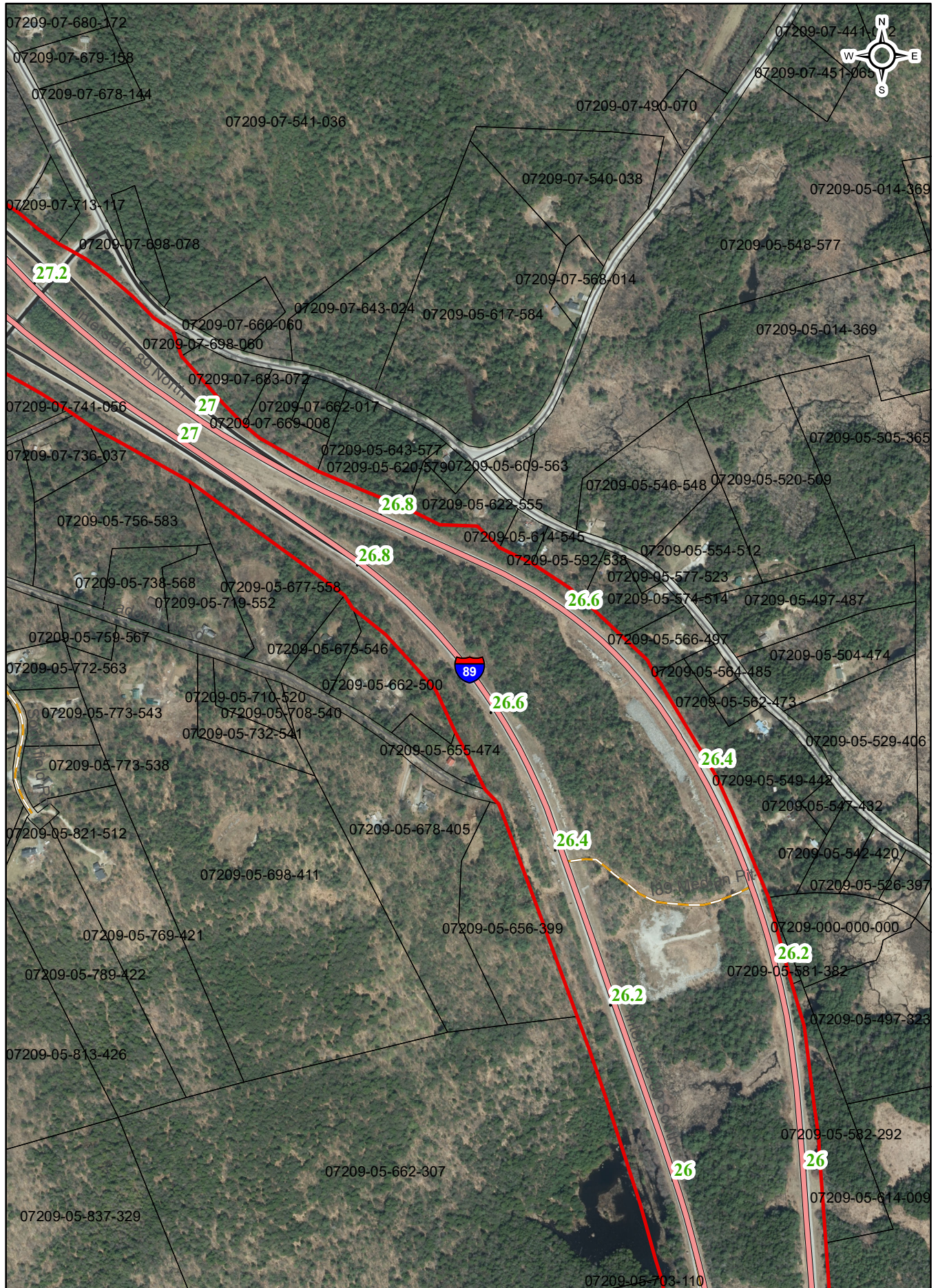


0 250 500 1,000 Feet

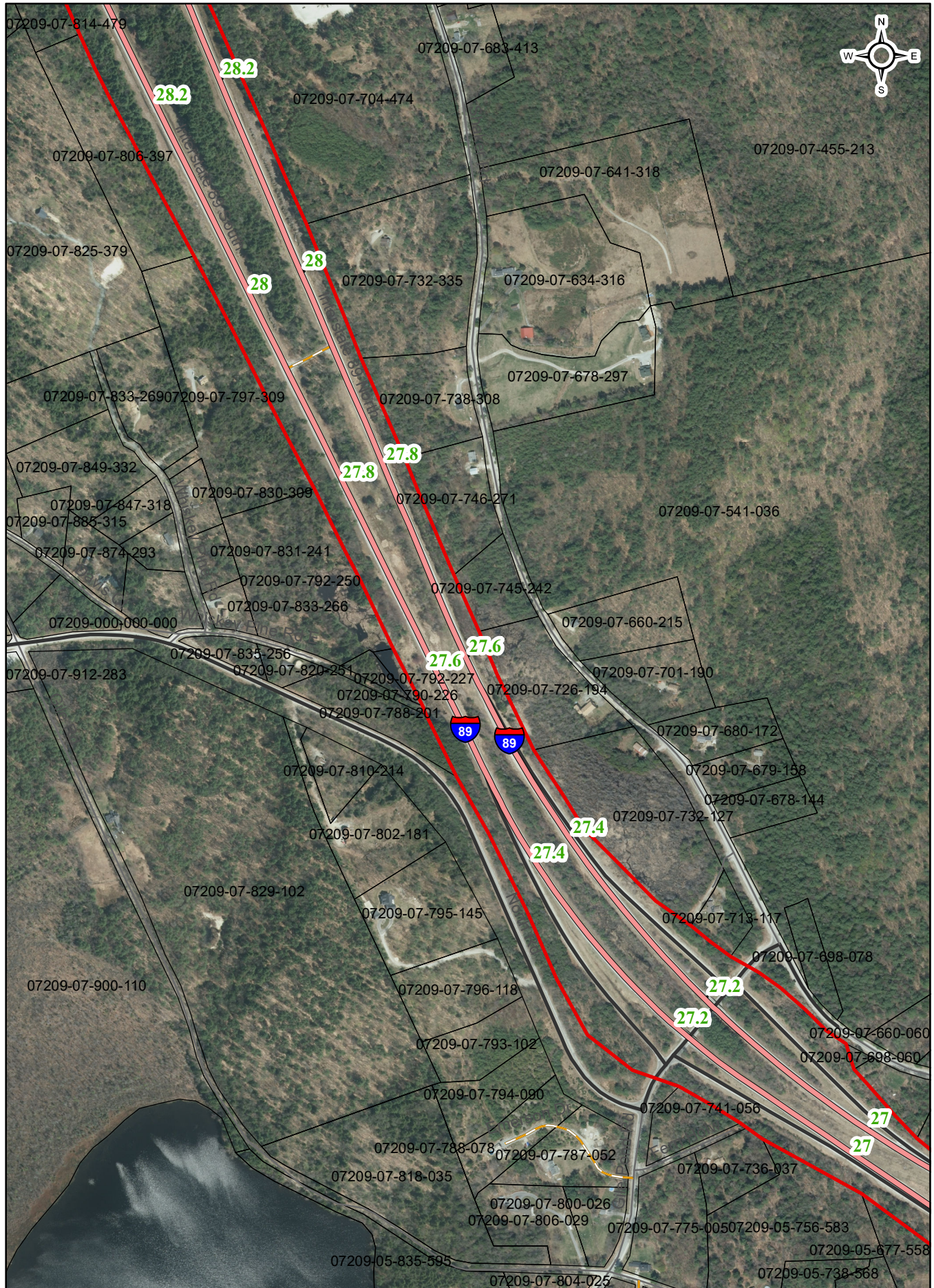
1:8,000

 Sutton 42419 Project Area

Sutton 42419 Tax Map 3




Sutton 42419 Tax Map 4

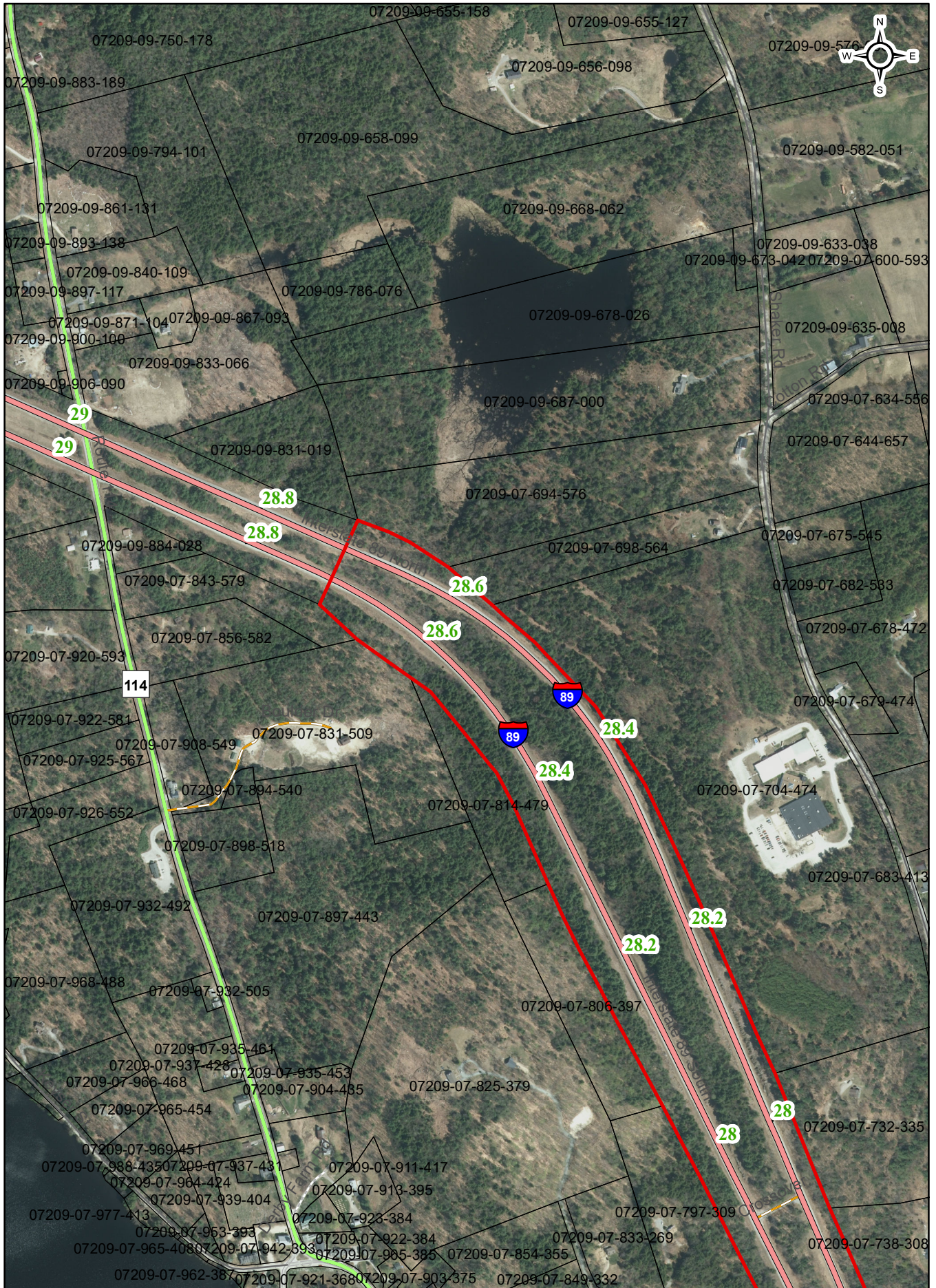


0 250 500 1,000 Feet

1:8,000


 Sutton 42419 Project Area

Sutton 42419 Tax Map 5



0 250 500 1,000 Feet

1:8,000

 Sutton 42419 Project Area



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



Water Division/Land Resources Management
Wetlands Bureau

[Check the Status of your Application](#)

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

APPLICANT'S NAME: NH Department of Transportation **TOWN NAME:** Sutton

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.

WITH THE EXCEPTION OF THE NO-BUILD ALTERNATIVE, WHICH WOULD NOT ADDRESS THE STRUCTURAL AND SAFETY DEFICIENCIES OF INTERSTATE 89 AND ITS APPURTENANCES, THE PROPOSED WORK IS THE ALTERNATIVE WITH THE LEAST IMPACT ON WETLANDS AND SURFACE WATERS. THE PROPOSED ROADWAY WORK IS LIMITED TO THE EXISTING FOOTPRINT, AND THE DRAINAGE WORK IS LIMITED TO EXISTING DRAINAGE SYSTEM STRUCTURES. ACCESS AND IMPACTS WERE MINIMIZED THE MAXIMUM EXTENT PRACTICABLE.

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.

This project does not impact tidal marshes or non-tidal marshes.

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

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

The proposed work will maintain existing connections between adjacent wetland or stream systems throughout the project area. Connections at drainage structures, included in the work, with perched outlets or sedimentation buildups at inlets or outlets will be rehabilitated or replaced in-kind as appropriate and will address deficiencies in connectivity to the maximum extent practicable.

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.

This project minimizes impacts to wetlands and streams by maintaining existing inlets, outlets, and connections between wetlands. Localized impacts will be required for upgrades to these structures, pipes, and outlets, which is necessary to extend the service life of the highway infrastructure and prevent catastrophic failure and emergency repair of the existing drainage system which would result in increased impacts to wetlands, as well as other environmental resources and the traveling public. Other wetland impacts due to tree clearing and slope work are necessary in order to complete these tasks that are intended to address existing safety concerns on the highway due to unsafe site distances and roadway widths. These efforts will align with meeting NHDOT standards established from the AASHTO Geometric Design of Highways and Streets.

There are no exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, or habitat and reproduction areas for species of concern within the project limits.

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

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

The proposed project will improve the condition of the highway drainage system and other roadway appurtenances on Interstate 89, therefore extending the functional lifespan of the highway and preserving the existing public commerce, navigation, and recreational opportunities.

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.

There are no existing floodplains or floodways within the project area.

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

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

Impacts associated with riverine systems are limited to the maintenance and improvement of existing drainage structures. Any streams will be maintained in their existing locations and connectivity will be improved to the maximum extent possible where existing sedimentation, erosion or perched conditions exist.

The project will include impacts to scrub-shrub wetlands, however, no scrub-shrub marsh complexes are present within the project limits. The scrub-shrub wetlands that will be impacted are primarily located within previously disturbed man-made ditches adjacent to the highway and impacts to these areas are associated with slope work to accommodate roadway widening for safety purposes. All scrub shrub wetlands that are disturbed for this reason will be reconstructed adjacent to the existing location and will continue to collect, convey, treat, and control storm water and spring run-off in the same manner that the existing drainage ditches do currently.

Impacts to forested wetlands are due to work at drainage outlets or as a result of shoulder widening along the Exit 10 acceleration and deceleration lanes. The majority of the drainage impacts are temporary and are intended for access.

All work will stabilize and extend the functional lifespan of many of these structures which are no longer structurally sound and will therefore decrease the potential for failure and resulting erosion and sedimentation of nearby water resources.

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.

There are three Public Drinking Water Supply Wells, two with Wellhead Protection Areas, located in the project area, as well as the Pennichuck Water Works Drinking Water Source Protection Area, however, the proposed work is not anticipated to impact any of these resources as the work is limited to maintenance and rehabilitation of existing highway infrastructure and appurtenances. There are no aquifers in the project area. Best Management Practices for erosion control and sedimentation will be installed and maintained throughout the duration of construction; there will be no impacts to water quality outside of the work areas.

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

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

Impacts are limited to intermittent streams and are necessary for the maintenance and improvement of existing drainage structures. The work will stabilize and extend the functional lifespan of many of these structures which are no longer structurally sound and will therefore decrease the potential for failure and resulting erosion and sedimentation of nearby water resources. Improvements include stone outlet protection to reduce the potential for scouring and will eliminate perches. Accumulated sediment and debris impeding flow at drainage culvert inlets and outlets will be removed, accommodating full flows.

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.

There are no shoreline structures proposed under this project.

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.

There are no shoreline structures proposed under this project.

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.

There are no shoreline structures proposed under this project.

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.

There are no shoreline structures proposed under this project.

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.

There are no shoreline structures proposed under this project.

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.

There are no shoreline structures proposed under this project.

PART II: FUNCTIONAL ASSESSMENT
<p>REQUIREMENTS</p> <p>Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).</p>
<p>FUNCTIONAL ASSESSMENT METHOD USED:</p> <p>Function and value assessments representative of the various wetland types associated with the project area were completed using the Army Corps of Engineer's "Highway Methodology Workbook Supplement" (Appendix A, USACE, September 1999). Wetland classification types, in conjunction with soils and hydrological influences, were used to determine the groupings for the functions and values assessments, which are included in this application.</p>
<p>NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: CINDY BALCIUS</p>
<p>DATE OF ASSESSMENT: NOVEMBER/DECEMBER 2020</p>
<p>Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT:</p> <p><input checked="" type="checkbox"/></p>
<p>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:</p> <p><input checked="" type="checkbox"/></p> <p>Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.</p>

Sutton; NHDOT Project 42419

Supplemental Narrative

Project Description

Sutton 42419 is a federally funded 4R project included in the Ten Year Transportation Improvement Plan (TYP). The project's purpose and need is to rehabilitate the roadway to improve poor pavement surface, reconstruct guardrail to bring it to the current standard, replace metal closed drainage systems and rehabilitate culverts as needed. By funding this project with federal funds, operation/district funds can be used for other needs dispersed throughout the state, rather than having several years' worth of budgets being entirely consumed in one project.

The work will begin at MM 24.2 and extend 4.6 miles to MM 28.8 on Interstate 89 (I89) north and south and include ramps at Exit 10, for a total of 9.2 pavement miles. The scope of work for this project includes full depth pavement reclaim on the I89 mainline north and south barrels, full depth pavement replacement on the Exit 10 ramps. The existing roadway will be widened from 36.5-ft to a 38-ft typical on the mainline with the exception of MM 25.9 to MM 26.9 in the southbound direction, which was widened under a previous project. The Exit 10 ramp shoulders will also be widened from 4-ft to 10-ft where necessary to match the State's typical for interstates. Other pavement work includes reconfiguring the Sutton Rest Area. Additional work includes guardrail replacement, tree clearing for improving sight distance and access to drainage structures, signing upgrades and replacements as needed, and rock scaling. Bridge work will be limited to paving. Drainage structure improvements will include maintenance and repair work as needed for the proposed design and future maintenance of the structures.

The current advertising date is September 21, 2021 with anticipated construction timeframe of Spring 2022 to Fall 2024. In order to advertise using 2021 federal funds, this project must advertise by the end of the federal fiscal year (September 30).

Existing Conditions

Existing details shown on the Plans are from NHDOT project survey which was concentrated around existing pipe inlets and outlets supplemented by LIDAR contours which were only used where survey was not available. LIDAR contours are shown on the Plans to provide a consistent representation of the topography for the entire project area, rather than showing separate contour sets from different surveys which have some overlaps and gaps in coverage.

Project Alternatives

The purpose of the project is to update the infrastructure (pavement, drainage, guardrail, and signage) on I-89 from MM 24.2 to MM 28.8, including the Exit 10 ramps and the Sutton Rest Area to extend the service life of the interstate facility. The need for this is demonstrated by the deteriorated condition of the existing highway infrastructure, which has surpassed the original anticipated 30-year lifespan, and outdated or unsafe existing roadway widths, guardrail, site distances, etc.

Alternatives to address the project's Purpose and Need included the following:

- No Build Option: If the no build option were chosen, the highway would continue to deteriorate to the point where it could impede the future function of I-89 and/or require more expensive future rehabilitation options.
- Pavement Preservation: Continue to preserve the existing infrastructure with a pavement overlay. This would not address the Purpose and Need as the existing pavement is showing thermal and wheel path fatigue cracks and adjacent drainage and guardrail is in a poor condition. Allowing the infrastructure to continue to deteriorate would require a more substantial rehabilitation effort in the future.
- 4R (resurfacing, relocation, reconstruction or rehabilitation) Alternative (selected alternative): This alternative rehabilitates the existing pavement through a reclaim treatment, widens mainline and ramps where the widths are deficient, and replaces/rehabilitates ancillaries such as drainage and guardrail. This alternative meets the Purpose and Need by updating the roadway to meet current safety guidelines and extending the service life of the interstate facility.
- Full Box Reconstruction: This alternative would require extensive work to completely replace the existing roadway structure and aged infrastructure. While this would meet the Purpose and Need, this alternative is not preferred as it would be unreasonably costly and detrimental to the travelling public due to added disruptions associated with complete infrastructure replacements which are not needed in many instances when repair or rehabilitation can also meet the Purpose and Need.

Project Wetland Impacts

This project proposes impacts to several different types of wetlands and through discussion with the Natural Resource Agencies will be handled as follows:

- The project proposes no impacts to prime wetlands or surface waters under the jurisdiction of the Shoreland Water Quality Protection Act. The project limits are also **not within** of the limits of a Local River Advisory designation and jurisdiction.
- There are impacts to jurisdictional wetlands classified as PEM1Ex (previously excavated man-made ditch lines) that are associated with underdrain and catch basin replacement-in-kind. The proposed work is in an effort to maintain, replace, and preserve the usefulness of the man-made non-tidal drainage ditches and to update the underdrain along this highway corridor and will be done within the same footprint of the existing delineated ditch; work associated with these ditches will not extend into nor beyond any area of wetlands jurisdiction of the department of environmental services that is not delineated at man-made non-tidal drainage ditch; dredged spoils will be deposited in areas outside of wetlands jurisdiction. These ditch lines will be returned to existing condition (elevation, width, and re-vegetated) after construction. Per RSA 482-A:3, IV(b), Env-Wt 308.01(b), NH ACOE General Permit section IX 22(d), and CFR 323.4(a)(1)(iii)(c)(1)(i)&(ii) these impacts are exempt from permitting. These areas of work are demarcated on the plans with a label "EXEMPT per RSA 482-A: 3, IV(b)." and a note on each applicable sheet explaining and referencing the exemption citations. This exemption and proposed work was discussed at the March 17, 2021 Natural Resource Agency Meeting.

- As discussed at the March 17th, 2021 Natural Resource Agency Meeting, there are locations which qualify for permitting through NHDES Routine Roadway Maintenance Registration process under Activities RR1-Culvert Replacement or Repair, RR6-Headwall Construction, Repair, or Replacement and RR8- Culvert Inlet and Outlet Maintenance. RRMA locations are labeled on the plans as RRMA – DN XX.
- Impacted wetlands that do not qualify for a RRMA registration will be permitted through the NHDES Wetlands Bureau Standard Dredge and Fill Permit as a Major Impact Project. This NHDES Wetlands Bureau Standard Dredge and Fill Major Impact Project and permit includes impacts associated with tree clearing, slope work, rock scaling, drainage ditch maintenance in-kind that is exempt from permitting, drainage ditch relocation, and drainage work within wetlands jurisdiction that do not qualify under the Routine Roadway Maintenance Activities. These impacts will also qualify for coverage under the USACOE State Programmatic General Permit.

Tree Clearing: Impacts associated with tree clearing are necessary for access to drainage structures and other work areas, as well as for clearing to create safer sight distances for the interstate, which strives to achieve 730' for the design speed of 70 mph. The majority of tree clearing areas are associated with access to the inlet or outlet of drainage structures. The two impact areas of longer linear clearing needed for sight distance were reviewed and evaluated to determine if the impacts triggered the need for mitigation associated with forest conversion. USACOE reviewed the proposed work, including details regarding the proposed tree clearing areas and types of wetlands being impacted, and determined that mitigation was not required for the impacts associated with tree clearing. Email coordination is included with the mitigation narrative within this application.

Slope Work: Impacts associated with slope work are necessary for pavement widening of I-89 mainline, Exit Ramps, and guardrail replacement. The pavement widening will require widening of the roadway embankments in these areas. Ditch line impacts also exist where the widening creates fill in the existing ditches which will then be recreated in the same location but at a higher elevation. These fill impacts are shown within this application as permanent impacts.

Rock Scaling: One rock slope will require scaling within the limits of this project located at 1513+50 SB. Temporary impacts to the wetland immediately below for access and equipment will be necessary. Disturbance to the wetland soils and vegetation will be avoided by utilizing temporary staging, matting, or a combination of geotextile fabric and stone to create a platform that will then be removed once the work is complete and if necessary the impact area will be reseeded with wetland seed mix. The contractor awarded the project will determine which method of staging will be used.

Drainage Work: There are several drainage structures that will require permanent and temporary impacts to jurisdictional wetlands including intermittent streams, and palustrine and forested wetlands. The intermittent streams within the project are located within the same wetland systems, but are not directly connected. Many of them generate at the outlet of the closed drainage system or are connected to palustrine wetlands in the median of the highway. Pipes with perched conditions, whether in wetlands or streams, will be corrected to the

maximum extent possible based on site conditions. These impacts are shown as permanent impacts; a typical outlet protection detail is included prior to the Wetland Impact Plan set.

- Three Tier 1 Intermittent Stream Crossings:
 - Wetland Identification #26: Located at MM 24.7 SB, an existing 24” corrugated metal pipe (CMP) 124’ long. The proposed work will slip line the 24” cmp with an 18” spp, replace the outlet end section in kind, and construction of outlet protection by regrading and installing stone at the outlet to address the perch and erosion at the outlet. (Typical outlet protection detail included prior to the Wetland Impact Plans).
 - Wetland Identification #138: Located at MM 27.1 NB, an existing 36” corrugated metal pipe (CMP) 250-ft long. The proposed work will slip line the 36” CMP with a 30” spp, repoint the outlet headwall and regrade the outlet to remove sedimentation build-up. (Typical outlet protection detail included prior to the Wetland Impact Plans).
 - Wetland Identification #203: Located at MM 28.7 NB, an existing 24” corrugated metal pipe (CMP) 130-ft long. The proposed work will slip line the 24” cmp with an 18” spp, construct new headwalls at the inlet and outlet and install outlet protection to repair existing and prevent future erosion. (Typical outlet protection detail included prior to the Wetland Impact Plans).
- Several CMP rehabilitations are not located along stream crossings, though at some locations there are intermittent streams located at either the inlet or the outlet of a pipe but transition into a wetland or vice-versa and therefore were determined to not qualify as stream crossings. Rehabilitation methods consist of slip-lining, as well as headwall and end section repair or replacement, and outlet regrading and stone installation.

Other Environmental Resources

Delineations: Site photos, delineations, and stream and wetlands assessments were performed by sub-consultant Stoney Ridge Environmental, LLC (SRE). See excerpts from the Report titled Final Wetland Delineation, Stream Cross Section, and Invasive Species Report included elsewhere in this application.

Threatened and Endangered Species: The NH Department of Natural and Cultural Resources Natural Heritage Bureau reviewed the project area and determined that there are no know records of State or Federally protected species or their habitats located in the vicinity of the work. The project is located within the range of the federally threatened northern long-eared bat (NLEB). Consultation for impacts to NLEB has been completed with the US Fish and Wildlife Service, who have concurred that the project will result in a May Affect, Likely to Adversely Affect finding for this species in accordance with the FHWA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and NLEB. The Contractor will be required to implement all appropriate Avoidance and Minimization Measures during construction and no further consultation is necessary.

Water Quality: The project proposes widening as described above for both mainline and the Exit 10 Ramps. This widening creates an increase in impervious area for the project. The Sutton Rest Area is being redesigned and will result in a reduction of pavement. However, the total project proposes an increase to impervious surfaces. Due to the net increase in impervious area, stormwater treatment is proposed as part of this project.

- This project proposes to treat the impervious surface required, to the extent possible, for the three concurrent 4R projects scheduled to advertise along the I-89 corridor. These projects include this one (Sutton 42419), Sutton-New London 40511 and Warner 15747. Sutton-New London 40511 and Sutton 42419 are scheduled to advertise in August, 2021. Warner 15747 is scheduled to advertise November 2022.
- Proposed treatment areas are centered around the Sutton Rest Area and the Exit 10 Interchange Ramps. The Sutton Rest Area treatment systems are proposed bioretention systems. The Exit 10 Ramp treatment systems are proposed swales.

Invasive Species: Invasive species were identified and delineated, both Type I and Type II species are present and the project will require an Invasive Species Management Plan.

Floodplains: There are no regulatory floodways or floodplains located within the work areas.

Impaired waters: The project is not located in the vicinity of any impaired waters.

Cultural Resources: The proposed project has been reviewed by the Department's Cultural Resource Program. Work located within existing interstate highway corridors are exempt from compliance with Section 106 of the National Historic Preservation Act, however, the Department still applies the same level of review for these projects as for projects which do require compliance. This project includes approved activities included in Appendix B of the Section 106 Programmatic Agreement and no further coordination is necessary.

Conservation Commission Coordination: The Town of Sutton Conservation Commission was contacted by letter on June 26, 2019. A response was received including identification of wetlands and invasive species in the project area and a list of priority mitigation sites for the Town of Sutton.

Large, Sarah

From: OSullivan, Andrew
Sent: Tuesday, February 02, 2021 9:56 AM
To: Large, Sarah
Subject: FW: Routine Roadway Maintenance Activities for highway corridor projects

From: Benedict, Karl
Sent: Monday, October 26, 2020 3:01 PM
To: OSullivan, Andrew
Subject: RE: Routine Roadway Maintenance Activities for highway corridor projects

Hello Andy,

I can confirm that multiple RRRM that may be filed within the project limits. With confirmation that the projects meet activity specific criteria when combined. See Activity Specific Criteria on Registration Forms.

Ex.

Activity Specific Criteria:

- The culvert or culverts have a combined opening up to 48-inches in diameter (or 12.5 square feet).
- Work shall be done with the equipment located outside of surface waters or wetlands.
- Work can be done in combination with the replacement or extension of the culvert if the project also qualifies for those activities.
- Designated Rivers: An activity will not qualify for the Routine Roadway Notification process if within 250 feet of a Designated River.

Exception 1: If the activity is located on a Tier 1 stream whose contributing watershed above the stream crossing is 200 acres or smaller.

Exception 2: If the structure does not convey a direct surface water connection to the Designated River.

NOTE: If the work is within ¼-mile of any Designated River, a copy of the Routine Roadway Notice must be submitted to the River's Local Advisory Committee a minimum of five days prior to the start of work.

- *To qualify for the Certified Culvert Maintainer Program the project must not be within a ¼-mile of a Designated River or segment of river designated under RSA-483.*

Thanks,

Karl Benedict, Public Works Subsection Supervisor
Land Resources Management
Water Division, NH Department of Environmental Services
29 Hazen Drive, PO Box 95
Concord, NH 03302
Phone: (603) 271-4188
Fax: (603) 271-6588
Email: Karl.Benedict@des.nh.gov

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We greatly appreciate your feedback, please take a moment to fill out our [NHDES-LRM customer satisfaction survey](#)

From: OSullivan, Andrew <Andrew.M.OSullivan@dot.nh.gov>
Sent: Monday, October 26, 2020 11:09 AM
To: Benedict, Karl <Karl.D.Benedict@des.nh.gov>
Subject: Routine Roadway Maintenance Activities for highway corridor projects

Hi Karl,

We have a highway corridor improvement project that will address a number of concerns throughout the project limits. One of the concerns will be to address the maintenance of culverts that fall under the Routine Roadway Maintenance Registrations. I am advising the project team on the work that needs to be completed and wanted to get your concurrence on multiple RRM that may be filed within the project limits. It is my understanding that;

The activities covered in the Best Management Practices for Routine Roadway Maintenance Activities in New Hampshire can be combined to fit site-specific situations that might not be addressed by one activity. For example, an activity sponsor may propose to relocate (skew) and extend a culvert, as well as construct a headwall, provided the criteria for each individual activity is not exceeded and, multiple activities can be covered under this notification process. For example, an activity sponsor may propose to replace two culverts at separate locations, provided each site is in the same town and the work at each site does not exceed the individual activity requirements.

Let me know if this is your understanding as well. If so I will coordinate the work in accordance with the BMP manual either through the District or project team.

Thanks, Andy.

Andrew O'Sullivan
Wetlands Program Manager
New Hampshire Department of Transportation
Bureau of Environment
7 Hazen Drive, PO Box 483
Concord NH, 03301-0483
603-271-0556





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



[Check the Status of your Application](#)

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

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

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

The following definitions and abbreviations apply to this worksheet:

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

SECTION 1 - CONTACT/LOCATION INFORMATION		
APPLICANT LAST NAME, FIRST NAME, M.I.: NH Department of Transportation		
PROJECT STREET ADDRESS: Interstate 89, MM 24.2 to MM 28.8	PROJECT TOWN: Sutton	
TAX MAP/LOT NUMBER: N/A		
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 proposed project will rehabilitate roadway pavement and appurtenances along Interstate 89 from MM 24.2 to MM 28.8 in the town of Sutton. The work will include reclaiming the mainline roadway pavement, inlaying ramps at exit 10, reconfiguring the Sutton SB rest area, inlaying bridges, replacing guardrail, repairing and replacing drainage features, clearing trees, scaling rock outcroppings, and repairing slopes.</p>		

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

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

www.des.nh.gov

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

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

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

www.des.nh.gov

A/M BMPs	The project is designed to minimize the number and size of crossings, and crossings cross wetlands and/or streams at the narrowest point.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 500 Env-Wt 600 Env-Wt 900	Wetland and stream crossings include features that accommodate aquatic organism and wildlife passage.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 900	Stream crossings are sized to address hydraulic capacity and geomorphic compatibility.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
A/M BMPs	Disturbed areas are used for crossings wherever practicable, including existing roadways, paths, or trails upgraded with new culverts or bridges.	<input 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

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting

DATE OF CONFERENCE: March 17, 2021

LOCATION OF CONFERENCE: Virtual meeting held via Zoom

ATTENDED BY:

NHDOT

Sarah Large
Andrew O’Sullivan
Mark Hemmerlein
Deidra Benjamin
Marc Laurin
Jason Tremblay
David Scott
Tom Jameson
Tobey Reynolds
Meli Dube
Andrew Czachor
Corey Spetelunas
Bill Saffian
Kirk Mudgett
Kerry Ryan
Roger Appleton
Ralph Sanders

ME DOT

Eric Ham
Kristen Chamberlain
Jeff Folsom

ACOE

Mike Hicks

EPA

Jeanie Brochi

NHDES

Lori Sommer
Karl Benedict
Chris Williams
David Price

NHB

Amy Lamb

NH Fish & Game

Carol Henderson
Mike Dionne
Cheri Patterson

The Nature Conservancy

Pete Steckler

**Consultants/ Public
Participants**

Christine Perron
Jim Foley, Lamprey River LAC
David McNamara
Mike Leach
Jerry Fortin
Pete Walker
Greg Bakos
Greg Goodrich
Nicole Martin
Frank Koczalka
KC Moran, City of Manchester
Owen Friend-Gray, City of
Manchester
Stephen Hoffmann
Samuel White
Brian Colburn
Vicki Chase
Kevin Ferguson
Keith Snow
Tim Higginson

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

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, NHNB – 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

channelization. The existing box culvert has no natural bed material, and the concrete bottom extends through the ends of the wingwalls with a total length of 37.5'. The new configuration will remove a total of 37.5' of concrete stream bed. The existing straight wingwalls will be replaced with 45 degree wingwalls, reducing approximately 7.5' of existing channelization.

The preferred alternative is to replace the 10' wide box culvert with a 22' wide precast concrete box culvert, 8' deep and 30' long. A 2' bed of simulated stream material will be placed in the culvert and over a 2' deep layer of riprap at the inlet and outlet of the culvert. The roadway width will be maintained, with riprap slope protection added.

This project falls into a category noted by DOT as one of the few remaining projects where the field work was completed prior to the current rules. The proposed culvert was sized prior to the current Stream Crossing Rules adopted in 2019. The 22' width is reflective of a bankful width of $16.2' \times 1.2 + 2'$.

To comply with current rules, due to the crossing's slight entrenchment, the opening would need to be 38' wide. This is not practical at the site. It would require a bridge structure, which would raise the roadway profile within the floodplain. The wider opening would lead to additional property and resource impacts as well, including wetland, stream, Shoreland and floodplain impacts. Additionally, it would require a significantly longer roadway closure to install, and the costs would also significantly increase to construct the full bridge.

The project will be constructed during a full roadway closure and detour of South Bennington Road. Water diversion structures will be installed on both the upstream and downstream ends of the culvert, and a 48" temporary pipe will convey the brook during construction. Once the existing culvert has been removed and the new culvert installed, the temporary diversion and structures will be removed, and the stream restored to the culvert. The project is scheduled to advertise in the fall of 2021 with anticipated construction during the summer of 2022.

There are approximately 2,000 sf of permanent impacts to the stream anticipated, as well as 3 sf of permanent wetland impacts. 84 lf of permanent channel impacts are proposed. Additional temporary impacts of 1,150 sf and 85 lf of stream and 175 sf of wetlands are also anticipated.

Stantec proposed the project as self-mitigating, based on the following project elements:

- The project complies with the Stream Crossing rules as they existed at the time of design.
- Simulated streambed material will be placed within the stream where impacted by the project and replace the existing concrete bed through the culvert.
- The structure will pass the 100-year storm for the Russell Brook with 1 foot of freeboard.
- The project will add 125 cy of flood storage.

Karl Benedict, NHDES Wetlands Bureau, noted the improvements to hydraulics and aquatic passage. It is not fully accommodating per the current guidelines, but good as is. He asked about adding a mix of humus and vegetation in the bank riprap. Stantec noted stone intermixed with humus is proposed above the 100-year elevation associated with Russell Brook. He agreed that the stream crossing was self-mitigating. He noted that 904.10 (Alternative Design) does need to be submitted as part of the application as the crossing is not fully compliant.

Lori Sommer, NHDES Wetlands Bureau, noted that the bank riprap shown on the plans impacts the stream and will require mitigation. She asked about leaving the 48" bypass pipe permanently due to the entrenchment of the crossing. Due to use of plastic pipe and long-term maintenance concerns this was not supported by DOT. S. Large also clarified that the proposed crossing does meet the Q100 with 1' of freeboard, so accommodation for additional flow is not necessary from a hydraulic standpoint in the design.

It was asked if the simulated stream material could be intermixed with the riprap below the 100-year elevation. This could allow the riprap to be self-mitigating. It was suggested that this be reviewed. Otherwise, linear foot of riprap along the channel for each bank will need to be counted as part of an ARM fund calculation. Lori noted the bank impact is measured parallel to the brook. The channel is considered self-mitigating. Lori noted the 3 sf in the PRA wetland would require mitigation under the new rules since the entire project is within the floodplain (of the Contoocook River).

Carol Henderson, NHFG, asked about the construction timeline. It is planned for the summer of 2022, during low flow season. Wildlife friendly erosion control will be necessary due to the presence of the wood turtle. She noted that silt fence and similar barriers need to be installed early. Also, the duration of bank impacts should be minimized, and leaflets provided to the contractor due to the wood turtle's presence.

Peter Steckler, TNC, noted he has seen erosion issues with simulated streambed materials in these types of bottleneck crossings. Suggested a coarser simulated material that might be less likely to wash out of the culvert, and utilizing larger stones at the outlet to help lock the simulated stream bed material in. Melilotus Dube, NHDOT Bureau of Environment, noted that the project wetland permit application is anticipated to be submitted in the near future and the application and plans would be updated based upon the meeting discussion, including to show self-mitigation for the banks, if possible, or provide an arm fund calculation for the banks if unable to be self-mitigating, and would coordinate with staff. The intent was not to have to return to the Natural Resources meeting for the project to discuss mitigation. L. Sommer agreed that follow up via email is acceptable.

This project has been previously discussed at the 11/21/2018 Monthly Natural Resource Agency Coordination Meeting.

Jefferson, #42558 (X-A004(910))

Stephen Hoffmann introduced the Jefferson 42558 project involving the replacement of the US Route 2 Bridge over Priscilla Brook (Bridge No. 140/097) and the replacement of a culvert located 200' to the southeast that carries an unnamed stream under US Route 2 in Jefferson, New Hampshire. The majority of the resource identification has been completed and an alternative analysis has evaluated potential replacement structures. A public meeting is scheduled for April 2021. The project is currently scheduled to advertise in August 2022.

Bridge 140/097

Bridge 140/097 consists of a 10' jack-arch bridge founded on stone masonry abutments and was originally constructed in 1900. A roadway/bridge rehabilitation and widening project in 1979 extended the bridge on the upstream and downstream sides by installing a concrete slab superstructure founded on concrete abutments. Priscilla Brook is a perennial stream with a 2.05 square mile watershed, making this a Tier 3 stream crossing. A stream assessment was completed in November 2020 and the average Bankfull width was determined to be 11'. There are wetlands located adjacent to the bridge and roadway. Based on the results of the stream assessment and the Rosgen Stream Classification System the channel is a Type E channel. Additional resources in the vicinity of the proposed project (both the bridge and culvert) include 2015 New Hampshire Wildlife Action Plan mapped 'Highest Ranked Habitat in NH' and the project is located within the range of the federally threatened northern long-eared bat and Canada lynx.

The purpose of the proposed project is to address the deterioration of the existing bridge and the hydraulic opening. The project is needed because the bridge deck, superstructure, and substructure are Condition State 4 (Poor) and the bridge is included on the State Red List.

Increases to the bridge span are limited by adjacent driveways in close proximity to the bridge. Increases to the roadway profile, or the span length/layout will likely have ROW impacts and impacts to access of adjacent properties.

Three span alternatives were evaluated for the replacement bridge structure based on geomorphic compatibility. Alternatives are:

- 1.) **106' Span:** Fully compliant with NH Stream Crossing Rules
 $[11'(\text{Wbf}) \times 9.7 (\text{Entrenchment Ratio}) = 106']$
 - Not feasible at this location due to the constraints of the site.
 - Cannot lengthen bridge span to the west due to the driveway in the SW corner.
 - Impacts driveway to the NE.
 - Increase in roadway profiles results in increased ROW and environmental impacts.
 - Significant increase in cost and duration.

- 2.) **24' Span:** Alternative design using Rosgen stream channel type entrenchment ratio.
 $[11'(\text{Wbf}) \times 2.2 (\text{Rosgen Type E Channel Entrenchment Ratio}) = 24']$
 - Span accommodates bankfull width and meets hydraulic requirements.
 - Provides a 2' wildlife shelf on at least one side.
 - Similar site constraints to the 106' span, this alternative includes minor roadway profile adjustments, increased ROW/environmental impacts, increased construction costs and duration.

- 3.) **15' Span:** Alternative design based on bankfull width
 $[1.2 \times 11' (\text{Wbf}) + 2' = 15.2']$
 - Accommodates bankfull width and meets hydraulic requirements.
 - Provides a 2' wildlife shelf on one side.
 - Provides a 50% increase in span length over existing conditions.
 - No change in roadway profile minimizes impacts to adjacent properties, driveways, and adjacent wetlands.
 - Minimizes construction costs and duration.

Culvert

The existing culvert consists of a 4'x4' concrete box originally constructed in 1930 with 48" CMP extensions added to both the inlet and outlet ends. The culvert carries an unnamed, perennial tributary of Priscilla Brook under US Route 2. The confluence of the two streams is located a few hundred feet southwest of US Route 2 and the proposed project. The stream has a watershed size of 1.05 square miles, making this a Tier 3 stream crossing. A stream assessment was completed in August 2019 and the average bankfull width was determined to be 11'. There are scrub-shrub and forested wetlands located adjacent to the stream in the vicinity of the culvert. Based on the results of the stream assessment and the Rosgen Stream Classification System the channel is a Type B channel.

The purpose of the proposed project is to address the deterioration of the existing culvert and the undersized hydraulic opening. The project is needed because the culvert is in poor condition and there are also flooding concerns associated with the undersized crossing. A sinkhole has also started to develop within the roadway at this location possibly suggesting partial failure of the existing structure.

The culvert crossing location has similar design constraints as the bridge structure, and is located between two driveways, further restricting the size/location of replacement alternatives. Three concrete box culvert alternatives were evaluated based on geomorphic compatibility. Alternatives are:

- 1.) **22' x 4' Opening:** Fully compliant with NH Stream Crossing Rules
 $[11'(\text{Wbf}) \times 2.0 (\text{Entrenchment Ratio}) = 22']$
 - Not feasible at this location due to the constraints of the site.
 - Increasing opening to the west would impact driveway to the west.
 - Requires an increase in roadway profile, resulting in additional ROW and environmental impacts.
 - Increase in construction cost and duration.

- 2.) **15' x 4' Opening:** Alternative design based on bankfull width
 $[1.2 \times 11' (\text{Wbf}) + 2' = 15.2']$
 - Span accommodates bankfull width and meets hydraulic requirements.
 - Similar site constraints to the 22' x 4' option, this alternative includes minor roadway profile adjustments, increased ROW/environmental impacts, increased construction costs and duration.

- 3.) **9' x 4' Opening:** Alternative design based on hydraulic requirements.
 - Passes the 50-year storm event without overtopping.
 - Embedded 2' to provide a natural substrate through the structure (actual structure size would be 9' x 6')
 - The 9' width would increase the size of the existing opening > 100%
 - No change in roadway profile minimizes impacts to adjacent properties, driveways, and adjacent wetlands.
 - Minimizes construction costs and duration.

In addition to the bridge and culvert alternatives, two traffic control methods are being evaluated. The first alternative would involve maintaining signalized two-way alternating one-lane traffic through two phases of construction. The second alternative involves maintaining two lanes of traffic in both directions also through two phases of construction. This alternative would result in increased temporary ROW and environmental impacts associated with shifting the alignment and the construction of a temporary roadway. This alternative is being evaluated at the request of the abutter and is not required based on traffic volumes. It is unlikely that the two-lane alternative will be selected due to increased costs, construction duration, and impacts.

The objective of this meeting was to obtain input from the resource agencies on the three culvert alternatives and the three bridge alternatives to help determine the selected alternatives. Based on the design constraints of the site, the design team has recommended the 15' bridge span and the 9' x 4' opening box culvert. The larger structures result in increased environmental impacts, right-of-way impacts, increased costs, increased construction duration, and result in impacts to driveways/access to adjacent properties. For these reasons, the larger alternatives are not feasible at this site.

Sarah Large asked whether the intent of this meeting was to determine if mitigation would be required. Mr. Hoffmann indicated that this was not the intended outcome of this preliminary meeting but would be happy to hear input from the agencies on their initial thoughts regarding mitigation and whether the project would be considered self-mitigating. Ms. Large also asked whether the 15' bridge span and 9' x 4' culvert opening passed the 50 and 100-year storms. Brian Colburn indicated that because the proposed structure is a culvert, it is only designed for the 50-year storm, but the roadway doesn't overtop at the 100-year. Sam White also confirmed that the 15' span passed the 100-year storm with 1-foot of freeboard.

Karl Benedict recommended that the NHDES stream crossing worksheet be completed for both crossings to help identify and address requirements. Mr. Benedict also asked if any Priority Resource Areas (PRAs)

were present, whether the outlet was perched or if scour was occurring downstream. Mr. Hoffmann stated he was pretty sure no PRAs were located in the vicinity but wanted to double check the resource mapping before giving a definitive answer. Brain Colburn indicated that there is a 2.5 deep scour hole at the outlet, but the banks were stable. Mr. Benedict also suggested comparing the velocities of the reference reach with the velocities through the structure. Mr. Benedict also suggested including a restoration/planting plan that focused on areas of temporary impacts.

Lori Sommer indicated that she was unable to determine if the project could be self-mitigating at this time since impacts had not been determined. She indicated that we would need to confirm the presence of any PRAs, address all applicable rules, and nail down the design/impacts. Ms. Sommer also recommended that the limits of disturbance be minimized to retain the vegetated riparian buffer areas adjacent to the streams.

Carol Henderson highlighted the positive benefits of the wildlife connectivity improvements. She indicated she was interested in the public input and would prefer larger alternatives but understands the constraints.

Amy Lamb confirmed that no NHB records were identified in the vicinity of the project and had no additional comments.

Mike Hicks had no comments.

Jean Brochi had no comments.

Pete Steckler asked which side the wildlife shelf would be located on and how much headroom would be provided. Mr. White explained that the shelf would be located in front of the southeast abutment and would provide approximately 2-3 feet of headroom. Mr. Steckler suggested possibly lowering the shelf to accommodate additional headroom. Christine Perron explained that the shelf would be located at or slightly above the ordinary high-water elevation, and that the shelf was designed for small mammal passage (consistent with the species identified in the NH Wildlife Action Plan). Mr. Steckler explained that it is acceptable for the wildlife shelves to be regularly flooded during high flows as long as they provide wildlife passage most of the time. Mr. Steckler also asked about wildlife passage through the culvert structure. Sam White indicated that a wildlife shelf is not being incorporated into the culvert replacement structure. Mr. Steckler suggested incorporating a low flow channel to accommodate wildlife passage and improve aquatic organism passage during lower flows.

Kirk Mudgett provided additional photographs of the downstream channel, banks, and outlet, confirming that a scour hole is present; however, the banks appear to be relatively stable, and the outlet is not perched.

Following the discussion from this meeting it is assumed that the resource agencies are in general agreement with the 15' bridge span and 9' x 4' opening box culvert. Next steps for the project involve holding the Public Officials/Public Informational meeting (April 2021), selecting the preferred alternative, and quantifying impacts. The project will be presented again at the June or July 2021 Resource Agency Meeting to confirm the preferred alternative, proposed impacts, and need for mitigation.

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

Sutton, #42419 (X-A004(839))

Corey Spetelunas, NHDOT Highway Design, introduced the project including the location and description of the scope of work. Sutton 42419 is a 4R job which typically involve resurfacing, relocation, reconstruction or rehabilitation of roadway infrastructure and appurtenances. The work will begin at MM 24.2 and extend 4.6 miles to MM 28.8 on Interstate 89 (I89) north and south and include ramps at Exit 10, for a total of 9.2 pavement miles. The scope of work for this project includes full depth pavement reclaim on the I89 mainline north and south barrels, full depth pavement replacement on the Exit 10 ramps, guardrail replacement, tree clearing for site distances and access to drainage structures, signage upgrades and replacements, minor bridge work including joint repair and paving, rock scaling, widening of the I89 mainline and Exit 10 ramps where necessary, and maintenance, repairs and upgrades to drainage structures. The current advertising date is August 10, 2021 with anticipated construction timeframe of Spring 2022 to Fall 2024 or Spring 2025. The primary purpose of this meeting is to review the anticipated impacts to natural resources, especially impacts to wetland areas under the jurisdiction of the NH Department of Environmental Services (NHDES) Wetlands Bureau (NH Wetlands Bureau) and the US Army Corps of Engineers (USACOE).

C. Spetelunas provided an overview of the various wetland permitting anticipated for the proposed work. First, much of the proposed underdrain replacement will impact jurisdictional wetlands classified as PEM1Ex, which are previously excavated man-made ditch lines. These ditch lines will be returned to existing condition after construction and this work is therefore considered exempt from permitting under RSA 482-A:3, IV(B) and Env-Wt 308.01(b). Additionally, there are several locations which qualify for permitting through NHDES Routine Roadway Maintenance Registration process under Activities RR1, RR5, RR6 and RR8. Remaining locations will be permitted appropriately through the NH Wetlands Bureau Standard Dredge and Fill Permit as a Major Impact Project. This permit will include impacts from tree clearing, slope work and drainage work. These impacts will also qualify for coverage under the USACOE State Programmatic General Permit. Impacts associated with tree clearing are necessary for access to drainage structures and other work areas, as well as for clearing to create safer site distances for the interstate. There is no grubbing proposed so all impacts are anticipated to be temporary and are located within palustrine emergent and forested wetlands and riverine upper perennial and intermittent systems. Impacts associated with slope work are necessary for pavement widening and guardrail replacement. The existing roadway will be widened from 36.5" to a 38" typical on the entire I89 NB mainline and from MM24.2 to MM25.9 and MM26.9 to MM28.8 on I89 SB and widening the Exit 10 ramps shoulders from 4' to 10' where necessary, which will require widening the roadway embankments in these areas and filling in existing ditch lines and then recreating them at a higher elevation. This is expected to result in permanent impacts to palustrine emergent, scrub shrub and forested wetlands.

There are 11 drainage structure locations that will require impacts to jurisdictional wetlands, 3 of which are considered stream crossings and 2 of which are perched locations (one location is a stream crossing that is perched). Temporary impacts to jurisdictional areas are anticipated due to Corrugated Metal Pipe (CMP) culvert rehabilitation, headwall repair/replacement, ditch-line catch basin (CB) replacement, and non-exempt underdrain replacement. Permanent impacts to jurisdictional areas are anticipated due to new headwall construction, stone fill for outlet protection and perch elimination, and ditch regrading. Of the 11 locations discussed above, 7 are proposed CMP rehabilitations which are not located on stream crossings. Possible rehabilitation methods include UV cured-in-place liners, invert rehabilitation and slip-lining, as well as headwall and end section repair or replacement, and outlet regrading and stone installation. These pipes are mostly located within palustrine emergent, scrub shrub and forested wetlands at the inlets and outlets, while some have palustrine wetlands at the inlet and intermittent streams at the outlet. The first of the two perched locations mentioned above is located at a Tier 1 stream crossing, however, there is no work proposed on the culvert so no stream crossing forms will be provided in the SDF application. This location is identified as Drainage Note (DN) 16N located at MM26.6 NB and is a 30"

Reinforced Concrete Pipe (RCP) carrying an intermittent stream with a significant perch and erosion at the outlet. The proposed work will install outlet protection involving regrading and installing stone at the culvert outlet to address the perch. The second perched location is also located on a Tier 1 stream crossing and work is proposed on the culvert so stream crossing forms will be provided in the SDF application. This location is identified as DN 5S located at MM24.7 SB and is a 124' long 24" diameter CMP carrying an intermittent stream with a significant perch and erosion at the outlet. The proposed work will slip line the 24" CMP, replace the outlet end section and construct outlet protection by regrading and installing stone at the outlet to address the perch. Design for outlet protection at these two perched locations will be based off of the Department typical which calls for construction of a stone ramp at 5% slope maximum for a 50' length.

The first of the remaining two stream crossing locations is DN 26N located at MM 27.1 NB and is a 250' long 36" diameter CMP carrying an intermittent Tier 1 stream with a palustrine scrub shrub wetland at the inlet and a palustrine forested wetland at the outlet. The proposed work will slip line the 36" CMP, repair the outlet headwall and regrade the outlet to remove sedimentation build-up. The second of the remaining two stream crossing locations is DN 55N located at MM 28.7 NB and is a 130' long 24" diameter CMP carrying an intermittent Tier 1 stream. The proposed work will slip line the 24" CMP, construct new headwalls at the inlet and outlet and install outlet protection to repair and prevent erosion.

Meli Dube, NHDOT Bureau of Environment, discussed the other environmental resources and concerns in the area which include protected species, conservation lands, contamination, invasive species, and water quality. There are no NH Natural Heritage Bureau or NH Fish and Game concerns for the proposed work, however, the project is located within the range of the federally threatened northern long-eared bat (NLEB). Appropriate consultation with the US Fish and Wildlife Service is underway. There is one conservation land adjacent to the project area, (Sutton Pines) which is privately owned and is managed by the Society for the Protection of NH Forests. There are no anticipated impacts to this resource as all work will remain within the existing State right-of-way. The Land and Water Conservation Fund, Conservation Land Stewardship Program, and the Land and Community Heritage Investment Program have also reviewed the project area and determined that there are no publicly funded conservation lands in the vicinity of the proposed work. There are four known remediation sites within 1000' of the project area, however, there are no concerns for encountering contamination during construction associated with these sites, and also no known PFAS sites within 4000' of the project area. The project will generate excess Limited Reuse Soil which will be managed appropriately. Invasive species were identified and delineated, both Type I and Type II species are present and the project will require an Invasive Species Management Plan.

The proposed roadway widening will result in approximately 80,875 square feet of increased impervious surface area, however, the project also proposes to remove 40,900 sf of impervious surface at the Sutton Rest Area, resulting in a total net increase of approximately 40,000 sf throughout the project area. Coordination with the University of New Hampshire is currently underway to design an experimental stormwater treatment structure for installation at the rest area which is anticipated to treat approximately 50,000 sf of stormwater runoff. Additional locations for stormwater treatment swales are being vetted if determined necessary.

Regarding mitigation, Sutton 42419 is anticipated to be a Major Impact Project. Impacts to jurisdictional areas are not yet finalized but are anticipated to include approximately 24,000 sf of permanent wetland impacts, which would require mitigation as it is over the 10,000 sf threshold. A majority of these impacts are due to the fill in existing ditch lines holding palustrine wetlands associated with roadway widening, which will be reconstructed at a higher elevation. The Department requested that the impacts be considered self-mitigating at a 1:1 ratio due to the proposed reconstruction, similar to when riverine systems in ditch

lines are reconstructed and considered self-mitigating. The project is also estimated to result in approximately 195 lf of permanent stream impact, which is under the 200 lf threshold and would therefore not require mitigation.

Karl Benedict, NHDES Wetlands Bureau, suggested that RRMRs be submitted first so that if any are rejected for some reason, those locations could be included in the SDF application. He also asked if the project was anticipated to impact any Protected Shoreland areas, M. Dube responded that the work has been reviewed for this and there are no anticipated Shoreland impacts. K. Benedict commented that the typical outlet protection detail for addressing perches should be customized to each location and suggested using contours from lidar since survey is not typically acquired for this kind of project. C. Spetelunas confirmed that this is possible. K. Benedict confirmed that DN 16N discussed above is not considered a stream crossing and reiterated that NHDES Bureau of Alteration of Terrain rules and requirements be met for the proposed increase in impervious surface area. Sarah Large, NHDOT Bureau of Environment, stated that the stream crossing form 904.08 should be used for the Tier 1 Intermittent Stream sliplining locations, and K. Benedict concurred.

Lori Sommer, NHDES Wetlands Bureau, asked if the intermittent streams are connected and therefore require consideration for multiple impacts to the same stream? M. Dube replied that many are located within the same wetland systems but are not directly connected, many of them are generated at the outlet of closed drainage system pipes or are connected to palustrine wetlands in the median of the highway. L. Sommer indicated that tree clearing in forested wetlands, even without grubbing, needs to be assessed for forest conversion according to the USACOE guidelines and factored into the mitigation calculation appropriately. L. Sommer also explained that the allowance for the reconstruction of the ditchlines to be considered self-mitigating on a 1:1 ratio is applicable only to streams and not to palustrine wetlands. Alternatively, the Department can propose recreation of the disturbed wetlands to off-set mitigation for those impacts at a 1:1.5 ratio, however, this strategy would require some monitoring commitments to ensure reestablishment of the ditch line wetlands post-construction. L. Sommer emphasized that if permanent stream impacts to exceed the 200 lf threshold, that mitigation must be paid for all permanent stream impacts on the project including those proposed for outlet protection and perch correction.

Amy Lamb, NHDNCR NHB, confirmed that there are no records of protected species in the project area and did not offer further comment. Carol Henderson, NHFG, confirmed that there are no concerns but reiterated that appropriate consultation with USFWS for impacts to NLEB will be required. Jean Brochi, EPA, did not have any additional comments. Peter Steckler, The Nature Conservancy, indicated that this area is important connectivity habitat and requested that the Department look into wildlife collision data in the area and any potential measures that could be installed as part of this project such as alternative guardrail design or sign installation. M. Dube confirmed that this is possible and will follow up.

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

Sutton-New London #40511 (X-A004(421))

Corey Spetelunas, NHDOT Highway Design, introduced the project including the location and description of the scope of work. Sutton-New London 40511 is a 4R job which typically involves resurfacing, relocation, reconstruction or rehabilitation of roadway infrastructure and appurtenances. The work will begin at MM 28.8 and extend 2.9 miles to MM 31.7 on Interstate 89 (I89) north and south and include ramps at Exit 11, for a total of 7.4 pavement miles. The scope of work for this project includes full depth pavement reclaim on the I89 mainline north and south barrels, full depth pavement replacement on the Exit 11 ramps, guardrail replacement, tree clearing for site distances and access to drainage structures, signage

upgrades and replacements, minor bridge work including joint repair and paving as well as deck replacement at the bridges over NH Route 11, rock scaling, widening of the Exit 11 SB On-Ramp Acceleration Lane, and maintenance, repairs and upgrades to drainage structures. The current advertising date is August 10, 2021 with anticipated construction timeframe of Spring 2022 to Fall 2024 or Spring 2025. The primary purpose of this meeting is to review the anticipated impacts to natural resources, especially impacts to wetland areas under the jurisdiction of the NH Department of Environmental Services (NHDES) Wetlands Bureau (NH Wetlands Bureau) and the US Army Corps of Engineers (USACOE).

C. Spetelunas provided an overview of the various wetland permitting anticipated for the proposed work. First, much of the proposed underdrain replacement will impact jurisdictional wetlands classified as PEM1Ex, which are previously excavated man-made ditch lines. These ditch lines will be returned to existing condition after construction and this work is therefore considered exempt from permitting under RSA 482-A:3, IV(B) and Env-Wt 308.01(b). Additionally, there are several locations which qualify for permitting through NHDES Routine Roadway Maintenance Registration process under Activities RR1, RR5, RR6 and RR8. Remaining locations will be permitted appropriately through the NH Wetlands Bureau Standard Dredge and Fill Permit as a Major Impact Project. This permit will include impacts from tree clearing, slope work and drainage work. These impacts will also qualify for coverage under the USACOE State Programmatic General Permit. Impacts associated with tree clearing are necessary for access to drainage structures and other work areas, as well as for clearing to create safer site distances for the interstate. There is no grubbing proposed so all impacts are anticipated to be temporary and are located within palustrine emergent and forested wetlands and riverine intermittent systems. Impacts associated with slope work are necessary for pavement widening at the Exit 11 ramp described above and guardrail replacement. The Exit 11 ramp shoulder will be widened from 4' to 10', which will require widening the roadway embankment in this area and filling in existing ditch line and then recreating it at a higher elevation. This is expected to result in permanent impacts to palustrine forested wetlands.

There are 21 drainage structure locations that will require impacts to jurisdictional wetlands, 1 of which is considered a stream crossing and 6 of which are perched locations. Temporary impacts to jurisdictional areas are anticipated due to Corrugated Metal Pipe (CMP) culvert rehabilitation, headwall repair/replacement, ditch-line catch basin (CB) replacement, and non-exempt underdrain replacement. Permanent impacts to jurisdictional areas are anticipated due to new headwall construction, stone fill for outlet protection and perch elimination, and ditch regrading. Of the 21 locations discussed above, 17 are proposed CMP rehabilitations which are not located on stream crossings. Possible rehabilitation methods include UV cured-in-place liners, invert rehabilitation and slip-lining, as well as headwall and end section repair or replacement, and outlet regrading and stone installation. These pipes are mostly located within palustrine emergent, scrub shrub and forested wetlands at the inlets and outlets, while some have palustrine wetlands at the inlet and intermittent streams at the outlet.

The first perched location mentioned above is identified as Drainage Note (DN) 11S located at MM 24.9 SB and is a 30" CMP connecting a palustrine emergent wetland at the inlet and an intermittent stream at the outlet. The proposed work will slip line the 30" CMP, repair the inlet, repair the outlet headwall and address the perch. The second perched location is identified as DN 12N at MM 30.0 NB and is a 30" CMP connecting a palustrine scrub shrub and emergent wetland system at the inlet and a palustrine forested and emergent wetland system with an intermittent stream at the outlet. The proposed work involves slip lining the 30" CMP, repairing the inlet, repairing the outlet headwall and addressing the perch. The third perched location is identified as DN 13S at MM 30.0 SB and is a 30" CMP connected a palustrine forested wetland at the inlet and a palustrine forested wetland with an intermittent stream at the outlet. The proposed work involves slip lining the 30" CMP, repairing the inlet and outlet headwalls and addressing the perch. The fourth perched location is identified as DN 13N at MM 30.1 NB and is a 24" CMP connected a palustrine forested and scrub shrub wetland system at the inlet and a palustrine emergent wetland at the outlet. The

proposed work involves slip lining the 24" CMP, constructing a stone apron at the inlet and outlet and addressing the perch. The fifth perched location is identified as DN 14S at MM 30.1 SB and is a 24" CMP connecting a palustrine emergent wetland at the inlet and a palustrine forested wetland with an intermittent stream at the outlet. The proposed work involves slip lining the 24" CMP, regarding the ditch at the inlet, constructing a stone apron at the outlet, and addressing the perch. The sixth perched location is identified as DN 39N at MM 31.2 NB and is a 54" Reinforced Concrete Pipe (RCP) and carries a Tier 1 intermittent stream with a palustrine scrub shrub and forested wetland system at the inlet and a palustrine emergent wetland at the outlet. Proposed work involves constructing a stone apron at the outlet and addressing the perch, so no stream crossing forms will be included in the SDF application as there are no proposed impacts to the crossing itself. Design for outlet protection at these perched locations will be based off of the Department typical which calls for construction of a stone ramp at 5% slope maximum for a 50' length.

The only stream crossing location is DN 14N located at MM 30.3 and consists of twin 550' long 84" diameter CMPs carrying Lion Brook (Tier 3 stream) under both barrels of the highway. There is a ponded wetland upstream of the crossing with a dam/water elevation structure immediately adjacent to the inlet, such that the inlet is at a lower elevation than the ponded area. The proposed work will include the shotcrete invert rehabilitation strategy, as well as repair to the inlet structure and outlet headwall.

Meli Dube, NHDOT Bureau of Environment, discussed the other environmental resources and concerns in the area which include protected species, conservation lands, contamination, invasive species, and water quality. There are no NH Natural Heritage Bureau or NH Fish and Game concerns for the proposed work, however, the project is located within the range of the federally threatened northern long-eared bat (NLEB). Appropriate consultation with the US Fish and Wildlife Service is underway. There are three conservation lands adjacent to the project area (Bristol Conservation Easement, Forte Tract, and King Hill Reservation). There are no anticipated impacts to these resources as all work will remain within the existing State right-of-way. The Land and Water Conservation Fund, Conservation Land Stewardship Program, and the Land and Community Heritage Investment Program have also reviewed the project area and determined that there are no publicly funded conservation lands in the vicinity of the proposed work. There are two known remediation sites within 1000' of the project area and coordination is underway to determine if there are concerns for encountering contamination during construction associated with these sites. There are no known PFAS sites within 4000' of the project area. The project will generate excess Limited Reuse Soil which will be managed appropriately. Invasive species were identified and delineated, both Type I and Type II species are present and the project will require an Invasive Species Management Plan. The proposed roadway widening will result in approximately 8,500 square feet of increased impervious surface area, however, no treatment is proposed for this project as it is intended to be accounted for in the proposed treatment for the Sutton 42419 project located immediately south of this Sutton-New London 40511 project area. The project is located in the Protected Shoreland of Lions Brook Dam ponded area and will be permitted appropriately if necessary.

Regarding mitigation, Sutton-New London 40511 is anticipated to be a Major Impact Project. Impacts to jurisdictional areas are not yet finalized but are anticipated to include approximately 11,800 sf of permanent wetland impacts, which would require mitigation as it is over the 10,000 sf threshold. A small amount of these impacts are due to the fill in the existing ditch line holding a palustrine forested wetland associated with roadway widening at Exit 11, which will be reconstructed at a higher elevation. The Department requested that the impacts be considered self-mitigating at a 1:1 ratio due to the proposed reconstruction, similar to when riverine systems in ditch lines are reconstructed and considered self-mitigating. The project is also estimated to result in approximately 410 lf of permanent stream impact, which is over the 200 lf threshold and would therefore require mitigation. The ARM calculator will be used to determine the appropriate amount of mitigation and this will be confirmed via email with NHDES.

Karl Benedict, NHDES Wetlands Bureau, suggested that RRMRs be submitted first so that if any are rejected for some reason, those locations could be included in the SDF application. K. Benedict commented that the typical outlet protection detail for addressing perches should be customized to each location and suggested using contours from LIDAR since survey is not typically acquired for this kind of project. C. Spetelunas confirmed that this is possible. K. Benedict stated that Stream Crossing Forms 904.04 and 904.08 should be used for the Tier 1 locations and that 904.10 should be used for the Lion Brook (Tier 3) location. K. Benedict asked if the structure at the inlet of Lion Brook is a dam and Peter Steckler, The Nature Conservancy, replied that it is and the ponded area is used for recreational purposes. K. Benedict indicated that the Department should coordinate with the NHDES Dam Bureau to determine if any special considerations for the design/construction of the project area needed. K. Benedict requested that the Department investigate and address, if possible, the reason for erosion at some of the perched locations in an effort to prevent continued issues at these pipes.

Lori Sommer, NHDES Wetlands Bureau, indicated that tree clearing in forested wetlands, even without grubbing, needs to be assessed for forest conversion according to the USACOE guidelines and factored into the mitigation calculation appropriately. L. Sommer also explained that the allowance for the reconstruction of the ditch lines to be considered self-mitigating on a 1:1 ratio is applicable only to streams and not to palustrine wetlands. Alternatively, the Department can propose recreation of the disturbed wetlands to off-set mitigation for those impacts at a 1:1.5 ratio, however, this strategy would require some monitoring commitments to ensure reestablishment of the ditch line wetlands post-construction. L. Sommer agreed that since permanent stream impacts exceed the 200 lf threshold, mitigation must be paid for all permanent stream impacts on the project including those proposed for outlet protection and perch correction. M. Dube stated that the NHDES ARM calculator would be used to quantify mitigation and L. Sommer agreed that follow up email coordination with the final payments is acceptable.

Amy Lamb, NHDNCR NHB, confirmed that there are no records of protected species in the project area and clarified that the Sutton-New London 40511 project is associated with NHB20-3497. Carol Henderson, NHFG, confirmed that there are no concerns but reiterated that appropriate consultation with USFWS for impacts to NLEB will be required. Mike Hicks, USACOE, requested additional coordination regarding the tree clearing as not all clearing is considered forest conversion according to USACOE and may not require mitigation. Jean Brochi, EPA, did not have any additional comments. Peter Steckler, The Nature Conservancy, questioned whether the dam structure associated with the Chadwick Meadows Wildlife area at the Lions Brook inlet is necessary and if the Department could remove it to improve the crossing as mitigation. M. Dube will follow up with Carol Henderson regarding the property, as it is managed by NHFG.

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

Manchester, #29811 (X-A004(311))

Peter Walker (VHB) introduced the South Manchester Rail Trail project, which involves construction of a new 1.0-mile long segment of multiuse trail from Gold Street to Perimeter Road in Manchester. The intent of the project is to develop a continuous bike and pedestrian facility that will safely accommodate all non-motorized users, beginning at Perimeter Road to the south and progressing north to the southern end of the existing paved trail north of Gold Street. Stream impacts would occur at two locations: an unnamed perennial stream where an historic culvert would be reconstructed and at Cohas Brook, where a historic trestle bridge would be rehabilitated, including replacement of a historic stone abutment with a rip-rap slope.

P. Walker described the historic culvert location at the unnamed perennial stream, the extent of the washout/erosion, and the proposed rehabilitation. He also identified the provisional permanent bed and bank impacts to the unnamed perennial stream and flow diversion over the proposed trail alignment. (See attached slides.)

Greg Bakos (VHB) described the existing conditions of the trestle bridge and abutments, particularly the northern abutment pre- and post-failure. He explained that a deposit of debris in the river probably contributed to the stream flow diverting to the abutment, presumably during the 2006 Mother's Day storm. He discussed the sand bar buildup along the southern abutment that we may propose to remove it to help restore the streambed and prevent diversion of stream flow to the north abutment.

P. Walker presented a cross section view of the trestle bridge, including the installation of rip-rap along the northern bank since the restoration of the granite block retaining wall is not feasible. These impacts have been reviewed by NHDHR under Section 106. He also discussed the historic versus existing ground configuration to highlight the extent of erosion along the northern embankment. Cofferdams would be used on both sides to contain the work areas. Riprap along the southern bank would match the existing grade. He discussed the provisional permanent bed and bank impacts to the Cohas Brook.

Coordination on potential rare species impacts is on-going, including the bald eagle, banded sunfish, Blanding's turtle, and peregrine falcon identified on the Natural Heritage Bureau (NHB) DataCheck Report. The US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) report identified no species or critical habitats within the project vicinity. Section 106 coordination is complete and resulted in an Adverse Effect Memo (executed on 4/17/20) and a Memorandum of Agreement (executed on 8/20/20).

Karl Benedict (NHDES) asked if the erosion at the unnamed perennial stream is being addressed relative to overall site drainage. P. Walker believes the erosion is the result of a flood condition which we plan to stabilize with riprap slopes. K. Benedict recommended creating soil sections and partially vegetate the slopes for both streams to reduce the extent of proposed riprap and asked if there have been any considerations for debris removal in the Cohas Brook. If there is debris removal, another form of water diversion would be required, and the project would be classified as a major impact. He also asked whether the design could incorporate a shelf for terrestrial wildlife passage along the riprap for Cohas Brook.

Lori Sommer (NHDES) inquired about the extent of slope work along the Cohas Brook, asking if it will extend outside of the footprint of the existing abutment wall. If so, the additional length of rip-rap beyond the current wall location would require mitigation. P. Walker stated that the intent of the project is to restore/reconstruct the historic grade - which would extend into the current stream channel - the current scour and unstable condition at the base of the wall requires extension of the riprap into the channel. The riprap will bring the existing ground line closer to the historic line. The proposed limit of rip-rap ties into the upstream and downstream areas which shows that we are restoring a substantial bank failure rather than filling into the stream channel. The purpose of the riprap is to preserve the historic infrastructure. He also mentioned the mapped floodplain wetland priority resource area (PRA) located downstream of the bridge, is outside the proposed limits of disturbance. L. Sommer added that the identified species on the NHB report and their habitat may also constitute PRAs, which would also trigger mitigation. P. Walker stated that coordination with the NH Fish and Game Department regarding the identified species will commence soon. L. Sommer clarified that no mitigation would be required for the riprap that is located in the area of the bank that previously existed. However, the portion of riprap that goes beyond that area farther into the channel may require mitigation for the linear impacts.

Carol Henderson (NHF&G) suggested that we have continued conversations with Kim Tuttle. NHF&G typically refers to Chris Martin (NH Audubon) during construction for the bald eagle and peregrine falcon. She also mentioned that Kim may have some concerns about the new paved trail relative to the Blanding's turtle. C. Henderson asked if tiering of the bank for the wildlife crossing would be possible. P. Walker responded that the design team could investigate developing a bench or use vegetation to establish a wildlife crossing.

Amy Lamb (NHB) inquired further about the potential opportunity for a more terraced embankment to have a more naturalized and partially vegetated embankment. She had no concerns for plants or exemplary natural communities but recommended the use of native vegetation wherever possible.

Mike Hicks (USACE) noted that Cohas Brook is Essential Fish Habitat. He suggested we do some research and he could assist with the submission of forms to the National Marine Fisheries Service, if needed. He confirmed that the USFWS IPaC report did not identify any species. He requested to coordinate with VHB to expedite the process and give Mike Johnson from NOAA the information he needs.

Peter Steckler (Natural Conservancy) reiterated that we should investigate terracing options along the proposed rip-rap embankment. He suggested that we also consider mulching in the bank and staking it down with fabric and applying a native seed mix, and suggested we look at project in Vermont for examples of this approach.

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

Candia-Raymond, #43221 (X-A0005(058))

Jason Tremblay presented this initial review of bridge preservation work to extend the useful life of the decks of two bridges in Candia and one in Raymond along NH Route 27. All three bridges were constructed in the 1930's and widened in the 1970's.

J. Tremblay individually summarized, in a power point presentation, the anticipated work at each bridge, which will consist of the removal and replacement of bridge pavement and membrane, partial and full depth deck repairs, and installation of crack control joints, as required. No repairs to the abutments or wing walls are required at all three bridges. Marc Laurin briefly identified the environmental resources associated with each bridge. He stated that he noted that the bridges were directly adjacent to wetlands, and that formal wetland delineations will be conducted this spring.

For all three bridges, the NHNHB database search has identified Threatened and Special Concern turtle species, northern black racer, bridle shiner and American eel vertebrates species. Coordination with Fish and Game has occurred and preliminary measures to address the potential impacts have been provided. Hollow Joe-Pye weed and Red threeawn plant species may occur within the project area. The FWS IPaC database identified the federally threatened Northern Long-eared Bat and Small Whorled Pogonia. Coordination with FWS concluded that there would be no concern with the Small Whorled Pogonia. Several invasive plant species are located within the project area.

The NH 27 bridge over North Branch River (Candia #184-102) - J. Tremblay identified that access would be from the upstream side (northeast quadrant) from within DOT ROW of the former bridge alignment. It is anticipated that no impacts within the streambeds will occur as work on the underside of the bridges could be conducted from platforms attached to the abutments. M. Laurin identified that the North Branch River is a Tier 3 stream and an outstanding resource water watershed. It is a Designated River, and

Forested and Scrub-Shrub wetlands are adjacent to the crossing. The bridge is within its 100 year floodplain.

The NH 27 over Beane Brook (Candia #189-103) - J. Tremblay identified that access would be from the downstream side (southwest corner) from within DOT ROW. It is anticipated that no impacts within the streambeds will occur as work on the underside of the bridges could be conducted from platforms attached to the abutments. M. Laurin identified that Bean Brook is a Tier 3 stream as it is within the 100 year floodplain of the North Branch and in its outstanding resource water watershed. It is a tributary to the North Branch a Designated River, and Emergent and Scrub-Shrub wetlands are adjacent to the crossing.

The NH 27 over Lamprey River (Raymond #083-151). J. Tremblay identified that access would be over the wings on the corners of the bridge within DOT ROW. It is anticipated that no impacts within the streambeds will occur as work on the underside of the bridges could be conducted from a barge secured to the bridge piers. M. Laurin identified that the Lamprey River is a Tier 3 stream. It is a Designated River, and Forested and Emergent wetlands are adjacent to the crossing. The bridge is within a designated floodway and 100 year floodplain.

Karl Benedict suggested that DOT investigate if each individual bridge would qualify for a PBN for repairs within an existing Tier 3 crossing under Env-Wt 904.09. He stated that restoration of the access points would be required. Further coordination with DES would be required to determine if access impacts would put the project impacts over the minimum threshold. He stated that one permit could be issued if PBNs are not appropriate.

Lori Sommer confirmed that if the impacts are temporary, mitigation would not be required.

Carol Henderson stated that when the impacts are better defined, further coordination with Fish & Game would be required on how to minimize potential impacts to the species.

Amy Lamb stated that there is likely no concern with the Red threeawn as this plant was identified in the adjacent utility corridor and if there are no impacts in that area the plant would likely not be present in the vicinity of the bridges. She suggested that during the wetland delineation effort the presence of Hollow Joe-Pye weed be investigated and that it should be identifiable even now before the growing season as its stems are persistent through the winter.

Mike Hicks inquired about the Wild and Scenic Designation status of the Lamprey River. He was informed that the designation does not extend to the project area. Mike also reminded DOT that the Lamprey River is EFH habitat and coordination with NOAA NMFS is required.

There were no further concerns from the other agencies.

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

Portsmouth-Kittery, #15731 (A000(909))

Christine Perron provided an overview of the permitting considerations for re-setting the upstream cable at the Sarah Mildred Long (SML) Bridge. The SML bridge carries US Route 1 Bypass over the Piscataqua River between Portsmouth NH and Kittery ME. The bridge was recently replaced, and a Google Earth image was provided, showing the location of the new bridge and the former alignment over the river. The lift span is located in the center of the river, with the state line running through the middle. This stretch of

the river is within a federal navigation channel that is managed by the Army Corps. The lift span has two submarine power cables running between the two towers roughly parallel to the bridge. Following the placement of the cables, concrete block mats were laid over them in the middle of the channel to add further protection.

The bridge replacement project was initiated about 10 years ago. Endangered Species Act and EFH consultations were completed 2012-2013, with an agreement to complete in-water work between Nov 15 and March 15. The project required a number of other permits and approvals, including an Army Corps Individual Permit (NAE-2013-01623), NHDES Major Impact Dredge & Fill Permit (2014-01053), and Individual Water Quality Certificate (2014-404I-001). Construction of the new bridge took place over several years and the new bridge was open to traffic in the Spring of 2018.

Because the project is within a federal navigation channel, the project team had to work closely with the navigation branch of the Army Corps. As part of that coordination, the Corps required as a condition of the IP that the submarine cables be buried at least 42 feet below MLLW. It was discovered following construction of the cables that the contractor did not place the cables at the appropriate depth. Sonar scans showed part of the upstream cable about 3.5 feet higher than required. The Contractor, in fact, just placed the cables on top of the streambed without burying them. Since this issue was discovered, MaineDOT has been coordinating with the Corps. The Corps has confirmed the need for resetting the upstream cable to the required depth in order to protect the cable from anchor drag from large ships in the channel. Concurrently, MaineDOT was also engaged in legal disputes with the Contractor. Ultimately, a legal settlement was reached and included the requirement for the Contractor to address the upstream cable.

To address the cable depth of the upstream cable, the following construction sequence is anticipated:

- 1) Remove the existing cable mats (either set aside or placed on barge)
- 2) Set aside the entire length of the existing upstream cable (+/- 300 feet)
- 3) Excavate approximately 125 feet of river bottom (75 feet in NH)
 - 'long reach' excavator to reach from the barge to the river bottom
 - underwater hand jetting may also be used
 - excavated material will be placed to the side on the riverbed.
- 4) Re-set cable and re-install concrete mats.

The initial plan was to require the contractor to complete the work as soon as possible (June-July 2021); however, due to concerns regarding fisheries and to accommodate permitting needs, starting work in early August is now proposed.

Factors related to turbidity were summarized. The excavation will be carried out sequentially over a period of 30-60 days within short windows of time within each tide cycle. Due to the high velocities in the river, which average 1.7 to 2 ft/sec, but are often much higher, the substrate of the riverbed is primarily gravel and cobble. For consultation purposes, it has been assumed that sediment plumes could potentially extend up to 2,400 feet upstream or downstream but likely no more than 300 feet in width due to small work area. The upstream and downstream distances are based on the standard distances used for Section 7 effect analysis for mechanical dredging. However, the Army Corps Piscataqua River turning basin project assumed that the majority of the sand and gravel to be dredged for that project would settle out within 1,000 feet of dredging. That assumption was based on prior monitoring conducted during Boston Harbor and other dredging operations while dredging silty material, which showed that the majority of resuspended material settled within a 1,000 feet from the dredge. Given the coarse substrate at the SML and the fact that much less material will be moved for the cable, it is reasonable to assume that any turbidity plume would not extend as much as 2,400 feet. The currents in this location make turbidity curtains ineffective and cofferdams are not practicable given the depth of water, cost, and presence within the navigation channel.

Mapped eelgrass beds are located 2,000 feet upstream from the bridge and 5,700' downstream. It is not anticipated that a sediment plume from the cable work would reach these locations.

As part of the agreement with the Contractor, MaineDOT will be securing all the environmental approvals and permits required to address the cable.

Consultation with NOAA has been reinitiated and is summarized below:

Endangered Species Act

- Atlantic sturgeon and shortnose sturgeon, Atlantic sturgeon critical habitat
- NOAA concurred with the MaineDOT/FHWA's Not Likely to Adversely Affect determination, which assumed a work window between August 1- March 15. This work avoids the TOY when sturgeon are more likely to be present in the action area.

Essential Fish Habitat

- Updated EFH Assessment submitted to allow for a work window between August 1 – March 15
- Mike Johnson provided one conservation recommendation, which was to complete work as close to the normal dredging work window as possible (Nov 15 – March 15) if any flexibility in scheduling was possible.

Section 404/10 Individual Permit: MaineDOT confirmed with the Army Corps that work could be done under the existing permit. An amendment will be required to allow for a change in the in-water work window. MaineDOT is coordinating with the Corps to get the amendment.

Water Quality Certificate: The project team met with Gregg Comstock from NHDES on March 11, 2021. Gregg stated that he would call Mike Hicks to determine the appropriate next steps but was hopeful that a new WQC would not be required.

NHDES Dredge & Fill Permit: The original permit for the bridge replacement expired in 2019. Two meetings have been held with the DES Wetlands Bureau (February 25, 2021 and March 11, 2021) and it has been confirmed that a new permit would be required for the proposed cable work and that the permit would be classified as major. A request for a rule waiver would be required to allow the proposed in-water work window, since Env-Wt 307.10(i) states that no dredging can occur between Nov 15 and Mar 15. Coordination with NH Fish & Game is underway to determine if a rule waiver would be supported.

Proposed impacts would entail the following:

The total required excavation in NH: 75 feet (perpendicular to the flow of water) x 10 feet wide = **750 SF**
 Additional 40 feet construction disturbance (removal of concrete mats and cable) x 10 feet wide = **400 SF**

All proposed work will be within the previously permitted impact area shown as Locations CCC and DDD in the 2014 wetland impact plans. No new permanent impacts are proposed. The proposed work will result in a total of 1,150 SF of impact. The 2014 impact plan estimated that placement of the cable and mats would require 3,088 SF of impact.

The next steps for this project entail continued coordination with NH Fish & Game, Army Corps, and Gregg Comstock. The intent is to submit the Dredge & Fill application to NHDES by April 2nd to allow enough time to obtain the permit and receive approval of the permit by the NH Governor & Council.

Carol Henderson (NH Fish & Game) asked if NOAA noted specific concerns with allowing the work to begin in August. If the work would require only 30-60 days to complete, Carol asked why it couldn't be scheduled to begin within the preferred in-water work window. Eric Ham noted that Mike Johnson asked this question as well during EFH consultation. MaineDOT is anxious to resolve the issue with the contractor as quickly as possible due to the legal settlement. Also, the work is challenging to complete, with the need for a barge and divers, and these logistics are especially challenging if winter conditions exist. It is also preferred to have a little room for error in scheduling, so a longer potential work window is preferred as a contingency.

Mike Dionne (NH Fish & Game) noted that other anadromous species are present earlier in the spring, so moving the work to August and avoiding the June-July window helps avoid impacts to those species.

Karl Benedict (NHDES) supported the ongoing coordination regarding water quality and in-water work window. He noted that documentation of coordination with NOAA and NHFG should be included with the request for a rule waiver.

Dave Price (NHDES) noted that, because the project involves work in public waters, the permit would require approval by the NH Governor & Council, so the timing of that approval should be taken into account. He also noted that coordination with the Pease Development Authority Division of Ports and Harbor should take place as a requirement of the Dredge & Fill permit in tidal waters.

Lori Sommer (NHDES) noted that the impacts required for placement of the cable in the 2014 permit required mitigation. She recommended that the 2014 impacts and mitigation paid be compared with the impacts now proposed to determine if additional mitigation is required. *Subsequent to the meeting, additional information was provided to Lori and she confirmed that no additional mitigation was required.*

Chris Williams (NH Coastal Program) stated that a Coastal Zone consistency determination was required in 2014 due to the need for an Individual Permit. Since the proposed work will be authorized under the same Individual Permit, he does not anticipate the need for a new consistency determination. However, he asked that he be copied on information provided to the Army Corps for the permit amendment.

Mike Hicks commented that the US Coast Guard needs to be kept closely involved in the proposed work and schedule. He noted that MaineDOT and the Corps have been wrestling with the cable issue for over a year and a major meeting was scheduled for this Friday (March 19th) to discuss the work. This is a challenging site and the cable creates a safety concern. He confirmed that a permit amendment would be required due to the change in in-water work window. Historic resources were cleared as part of the original permit coordination. He did not see any need for a new Water Quality Certificate and would discuss with Gregg Comstock at NHDES. He further noted that there is no viable eelgrass habitat in the work area. He noted that the Corps permit allows for maintenance work, and this is essentially maintenance work.

Jeff Folsom (MaineDOT) added that the issue with the cables has been discussed since 2018. The meeting on Friday with the Corps was primarily to discuss the concrete mats, which must be addressed separate from the cable elevation concern.

Amy Lamb (NHB) commented that the reasoning regarding turbidity and the unlikelihood that sediment would impact existing eelgrass beds made sense but asked if that reasoning was based on any engineering or modeling. C. Perron said that no modeling was completed but water quality monitoring reports from the bridge replacement project were reviewed and there had been minimal concerns with water quality at that time.

Jean Brochi (EPA) asked for clarification on the proposed impacts and 2014 impacts. C. Perron explained that the proposed impacts actually reduce the area of permanent impact as compared with the impacts assumed in 2014. J. Brochi ask for the dimensions of the concrete mats, and if they are moving. J. Folsom responded that the mats consist of 2'x2' blocks that lock together, creating a 8' wide x 300' long mat. Some portions are getting pushed around on the riverbed and some have moved off the cable. The concern is that they will continue to move. A permanent solution is still being worked out.

J. Brochi asked where the dredged material would be taken. C. Perron responded that the material would be cast aside on the riverbed. J. Folsom further clarified that the work needed to achieve the required cable elevation was more consistent with regrading rather than excavating a hole in the riverbed.

Pete Steckler (TNC) asked if any turbidity controls were in place for the original cable installation. Eric Ham replied that no turbidity controls were in place at that time. The cables were just laid on the riverbed.

This project has been previously discussed at the 6/19/2013, 9/18/2013, 1/15/2014, 3/19/2014, 4/18/2018, 6/20/2018, and 9/19/2018 Monthly Natural Resource Agency Coordination Meetings.

Sutton; State No. 41429

Mitigation Report

The proposed project was discussed at the March 2020 Natural Resource Agency Coordination Meeting (NRACM). At the time of the meeting it was anticipated that permanent impacts to delineated wetland areas would exceed 10,000 square feet and would require mitigation. This has been confirmed now that final impacts are determined. It was also anticipated that stream impacts would be less than the threshold of 200 linear feet of permanent impacts. This has also been confirmed, and the project will not include mitigation relative to stream impacts.

The permanent impacts that require permitting under the Standard Dredge and Fill Permit are due to repairs required to maintain or rehabilitate the existing drainage infrastructure. The work is designed to minimize impacts to jurisdictional wetlands to the maximum extent practicable, as discussed in the wetlands application documents. Proposed drainage work includes slip linings, sediment and debris accumulation at culvert inlets and outlets, addressing perched outlets, and repairing erosion at culvert outlets.

There are also several impact areas in jurisdictional wetlands due to selective tree clearing for the purpose of improving sight lines along the highway to improve safety for the traveling public. These locations will not require grubbing, therefore allowing the existing native vegetation to re-establish over time, and therefore are accounted as temporary impacts to jurisdictional wetlands. Mike Hicks, US Army Corps of Engineers (USACOE), reviewed the proposed clearing locations for the purpose of improving sight lines and determined that these impacts do not constitute forest conversion nor permanent impact according to the USACOE. As such, no mitigation for these areas is necessary. Email coordination on this topic is included with this narrative.

Finally, wetland impacts due to slope work associated with roadway widening and guardrail replacement that require fill in existing wetlands will also be permitted appropriately as permanent impact and are included in the mitigation calculation. It was discussed at the NRACM that it is possible to request exemption from mitigation for a portion of the roadway widening impacts in ditch line wetlands due to proposed reconstruction at a 1.5:1 ratio, however, the Department is not pursuing this option and the proposed mitigation calculation includes these permanent impacts within the impact totals used within the ARM in-lieu fee calculator.

As a result of the impacts associated with the activities described above, the Department is proposing to make a one time in-lieu wetland fee payment of \$109,316.58 for 26,069 SF of permanent palustrine wetlands impacts, to the NHDES Aquatic Resource Mitigation Fund.

**NHDES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION**
INSERT AMOUNTS IN YELLOW CELLS

1 Convert square feet of impact to acres:			
INSERT SQ FT OF IMPACT	Square feet of impact	26069.00	
		43560.00	
	Acres of impact =	0.5985	
2 Determine acreage of wetland construction:			
	Forested wetlands:	0.8977	
	Tidal wetlands:	1.7954	
	All other areas:	0.8977	
3 Wetland construction cost:			
	Forested wetlands:	\$86,784.63	
	Tidal Wetlands:	\$173,569.27	
	All other areas:	\$86,784.63	
4 Land acquisition cost (See land value table):			
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT. (Insert the amount do not copy and paste.)	Town land value:	4804	
	Forested wetlands:	\$4,312.52	
	Tidal wetlands:	\$8,625.03	
	All other areas:	\$4,312.52	
5 Construction + land costs:			
	Forested wetland:	\$91,097.15	
	Tidal wetlands:	\$182,194.30	
	All other areas:	\$91,097.15	
6 DES Administrative cost:			
	Forested wetlands:	\$18,219.43	
	Tidal wetlands:	\$36,438.86	
	All other areas:	\$18,219.43	
***** TOTAL ARM PAYMENT*****			
	Forested wetlands:	\$109,316.58	
	Tidal wetlands:	\$218,633.16	
	All other areas:	\$109,316.58	

Large, Sarah

From: Hicks, Michael C CIV USARMY CENAE (USA) <Michael.C.Hicks@usace.army.mil>
Sent: Monday, April 26, 2021 9:48 AM
To: Large, Sarah
Cc: Dube, Melilotus; OSullivan, Andrew
Subject: RE: Sutton 42419 and Sutton-New London 40511 Tree Clearing

Categories: Attention

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

Sarah,

Mitigation is not required for the tree clearing.

Thanks,
Mike

Michael Hicks, PM
USACE, REG DIV., BR. C
978-318-8157

-----Original Message-----

From: Large, Sarah <Sarah.E.Large@dot.nh.gov>
Sent: Friday, April 23, 2021 11:22 AM
To: Hicks, Michael C CIV USARMY CENAE (USA) <Michael.C.Hicks@usace.army.mil>
Cc: Dube, Melilotus <Melilotus.M.Dube@dot.nh.gov>; OSullivan, Andrew <Andrew.M.OSullivan@dot.nh.gov>
Subject: [Non-DoD Source] Sutton 42419 and Sutton-New London 40511 Tree Clearing

Hi Mike,

At the March Natural Resource Agency Meeting, NHDOT presented on Sutton 42419 and Sutton-New London 40511; 4R highway maintenance projects along the I-89 corridor from Sutton NH (MM 24.2) to New London (MM 31.7) which include work such as: pavement reclaim & replacement, guardrail replacement, tree clearing, signing upgrades & replacement, minor bridge work, rock scaling, drainage and culvert maintenance, repairs, and replacement. Proposed work within wetlands jurisdiction includes drainage culvert maintenance, repairs, and replacement as well as tree clearing. (Only tree clearing, NOT grubbing). One topic that came up during the meeting and specifically during mitigation coordination and conversations was if there was concern that the tree clearing within wetlands jurisdiction would create wetland conversion and if these impacts should be accounted for within the mitigation calculation. During the meeting we didn't have time to share and review the entire impact plan set to discuss each of the areas of tree clearing during the meeting, therefore we advised we would follow up on this topic after the meeting.

The design team went through a set of plans to identify and have highlighted all of the areas where tree clearing is proposed. I reviewed these plans sets and offer the following summary.

Large, Sarah

From: Large, Sarah
Sent: Friday, April 23, 2021 11:22 AM
To: 'Hicks, Michael C CIV USARMY CENAE (USA)'
Cc: Dube, Melilotus; OSullivan, Andrew
Subject: Sutton 42419 and Sutton-New London 40511 Tree Clearing

Categories: Attention

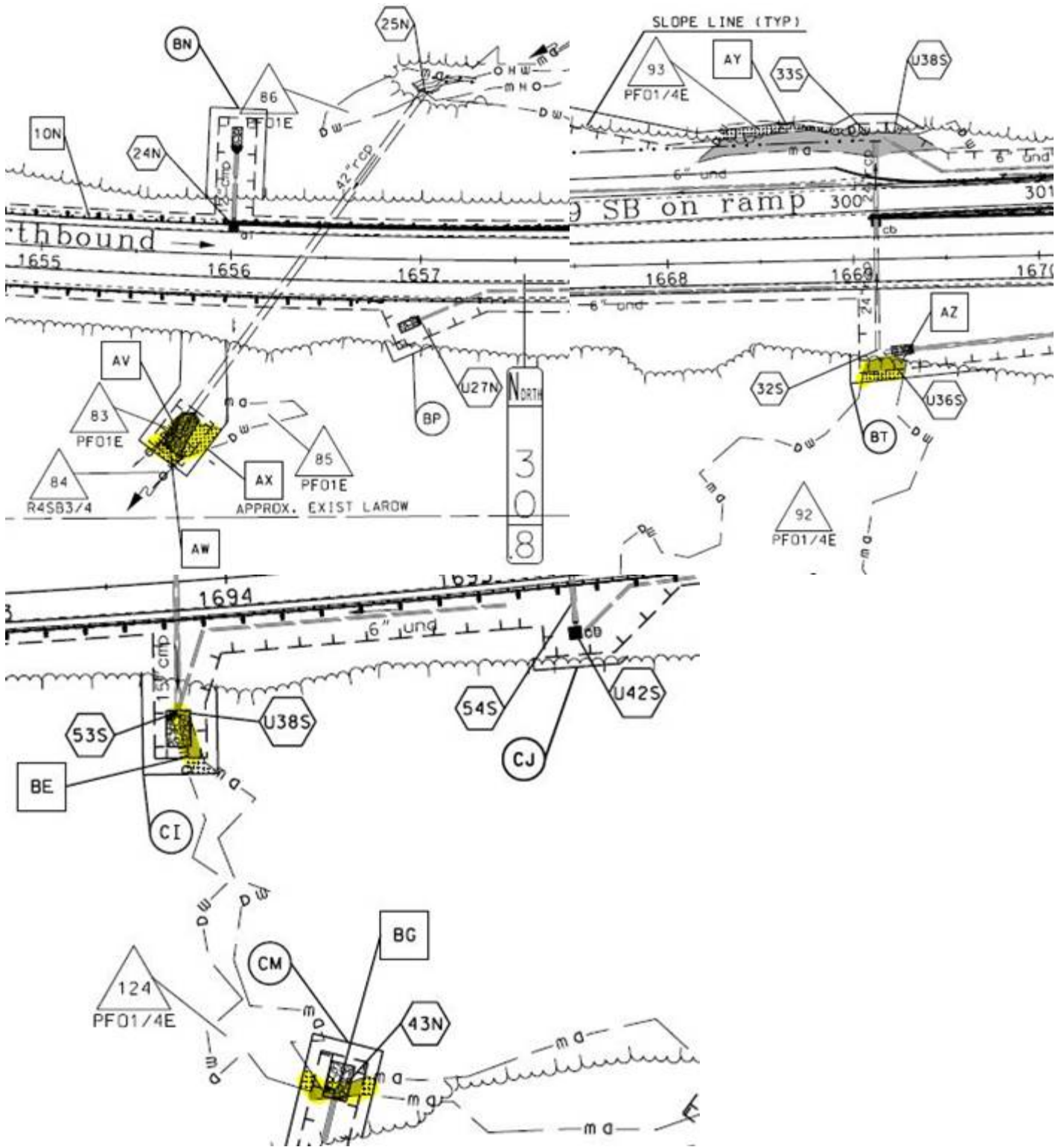
Hi Mike,

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The design team went through a set of plans to identify and have highlighted all of the areas where tree clearing is proposed. I reviewed these plans sets and offer the following summary.

The majority of the tree clearing locations are located at the inlet or outlet of a pipe in order to access the area to complete the drainage maintenance work; the clearing limits and temporary impacts associated with the tree clearing at these locations are small and have been minimized to the greatest extent. I don't view these areas of tree clearing around drainage structures as having the potential to convert the wetlands classification, the overall wetland classification and functions and values of the wetlands at these locations will remain the same.

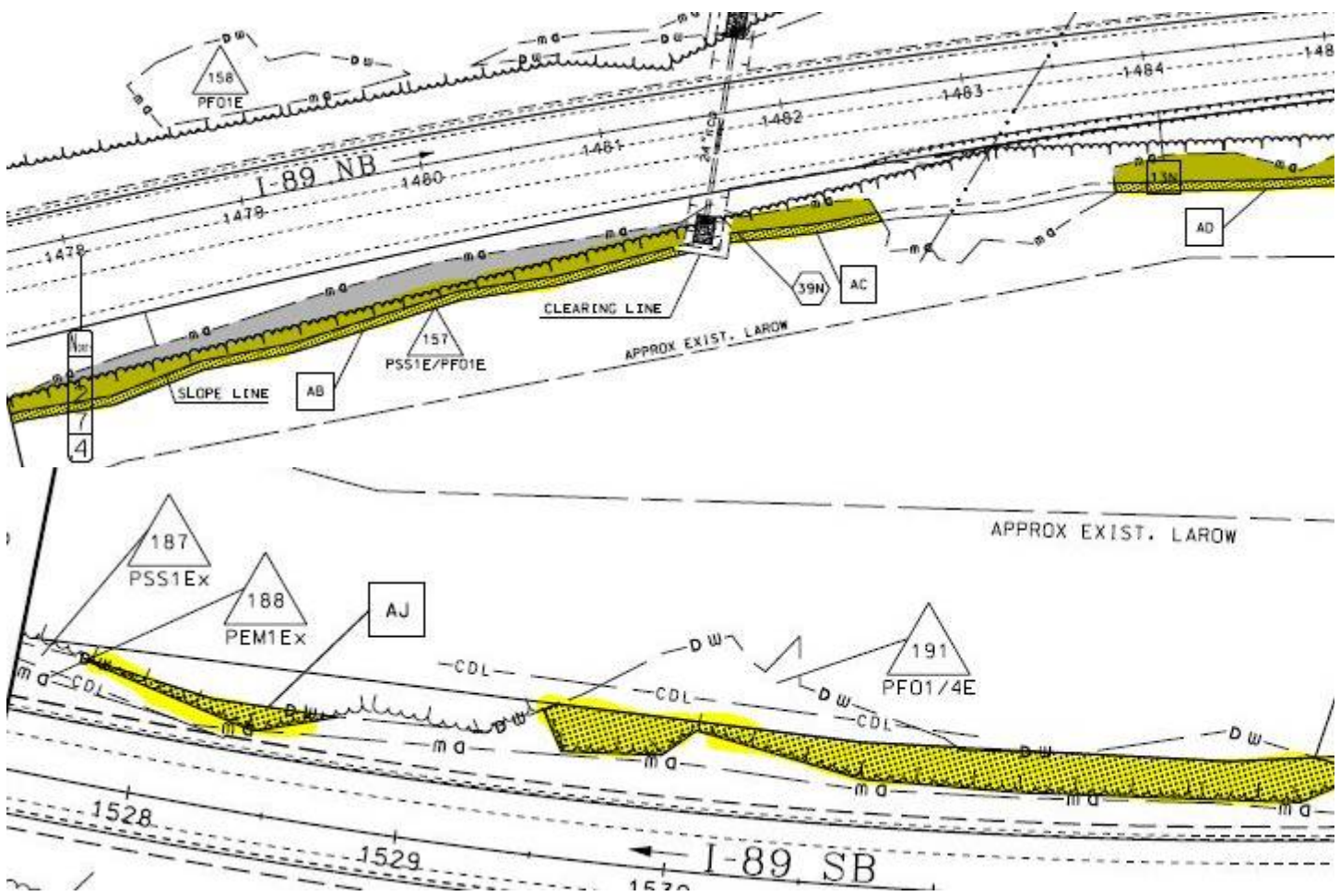
Examples of small tree clearing impact areas:



There are two areas within the Sutton 42419 project area where there are larger linear lengths of tree clearing (not grubbing). One area is a stretch of I-89 northbound that runs along a very large palustrine scrub-shrub wetland. The team is proposing to widen the slope along this length of highway and plans to complete some tree clearing along this impact area. [The slope impacts are appropriately accounted for as permanent impacts and the tree clearing is accounted for as temporary impacts.] Overall the tree clearing is a small area in comparison to the entire wetland complex; the entire wetland system will continue to remain the same wetland classification and the functions and values

of the wetland complex as a whole will not be changed due to the tree clearing. The second location is a scrub shrub ditch that runs along I-89 southbound. The ditch line alternates between emergent and scrub shrub which tells me that the ditch was very likely originally emergent and roadside woody vegetation were introduced over time and began to grow within the manmade ditch line. The functions and values of this wetland will remain the same.

Examples of longer and linear tree clearing impact areas:



I don't view any of these tree clearing locations triggering the need to be mitigated/ conversion concerns, but what are your thoughts Mike?

I will be out on vacation next week, so I have cc'ed Meli Dube, whom is the environmental manager for these projects. She advised me that she is able and willing to help coordinate on this topic while I am out. We are hopeful to receive your thoughts and comments within the next week/ week and a half if at all possible.

Thank you for your time and review of this information Mike. We greatly appreciate it.

Sarah Large
Wetlands Program Analyst
NH Department of Transportation
Bureau of Environment

Wetland System A

Wetland System A is a large wetland system that spans from approximately mile marker 24.2 to the drainage split near mile marker 28.2 (Sheets 1 through 19). The system is a series of wetlands fragmented by the NH DOT Interstate 89 highway corridor. The smaller wetlands within the system are located primarily within the highway median and on the southbound side of the roadway. These smaller wetland features drain to the east northeast and into the Stevens Brook wetland system which then drains generally to the southeast. For the purpose of this report SRE organized and grouped the wetlands by similarities in function and values and classification types. United States Army Corps of Engineers (USACE) data plots were USACE data plot forms, Highway Methodology Function and Value Forms and photo log is included at the end of this discussion for Wetland System A. SRE overlaid the wetland lines, Ordinary High Water (OHW) lines, Top of Bank (TOB) lines, data plot locations, wetland classifications and potential vernal pools on the sheets provided to SRE by NH DOT. For reference SRE has included an 8.5" x 11" of each wetland and corresponding sheet number at the end of each discussion. The full size 24" x 36" sheets are included at the end of the report.

Wetland A1

Wetland A1 is a high functioning large wetland associated with the Stevens Brook floodplain. Stevens Brook flows primarily from the north northwest to the south east near the outside of the northbound lanes. This wetland system meanders in and out of the NH DOT ROW along northeast side of the NB lanes between approximate station numbers 1316 and 1390 (Sheets 1 through 7). From NB station numbers 1316 to 1321 (Sheets 1 & 2) the wetland is classified as PFO1E with Stevens Brook being classified as R3UB1/2 and one intermittent stream entering the wetland being classified as R4SB2/3. At NB station number 1327 (Sheet 2) Wetland A1 is R4SB3 and is an intermittent stream entering the Stevens Brook wetland system. From NB station numbers 1329 and 1332 (Sheet 2) Wetland A1 is classified as PFO1E, with Stevens Brook being classified as R3UB1/2 and one intermittent stream entering the wetland classified as R4SB3. From station numbers 1334 to 1337 (Sheet 3) Wetland A1 is classified as PFO1/4E near the edge of the ROW with one PSS1E wetland near NB station number 1337 which is associated with an intermittent (R4SB3) that drains into the wetland at that location. From station numbers 1340 to 1353 (Sheets 3 & 4) Wetland A1 is classified as PFO1E with part of Stevens Brook (R3UB1/2) entering the ROW between NB station numbers 1342 and 1344. Additionally one intermittent enters the wetland near NB station number 1352 (R4SB4). Between NB station numbers 1355 and 1356 a small PEM1Ex/PFO1E wetland enters the wetland from a highway under drain (Sheet 4). From NB station numbers 1364 to 1368 (Sheet 5) Wetland A1 is classified as PFO1E with one (R4SB4) intermittent stream entering the wetland. From NB station numbers 1369 to 1375 Wetland A1 is classified as PFO1/4E and is a broad forested wetland associated with the floodplain of Stevens Brook. From NB station numbers 1381 to 1390 (Sheets 6 & 7) Wetland A1 is classified as PFO1/4E within the project area and there is one upper perennial stream (R3SB3/4) that enters the wetland near NB station 1386.

Wetland ID	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland A1	STA. 1316 - 1321NB	PFO1E, R4SB2/3, R3UB1/2	Sheets 1 & 2
Wetland A1	STA. 1327 - 1332NB	PFO1E, R4SB3, R3UB1/2	Sheet 2
Wetland A1	STA. 1334 - 1337NB	PFO1/4E, PSS1E, R4SB3	Sheet 3
Wetland A1	STA. 1340 - 1353NB	PFO1E, R3UB1/2, R4SB4	Sheets 3 & 4

Wetland A1	STA. 1355 - 1357NB	PFO1E, PEM1Ex	Sheet 4
Wetland A1	STA. 1364 - 1368NB	PFO1E, R4SB4	Sheet 5
Wetland A1	STA. 1369 - 1375NB	PFO1/4E	Sheets 5 & 6
Wetland A1	STA. 1381 - 1390NB	PFO1/4E, R3SB3/4	Sheets 6 & 7

Dominant vegetation throughout the wetland is characterized by *Acer rubrum* (red maple) with an understory/herbaceous layer of *Vaccinium corymbosum* (highbush blueberry), *Glyceria melicaria* (melic manna grass), *Osmunda spectabilis* (royal fern), *Osmundastrum cinnamomeum* (cinnamon fern) and *Onoclea sensibilis* (sensitive fern). Soils throughout the wetland are general poorly drained soils with inclusions of very poorly drained soils. The NRCS soil maps indicate that the soils within Wetland A1 are sufficient for groundwater recharge. Hydrology within Wetland A1 is primarily driven by hillside seeps, intermittent streams entering the wetland and flooding events that occur along Stevens Brook. In addition to Stevens Brook and associated floodplain the wetland also receives surface water from wetlands located to the southeast of the highway. Hydrology received from these wetlands is conveyed into Wetland A1 via numerous culverts as shown on the included plan sheets. Wetland A1 is dominated Palustrine Forested Broad-Leaved Deciduous Seasonally Flooded/Saturated (PFO1E) with a mix of Palustrine Forested Deciduous Broad-Leaved/Needle-Leaved Evergreen Seasonally Flooded/Saturated (PFO1/4E) in places. Additionally, there are some areas classified as Palustrine Scrub-Shrub Broad-Leaved Deciduous Evergreen Seasonally Flooded/Saturated (PSS1E) and Palustrine Emergent Persistent Seasonally Flooded/Saturated Excavated (PEM1Ex) associated with this wetland complex; however, these areas located within the NH DOT ROW are confined to areas associated with manmade swales and culvert outlets. Multiple small intermittent streams drain into the wetland from the west/southwest. These intermittent streams are classified as Riverine Intermittent Streambed with variable substrates ranging from Rubble (2), Cobble-Gravel (3) and Sand (4). One stream near NB Station number 1386 (Sheet 7) is classified as Riverine Upper Perennial Streambed Coble-Gravel/Sand (R3SB3/4). Sections of Stevens Brook where it enters the project area are classified as Riverine Upper Perennial Unconsolidated Bottom Cobble-Gravel/Sand (R3UB1/2). Details and locations of the classifications are noted on the included plan sheets.

Wetland Function and Values for Wetland A1:

Groundwater Recharge/Discharge: The forested wetlands are underlain by stratified drift and serve as groundwater recharge areas during high flow events. Additionally, Stevens Brook and the associated intermittent/perennial streams are functioning as discharge areas.

Floodflow Alteration: This broad wetland borders Stevens Brook and contains dense vegetation and relatively flat topography capable of altering floodflow during high flow periods.

Fish and Shellfish Habitat: Stevens Brook is known to be stocked with eastern brook trout and the beaver impoundment near the northern portion of the wetland is capable of supporting a large fish population.

Sediment/Toxicant Retention: The uplands surrounding the wetland are forested. The only known sources of sediments/toxicants is winter road treatment.

Nutrient Removal: Plant diversity and density within the wetland is capable of utilizing nutrients. No signs of nutrient flushing observed; however, flushing of nutrients is presumed to be occurring.

Production Export: A moderate level of flowering plants were observed. Higher trophic level species (i.e. deer) are utilizing the wetland. Old beaver activity was observed near the northern portion of the wetland.

Sediment/Shoreline Stabilization: Dense vegetation grows within the wetland adjacent to Stevens Brook and provides shoreline stabilization. Dense wetland vegetation also functions in sediment detention and retention.

Wildlife Habitat: Broad forested wetland bordering Stevens Brooks provides habitat for higher trophic level species. Multiple game trails were observed as well as several deer carcasses. Stevens Brook is known to be stocked with eastern brook trout and beaver activity within the wetland has created areas of ponded water suitable for waterfowl.

Recreation: No public access.

Educational/Scientific Value: Wetland type is common for the region of the state and no public access is available.

Uniqueness/Heritage: No historical structures observed. Wetland type is typical for the region.

Visual Quality/Aesthetics: No public access. Views are limited to only highway traffic.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species/habitat for this wetland during site work.

Wetland Function-Value Evaluation Form













Total area of wetland ~3.72ac Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Roadway Distance to nearest roadway or other development ~30 feet

Dominant wetland systems present PROSS/IE, R3UBR/2, R3SSB/4, PE01/4E, PEMEX Contiguous undeveloped buffer zone present No

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

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

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	Y	1,2,3,4,5,7,12,15	Y	Broad wetland within the Stevens Brook watershed. Organic soils are underlain by stratified drift.
 Floodflow Alteration	Y	1,2,3,5,6,8,9,10,11,13,14,17,18	Y	Broad wetland within the Stevens Brook watershed containing dense resilient vegetation. Wetland is capable of storing a large volume of water during high flow periods.
 Fish and Shellfish Habitat	Y	1,2,4,7,8,10,12,13,14,16,17	Y	Stevens Brook is known to be stocked with eastern brook trout. Beaver activity along the northern portion of the system has impounded water capable of supporting a larger quantity of fish species.
 Sediment/Toxicant Retention	Y	4,5,6,7,8,9,10,13,14	N	Surrounding uplands are primarily forested. No know sources of excess sediments exist other than winter roadway salts and sand.
 Nutrient Removal	Y	1,3,5,7,8,9,10,11,12,14	Y	Broad wetland with diverse plant community and structure is sufficient in size to utilize nutrients. No signs of nutrient flushing was observed.
 Production Export	Y	1,2,4,5,6,7,8,10,12,13	Y	Wetland contains a moderately dense flowering shrub plant community and food sources for higher trophic level species. Large deer population within the area.
 Sediment/Shoreline Stabilization	Y	2,6,7,9,12,14	Y	Broad wetland adjacent to Stevens Brook has dense resilient vegetation capable of stabilizing the stream bank during high flow periods.
 Wildlife Habitat	Y	5,6,7,8,9,10,11,13,14,15,17,18,19	Y	Plant diversity and community structure provides wildlife food sources and shelter. Several game trails and deer carcasses were observed.
 Recreation	N	6	N	No public access from NH DOT ROW.
 Educational/Scientific Value	N		N	No public access from NH DOT ROW. Wetland type is common for the region of the state.
 Uniqueness/Heritage	N	4,7,18,22	N	Wetland type is common for the region of the state. No old foundations or signs of historical significance was observed.
 Visual Quality/Aesthetics	N	6,7,11	N	No public access from the NH DOT ROW. Visual quality from the highway is low.
ES Endangered Species Habitat	N		N	No endanger species or habitat was observed during the site visit.
Other				Note that the total area of the wetland is an approximate for only the area within the NH DOT ROW.

Wetland ID: A1

Latitude _____ Longitude _____

Prepared by: CME/MSW Date 12/22/20

Wetland Impact: _____ Area _____

Wetland Type: _____

Evaluation based on:
 Office Field
 Corps manual wetland delineation completed? Y X N

Notes:

* Refer to backup list of numbered considerations.

Wetlands A2, A4, A10, A11, A20, A23, A29, A36, A41, A47 and A56:

SRE determined wetlands A2, A4, A10, A11, A20, A23, A29, A36, A41, A47 and A56 all have similar characteristics in plant communities/stratum, soils, hydrological influences and function and values. The following discussion therefore encompasses the above referenced wetlands.

Wetland A2 is classified as PFO1/4E, PSS1E, is located on the southbound side between station numbers 1315 and 1320 (Sheet 1) and drains via a through culvert into Wetland A1. Wetland A4 is classified as PFO1/4E, is located in the median between NB station numbers 1326 and 1328 (Sheet 2) and drains via a culvert into Wetland A1. Wetland A10 is classified as PFO1E& PSS1E, is located in the median between station numbers 1342 and 1345 (Sheet 3) in the median and drains to the northeast via a culvert into Wetland A1. Wetland A11 is classified as PFO1/4E, is located in the median between station numbers 1347 and 1349 (Sheets 3 & 4) and drains to the east northeast via a culvert into Wetland A1. Wetland A20 is classified as PFO1/4E & PSS1E, is located between station numbers 1385 and 1399 (Sheet 6) in the median and drains to the east via a culvert into wetland A1. Wetland A23 is classified as PFO1/4E, is located behind the information building at the southbound rest area near station 1395 (Sheet 7) and drains to the east to Wetland A24 which then drains through a network of under drains into Wetland A22. Wetland A29 is classified as PFO1/4E, is located between stations 1403 and 1409 on the NB side of the highway and drains east off ROW eventually into Stevens Brook. Wetland A36 is classified as PFO1/4E, is located on the NB side of the highway between station numbers 1429 through 1431 (Sheet 11) and drains east off ROW and eventually into Stevens Brook. Wetland A41 is classified as PFO1E, is located near station 1447 on the NB side (Sheet 13) of the highway and drains off ROW to the east and eventually into Stevens Brook. Wetland A47 is classified as PFO1/4E, PEM1E & PSS1Ex, is located on the northeast side of the Exit 10 NB off ramp between ramp station numbers 12 and 15 (Sheet 14) and drains off ROW to the northeast. Wetland A56 is classified as PSS1E, PFO1E, PSS1Ex & PEM1Ex, is located in the median between station numbers 1482 and 1493 (Sheets 16 & 17) and drains to the southeast into a culvert that then drain into Wetland A53. Details and locations of the classifications are noted on the included plans.

Wetland ID	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland A2	STA. 1315 - 1320SB	PFO1/4E, PSS1E	Sheet 1
Wetland A4	STA. 1326 - 1328M	PFO1/4E	Sheet 2
Wetland A10	STA. 1342 - 1345M	PFO1E, PSS1E	Sheet 3
Wetland A11	STA. 1347 - 1349M	PFO1/4E	Sheets 3 & 4
Wetland A20	STA. 1385 - 1399M	PFO1/4E, PSS1E	Sheet 6
Wetland A23	STA. 1395 Rest Area	PFO1/4E	Sheet 7
Wetland A29	STA. 1403 - 1406NB	PFO1/4E	Sheet 8
Wetland A36	STA. 1429 - 1431NB	PFO1/4E	Sheet 11
Wetland A41	STA. 1447NB	PFO1E	Sheet 13
Wetland A47	NB off ramp STA. 12 - 15 (Exit 10)	PFO1/4E, PSS1Ex, PEM1E	Sheet 14
Wetland A56	STA. 1482 - 1493M	PSS1E, PFO1E, PSS1Ex, PEM1Ex	Sheets 16 & 17

These wetlands are dominated by Palustrine Forested Broad-Leaved Deciduous Seasonally Flooded/Saturated (PFO1E) with a mix of Palustrine Forested Deciduous Broad-Leaved/Needle-

Leaved Evergreen Seasonally Flooded/Saturated (PFO1/4E) and Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded/Saturated (PSS1E) in places. The PSS1E classification is due to the diameter of the woody plants (less than 3 inches diameter at breast height (DBH) as measured at 4.5 feet above ground height)) and not due to the vegetation type, soils or hydrology. Dominant vegetation throughout these wetlands is by characterized by red maple, *Tsuga canadensis* (eastern hemlock), *Betula populifolia* (gray birch), *Abies balsamea* (balsam fir), *Spiraea alba* (white meadowsweet), cinnamon fern and sensitive fern. Soils within these wetland are poorly drained with scattered inclusions of very poorly drained soils. Hydrological influences for these wetlands are primarily hillside seeps with some influence of surface water runoff from the surrounding uplands and roadway.

Looking at PFO1/4E in Wetland A2 near SB station number 1318.



Looking northwest at Wetland A56 near NB station number 1484. General view of PSS1Ex wetlands.



Wetland Function and Values for Wetlands A2, A4, A10, A11, A20, A23, A29, A36, A41, A47 and A56:

Groundwater Recharge/Discharge: Wetlands are diffuse with hillside seeps being the primary source of hydrology making them discharge sites.

Floodflow Alteration: Topographical gradient is present allowing water to move through the wetlands. Wetlands are small.

Fish and Shellfish Habitat: Wetlands are not associated with a watercourse or pond.

Sediment/Toxicant Retention: The uplands surrounding the wetlands are forested. The only known sources of sediments/toxicants is winter road treatment. Not a primary function of the wetland.

Nutrient Removal: Plant diversity and density within the wetlands is moderately low. No signs of nutrient flushing were observed.

Production Export: Higher trophic level species tracks (i.e. deer) were observed within the wetlands; however, overland access is impeded by the wetlands adjacency to I-89.

Sediment/Shoreline Stabilization: Wetland is not associated with a watercourse or pond. Wetlands are small and surrounding uplands are stable.

Wildlife Habitat: Wetlands lack substantial food sources and are located adjacent to I-89.

Recreation: Hunting is not allowed within the NH DOT I-89 ROW. No public access is available for other purposes of recreation.

Educational/Scientific Value: Wetland type is common for the region of the state and no public access is available.

Uniqueness/Heritage: No historical structures observed. Wetland type is typical for the region.

Visual Quality/Aesthetics: No public access. Views are limited to only highway traffic.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species/habitat for these wetlands during site work.

Wetland Function-Value Evaluation Form

Total area of wetland Unknown Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Highway Distance to nearest roadway or other development ~40 feet

Dominant wetland systems present PFO1/4E, PFO1E, PSS1E Contiguous undeveloped buffer zone present No

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. A2, A4, A10, A11, A20, A23, A28, A35, A36, A41, A47 and A56

Latitude Longitude

Prepared by: CMB, MSW Date 12/22/2020

Wetland Impact: Type Area

Evaluation based on: Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	1,2,4,5,13	Y	Wetlands are diffuse and contain several hillside seeps were observed. Groundwater discharge is a moderate function.
Floodflow Alteration	Y	2,3,5,13	N	Gradient within the wetland is sufficient to move water off-site. Detention and retention times are low.
Fish and Shellfish Habitat	N		N	Wetlands are not associated within a watercourse or open water and unable to support a fish or shellfish population.
Sediment/Toxicant Retention	Y	2,4,6,8	N	Surrounding uplands are forested. Potential source of toxicants is highway runoff and road treatment.
Nutrient Removal	N	10	N	No known sources of excess nutrients observed up slope of the wetland. Wetland plant density and diversity is low to moderate.
Production Export	N	4	N	Wetland lacks high plant diversity and flowering plants. No sign of "flushing" of large amounts of organic plant materials observed. Deer tracks were observed.
Sediment/Shoreline Stabilization	N		N	Wetlands are not associated with a watercourse or pond.
Wildlife Habitat	Y	17	N	Wetland are small and located adjacent to the highway or within the median. Deer tracks were observed. Low plant diversity throughout the plant stratum.
Recreation	N		N	Public access is restricted and hunting is not permitted within the NH DOT I-89 ROW.
Educational/Scientific Value	N		N	Wetland lacks plant diversity and no public parking or access is available in the nearby area.
Uniqueness/Heritage	N		N	No archaeological or historical area know within the wetland. No public access.
Visual Quality/Aesthetics	N		N	Wetland lacks plant diversity. Wetland types are common for the region of the State.
ES Endangered Species Habitat	N		N	No potential endanger species habitat observed. Wetland types and plant communities are common for the region of the state.
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetlands A3, A5, A19, A24, A32, A33, A37, A40, A44-A, A46, A50, A52, A54, A58, A60, A61, A62 & A63

SRE determined wetlands A3, A5, A19, A24, A32, A33, A37, A40, A44-A, A46, A50, A52, A54, A58, A60, A61, A62 and A63 all have similar characteristics in plant communities/stratum, soils, hydrological influences and function and values. The following discussion therefore encompasses the above referenced wetlands.

Wetland A3 is classified as PSS1Ex, is located between SB station numbers 1328 and 1330 (Sheet 2) and drains to the northeast via a culvert into Wetland A4 which then drains into wetland A1. Wetland A5 is classified as PSS1Ex, is located near SB station number 1331 (Sheet 2) and drains to the northeast via a culvert into Wetland A6 which then drains into Wetland A1. Wetland A7 is classified as PFO1/4E, PSS1Ex, PEM1Ex & R4SB3, is located between SB station numbers 1334 and 1342 and drains to the northeast via a culvert into Wetland A8 which then drains into Wetland A1. Wetland A19 is classified as PSS1Ex, PEM1Ex & PFO1/4E, is located between SB station numbers 1385 and 1389 (Sheet 6) and drains to the southeast into a culvert that then drains into Wetland A20 which then drains into wetland A1. Wetland A24 is classified as PEM1Ex, is located between the rest area and the highway SB station number 1392 (Sheet 7) and drains into a catch basin/under drain system. Wetland A32 is classified as PSS1Ex, is located between SB station numbers 1418 and 1420 (Sheet 9) and drains to the south into a culvert that drains into Wetland 30 and then into Wetland A1. Wetland A33 is classified as PSS1Ex, is located between SB station numbers 1421 and 1423 (Sheet 9) and drains to the south into a culvert that then drains into Wetland 30 and then into Wetland A1. Wetland A37 is classified as PEM1Ex & PSS1Ex, is located between SB station numbers 1433 and 1437 (Sheets 12 & 13) and drains to the southeast and into a catch basin under drain system. Wetland A44-A is classified as PEM1Ex, is located near SB station number 1465 (Sheet 15) and drains to the south into Wetland A44 which through a series of culverts eventually drains into the Stevens Brook wetland system. Wetland 46 is classified as PEM1Ex & PSS1Ex, is located between NB station numbers 1461 and 1466 (Sheets 14 & 15) and drains off ROW to the east and eventually into the Stevens Brook wetland system. Wetland A50 is classified as PEM1Ex & PSS1Ex, is located between SB station numbers 1467 and 1472 (Sheet 15) and drains to the southeast into a culvert that drains to Wetland A53 and then eventually into the Stevens Brook wetland system. Wetland A52 is classified as PSS1Ex, is located between NB station numbers 1469 and 1472 (Sheet 15) and drains into a catch basin that then drains into Wetland A53. Wetland A54 is classified as PSS1Ex, is located near Exit 10 SB off-ramp station number 37 (Sheet 15) and drains via a culvert into wetland A51. Wetland A58 is classified as PSS1Ex, is located near SB station 1502 (Sheet 17) and drains via a culvert into Wetland A59 which then drains into Wetland A53 and eventually into the Stevens Brook wetland system. Details and locations of the classifications are noted on the included plans.

Wetland ID	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland A3	STA. 1328 - 1330SB	PSS1Ex	Sheet 2
Wetland A5	STA. 1331SB	PSS1Ex	Sheet 2
Wetland A19	STA. 1385 - 1389SB	PSS1Ex, PFO1/4E, PEM1Ex	Sheet 6
Wetland A24	STA. 1394 - 1395SB	PEM1Ex	Sheet 7
Wetland A32	STA. 1418 - 1420SB	PSS1Ex	Sheet 9
Wetland A33	STA. 1421 - 1423SB	PSS1Ex	Sheet 9
Wetland A37	STA. 1433 - 1437SB	PEM1Ex, PSS1Ex	Sheets 12 & 13

Wetland A40	STA. 1442 - 1455SB	PEM1Ex, PSS1Ex, PFO1/4E	Sheets 13 & 14
Wetland A44-A	STA. 1465SB	PEM1Ex	Sheet 15
Wetland A46	STA. 1461 - 1466NB	PEM1Ex, PSS1Ex	Sheets 14 & 15
Wetland A50	STA. 1467 - 1472SB	PSS1Ex, PEM1Ex	Sheet 15
Wetland A52	STA. 1469 - 1472NB	PSS1Ex	Sheet 15
Wetland A54	SB off ramp STA. 37 (Exit 10)	PSS1Ex	Sheet 15
Wetland A58	STA. 1502SB	PSS1Ex	Sheet 17
Wetland A60	STA. 1516 - 1521SB	PEM1Ex	Sheets 18 & 19
Wetland A61	STA. 1517 - 1521SBM	PEM1Ex	Sheet 19
Wetland A62	STA. 1519 - 1522NBM	PEM1Ex	Sheet 19
Wetland A63	STA. 1519 - 1522NB	PEM1Ex	Sheet 19

These wetlands are dominated by Palustrine Emergent Persistent Seasonally Flooded/Saturated Excavated (PEM1Ex), Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded/Saturated Excavated (PSS1Ex) with inclusions of PFO1/4E. The PSS1Ex classification is due to the diameter of the woody plants (less than 3 inches diameter at breast height (DBH) as measured at 4.5 feet above ground height)) and not due to the vegetation type, soils or hydrology. Dominant vegetation throughout these wetlands is characterized by white meadowsweet, gray birch, cinnamon fern, sensitive fern and *Typha latifolia* (broad leaf cattail) with scattered *Scirpus cyperinus* (woolgrass), *Lythrum salicaria* (purple loosestrife) and other less dominant plant species. Soils within these wetlands are poorly drained minerals. Hydrological influences for these wetlands are primarily surface water runoff from the surrounding uplands and roadway with some hillside seeps present. Regular roadway maintenance in the form of mowing operations was evident during site work.

Looking general PSS1Ex for the project area (Wetland A5).



Looking at catch basin typical along the underdrain (Wetland A60, A61, A62 & A63).



Wetland Function and Values for Wetlands A3, A5, A19, A24, A32, A33, A37, A44-A, A46, A50, A52, A54, A58, A60, A61, A62 and A63:

Groundwater Recharge/Discharge: Wetlands are primarily roadside ditches that receive roadway runoff and some hillside seepage. Function is moderate.

Floodflow Alteration: Wetlands are small and have topographical gradient sufficient to allow excess water to drain off.

Fish and Shellfish Habitat: Wetlands are not associated with a watercourse or pond.

Sediment/Toxicant Retention: The uplands surrounding the wetlands are forested or paved. The only known sources of sediments/toxicants is winter road treatment.

Nutrient Removal: Plant diversity and density within the wetlands is low. No signs of nutrient flushing were observed.

Production Export: Maintained roadside wetlands. No higher trophic level species observed within the wetlands.

Sediment/Shoreline Stabilization: Wetland is not associated with a watercourse or pond. Wetlands are small and surrounding uplands are stable.

Wildlife Habitat: Wetlands lack substantial food sources and are located adjacent to I-89.

Recreation: Hunting is not allowed within the NH DOT I-89 ROW. No public access is available for other purposes of recreation.

Educational/Scientific Value: Wetland type is common for roadside ditches in the region of the state and no public access is available.

Uniqueness/Heritage: Maintained roadside wetland drainages.

Visual Quality/Aesthetics: Maintained roadside wetland drainages.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species/habitat for these wetlands during site work. Maintained roadside wetland drainages.

Wetland Function-Value Evaluation Form

Total area of wetland Unknown Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Highway Distance to nearest roadway or other development ~15 feet

Dominant wetland systems present PEM1Ex/PSS1Ex Contiguous undeveloped buffer zone present No

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland ID: A3, A5, A19, A24, A32, A33, A37, A40, A44-A & A46

Latitude Longitude

Prepared by: CMB, MSW Date 12/22/2020

Wetland Impact: Type Area

Evaluation based on: Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	1,2,4,5	N	Hydrology is driven primarily by sheet flow from the highway during rain events and some hillside seepage.
Floodflow Alteration	Y	2,3,9	N	Wetlands are small and topographical gradient allows water to move through the wetlands.
Fish and Shellfish Habitat	N		N	Roadside man-made excavated wetlands not associated with a watercourse, nor do they contain standing water.
Sediment/Toxicant Retention	Y	1,2,6	N	Wetlands can retain sediments received (i.e. winter road treatment sand). Primary source of sediments/toxicants is from winter road treatment. Maintained roadside ditches.
Nutrient Removal	Y	3,9	N	Plant diversity is low. Maintained roadside ditches. No know sources of excess nutrients above the wetland.
Production Export	N		N	Maintained ditch wetlands. Wetlands lack plant diversity and ability to flourish due to routine highway maintenance.
Sediment/Shoreline Stabilization	N		N	Wetlands are not associated with a watercourse, lake or pond.
Wildlife Habitat	N		N	Wetland ditches adjacent to the highway lacking plant diversity and community structure.
Recreation	N		N	Wetland ditches adjacent to the highway.
Educational/Scientific Value	N		N	Wetland ditches adjacent to the highway.
Uniqueness/Heritage	N		N	Wetland ditches adjacent to the highway.
Visual Quality/Aesthetics	N		N	Wetland ditches adjacent to the highway.
ES Endangered Species Habitat	N		N	SRE did not observe any endangered species nor adequate habitat within these maintained wetlands along I-89.
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland Unknown Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Highway Distance to nearest roadway or other development ~15 feet

Dominant wetland systems present PEM1Ex/PSS1Ex Contiguous undeveloped buffer zone present No

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland ID: A50,A52,A54,A58,A60,A61,A62 and A63

Latitude _____ Longitude _____

Prepared by: CMB, MSW Date 12/22/2020

Wetland Impact: Type _____ Area _____

Evaluation based on:

Office X Field X

Corps manual wetland delineation completed? Y X N _____















Function/Value

Suitability
Y / N

Rationale
(Reference #)*

Principal
Function(s)/Value(s)

Comments

	Groundwater Recharge/Discharge	Y	1,2,4,5	N	Hydrology is driven primarily by sheet flow from the highway during rain events and some hillside seepage.
	Floodflow Alteration	Y	2,3,9	N	Wetlands are small and topographical gradient allows water to move through the wetlands.
	Fish and Shellfish Habitat	N		N	Roadside man-made excavated wetlands not associated with a watercourse, nor do they contain standing water.
	Sediment/Toxicant Retention	Y	1,2,6	N	Wetlands can retain sediments received (i.e. winter road treatment sand). Primary source of sediments/toxicants is from winter road treatment. Maintained roadside ditches.
	Nutrient Removal	Y	3,9	N	Plant diversity is low. Maintained roadside ditches. No know sources of excess nutrients above the wetland.
	Production Export	N		N	Maintained ditch wetlands. Wetlands lack plant diversity and ability to flourish due to routine highway maintenance.
	Sediment/Shoreline Stabilization	N		N	Wetlands are not associated with a watercourse, lake or pond.
	Wildlife Habitat	N		N	Wetland ditches adjacent to the highway lacking plant diversity and community structure.
	Recreation	N		N	Wetland ditches adjacent to the highway.
	Educational/Scientific Value	N		N	Wetland ditches adjacent to the highway.
	Uniqueness/Heritage	N		N	Wetland ditches adjacent to the highway.
	Visual Quality/Aesthetics	N		N	Wetland ditches adjacent to the highway.
	ES Endangered Species Habitat	N		N	SRE did not observe any endangered species nor adequate habitat within these maintained wetlands along I-89.
	Other				

Notes:

* Refer to backup list of numbered considerations.

Wetlands A7, A38, A44, A45, A48 and A49

SRE determined wetlands A7, A38, A44, A45, A48 and A49 all have similar characteristics in plant communities/stratum, soils, hydrological influences (including intermittent streams) and function and values. The following discussion therefore encompasses the above referenced wetlands.

Wetland A7 is classified as PFO1/4E, PEM1Ex, PSS1Ex and R4SB3, is located between SB station numbers 1334 and 1342 (Sheets 2 & 3) and drains primarily to the west into a culvert that then drains into Wetland A8 and then into Wetland A1. Wetland A37 is classified as PEM1Ex, PSS1Ex, PFO1/4E and R4SB3/4, is located between in the median between station numbers 1438 and 1444 (Sheet 13) and drains east into a culvert that then drains into Channel A39. Wetland A44 is classified as PSS1Ex, PFO1E, PFO1/4E & R4SB3/4, is located off the Exit SB on ramp between station numbers 40 and 50 (Sheets 14 & 15) and drains to the west into a culvert that then drains to the north to an unknown outlet. Wetland A45 is classified as PEM1Ex, PSS1Ex & R4SB3/4, is located in the median between station numbers 1456 and 1465 and drains to the northwest into a culvert that then drains into Wetland A48 and then eventually into the Stevens Brook wetland system. Wetland A 49 is classified as PSS1Ex & R4SB3/4, is located at the corner of the NB Exit 10 off ramp and Gile Pond Road and drains to the northeast eventually into the Stevens Brook wetland system. Details and locations of the classifications are noted on the included plans.

Wetland ID	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland A7	STA. 1334 - 1342SB	PEM1Ex, PSS1Ex, R4SB3, PFO1/4E	Sheets 2 & 3
Wetland A38	STA. 1438 - 1444M	PEM1Ex, PSS1Ex, PFO1/4E, R4SB3/4	Sheet 13
Wetland A44	SB on ramp STA. 40 - 50 (Exit 10)	PSS1Ex, PFO1/4E, PFO1E, R4SB3/4	Sheets 14 & 15
Wetland A45	STA. 1456 - 1465M	PEM1Ex, PSS1Ex, R4SB3/4	Sheets 14 & 15
Wetland A49	NB off ramp STA. 21 (Exit 10)	PSS1Ex, R4SB3/4	Sheet 15

These wetlands are dominated by Palustrine Emergent Persistent Seasonally Flooded/Saturated Excavated (PEM1Ex), Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded/Saturated Excavated (PSS1Ex), Riverine Intermittent Streambed Cobble-Gravel/Sand (R4SB3/4) and Riverine Intermittent Streambed Cobble-Gravel (R4SB3) with inclusions of PFO1/4E. The PSS1Ex classification is due to the diameter of the woody plants (less than 3 inches diameter at breast height (DBH) as measured at 4.5 feet above ground height)) and not due to the vegetation type, soils or hydrology. Dominant vegetation throughout these wetlands is characterized by red maple, gray birch, white meadowsweet, cinnamon fern and sensitive fern with scattered broad leaf cattail, woolgrass and purple loosestrife. Soils within these wetlands are poorly drained minerals. Hydrological influences for these wetlands are primarily surface water runoff from the surrounding uplands and roadway with some hillside seeps present. Regular roadway maintenance in the form of mowing operations was evident during site work.

Wetland Function and Values for Wetlands A7, A38, A44, A45 and A49:

Groundwater Recharge/Discharge: Wetlands are primarily roadside ditches that receive roadway runoff and some hillside seepage. Intermittent streams are associated with these wetlands.

Floodflow Alteration: Wetlands are small and have topographical gradient sufficient to allow excess water to drain off.

Fish and Shellfish Habitat: Intermittent streams associated with the wetlands are capable of supporting healthy fish or shellfish populations.

Sediment/Toxicant Retention: The uplands surrounding the wetlands are forested or paved. The only known sources of sediments/toxicants is winter road treatment.

Nutrient Removal: Plant diversity and density within the wetlands is low. No signs of nutrient flushing were observed.

Production Export: Primarily maintained roadside wetland ditches. No higher trophic level species observed within the wetlands. Deer tracks were random.

Sediment/Shoreline Stabilization: Wetlands are associated with intermittent streams. Wetlands bordering the intermittent streams are small and surrounding uplands are stable.

Wildlife Habitat: Wetlands lack substantial food sources and are located adjacent to I-89.

Recreation: Hunting is not allowed within the NH DOT I-89 ROW. No public access is available for other purposes of recreation.

Educational/Scientific Value: Wetland and intermittent stream types are common for the roadside ditches in the region of the state and no public access is available.

Uniqueness/Heritage: Maintained roadside wetland drainages.

Visual Quality/Aesthetics: Maintained roadside wetland drainages.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species/habitat for these wetlands during site work. Maintained roadside wetland drainages.

Wetland Function-Value Evaluation Form

Total area of wetland Unknown Human made? Partly Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Highway Distance to nearest roadway or other development ~15 feet

Dominant wetland systems present PEM1E/PSST1E/PFO14/ER4SS3/4/R4SS3 Contiguous undeveloped buffer zone present No

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

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

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	1,2,4,5,12	Y	Hydrology is driven primarily by sheet flow from the highway during rain events and some hillside seepage. Intermittent streams associated with the wetlands.
Floodflow Alteration	Y	2,3,13,15	N	Wetlands adjacent to the intermittent streams are small and topographical gradient allows water to move efficiently through the wetlands. Roadside wetland ditches.
Fish and Shellfish Habitat	N		N	Intermittent streams observed are not capable of support a fish population. No evidence of a shellfish population.
Sediment/Toxicant Retention	Y	2,6,8,10,13	N	Topographical gradient allows water to move through wetlands efficiently. Primary source of sediments/toxicants is from winter road treatment. Maintained roadside ditches are associated with the intermittent streams.
Nutrient Removal	Y	3,9	N	Plant diversity is low. Maintained roadside ditches associated with intermittent streams. No known sources of excess nutrients above the wetland.
Production Export	N		N	Maintained roadside ditch wetlands associated with intermittent stream. Wetlands lack plant diversity and ability to flourish due to routine highway maintenance.
Sediment/Shoreline Stabilization	Y	2,6,7,9	N	Small wetlands are associated with intermittent stream(s). Wetlands are not densely vegetated.
Wildlife Habitat	N		N	Wetlands are small, are adjacent to the highway and lack plant diversity and community structure.
Recreation	N		N	Wetland ditches adjacent to the highway.
Educational/Scientific Value	N		N	Wetland ditches adjacent to the highway.
Uniqueness/Heritage	N		N	Wetland ditches adjacent to the highway.
Visual Quality/Aesthetics	N		N	Wetland ditches adjacent to the highway.
ES Endangered Species Habitat	N		N	SRE did not observe any endangered species nor adequate habitat within these maintained wetlands along I-89.
Other				

Wetland I.D. A7, A38, A44, A45, A48 and A49

Latitude _____ Longitude _____

Prepared by: CMB, MSW Date 12/22/2020

Wetland Impact: _____ Area _____

Type _____

Evaluation based on:

Office X Field X

Corps manual wetland delineation completed? Y X N _____

Notes:

* Refer to backup list of numbered considerations.

Wetlands A6, A8, A14, A15 and A59:

SRE determined wetlands A6, A8, A14, A15, and A59 all have similar characteristics in plant communities/stratum, soils, hydrological influences and function and values. The following discussion therefore encompasses the above referenced wetlands.

Wetland 6 is classified as R4SB3 and PFO1E, is located in the median near station number 1330 (Sheet 2) and drains to the northeast via a culvert into Wetland A1. Wetland A8 is classified as PFO1/4E and R4SB3, is located in the median between station numbers 1336 and 1338 (Sheet 3) and drains to the northeast into a culvert that then drains into Wetland A1. Wetland A14 is classified as PFO1/4E, R4SB3/4 and R4SB4, is located between SB station numbers 1365 and 1373 and drains to a culvert that then drains into Wetland A15 and eventually into Wetland A1. Wetland A15 is classified as PFO1E and R4SB4, is located in the median between station numbers 1369 and 1373 and drains to the east into Wetland A1. Wetland A59 is classified as PFO1/4E and R4SB3, is located in the median between station numbers 1500 and 1502 and drains northeast into a culvert that then drains into Wetland A53 and then eventually into the Stevens Brook wetland system. Details and locations of the classifications are noted on the included plans.

Wetland ID	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland A6	STA. 1330M	R4SB3, PFO1E	Sheet 2
Wetland A8	STA. 1336 - 1338M	PFO1/4E, R4SB3	Sheet 3
Wetland A14	STA. 1365 -1373SB	PFO1/4E, R4SB3/4, R4SB4	Sheet 5
Wetland A15	STA. 1369 - 1374M	PFO1E, R4SB4	Sheet 5
Wetland A59	STA. 1500 - 1502M	PFO1/4E, R4SB3	Sheet 17

These wetlands are dominated by Palustrine Forested Broad-Leaved Deciduous Seasonally Flooded/Saturated PFO1E, Palustrine Forested Deciduous Broad-Leaved/Needle-Leaved Evergreen Seasonally Flooded/Saturated (PFO1/4E), Riverine Intermittent Streambed Cobble-Gravel/Sand (R4SB3/4), Riverine Intermittent Streambed Cobble-Gravel (R4SB3) and Riverine Intermittent Streambed Sand (R4SB4). Dominant vegetation throughout these wetlands is characterized by red maple, *Betula alleghaniensis* (yellow birch), balsam fir, eastern hemlock, cinnamon fern and sensitive fern. Soils within these wetlands are poorly drained with inclusions of very poorly drained soils. Hydrological influences for these wetlands are primarily hillside seeps with surface water runoff from the surrounding uplands and roadway.

Looking a typical PFO1/E (Wetland A59)



Wetland Function and Values for Wetlands A6, A8, A14, A15 and A59:

Groundwater Recharge/Discharge: Wetlands receive roadway runoff and some hillside seepage. Intermittent streams are associated with these wetlands. Wetlands are small and function is moderate.

Floodflow Alteration: Wetlands are small and have topographical gradient sufficient to allow excess water to drain off.

Fish and Shellfish Habitat: Intermittent streams associated with the wetlands are not capable of supporting healthy fish or shellfish populations.

Sediment/Toxicant Retention: The uplands surrounding the wetlands are forested or paved. The only known sources of sediments/toxicants is winter road treatment.

Nutrient Removal: Plant diversity and density within the wetlands is low. No signs of nutrient flushing were observed.

Production Export: Wetlands lack plant diversity and community structure. No higher trophic level species observed within the wetlands. Deer tracks were random.

Sediment/Shoreline Stabilization: Wetlands are associated with intermittent streams. Wetlands bordering the intermittent streams are small and surrounding uplands are stable.

Wildlife Habitat: Wetlands lack substantial food sources and are located adjacent to I-89.

Recreation: Hunting is not allowed within the NH DOT I-89 ROW. No public access is available for other purposes of recreation.

Educational/Scientific Value: Wetland and intermittent stream types are common for the region of the state and no public access is available.

Uniqueness/Heritage: Wetlands are adjacent to I-89. No historical features (i.e. old foundations) were observed during site work.

Visual Quality/Aesthetics: Small wetland drainages located near I-89.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species/habitat for these wetlands during site work.

Wetland Function-Value Evaluation Form













Total area of wetland Unknown Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Highway Distance to nearest roadway or other development ~40 feet

Dominant wetland systems present PFO1E, PFO1/4E, R4SBS3/4 Contiguous undeveloped buffer zone present No

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

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

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	Y	1,2,4,5	Y	Wetland system is diffuse, contains intermittent streams and several hillside seeps. Groundwater discharge is a moderate function.
 Floodflow Alteration	Y	2,3,5,9,13,15	N	Gradient within the wetland is sufficient to move water off-site. Detention and retention times are low. Wetlands are small.
 Fish and Shellfish Habitat	N		N	Intermittent streams associated with the wetlands are not capable of supporting a healthy fish or shellfish population.
 Sediment/Toxicant Retention	Y	2,6,8	N	Small wetlands associated with intermittent streams. Topographical gradient allows water to drain efficiently. Potential source of toxicants is highway runoff and road treatment.
 Nutrient Removal	N	5	N	No known sources of excess nutrients observed up slope of the wetlands. Wetland plant density and diversity is moderately low.
 Production Export	N		N	Wetlands lack high plant diversity and flowering plants. No sign of "flushing" of large amounts of organic plant materials observed.
 Sediment/Shoreline Stabilization	Y	2,6,10,13	N	Small wetlands associated with intermittent streams. Stream banks are stable; however, the wetlands lack dense vegetation.
 Wildlife Habitat	N	5,17	N	Wetlands are small and located adjacent to or within the median of the highway. Low plant diversity throughout the plant stratum. Overland access impeded by the highway.
 Recreation	N		N	Public access is restricted and hunting is not permitted within the DOT ROW.
 Educational/Scientific Value	N		N	Wetlands lack plant diversity and no public parking or access is available in the nearby area.
 Uniqueness/Heritage	N		N	No archaeological or historical areas known/observed within the wetland. Public access is restricted.
 Visual Quality/Aesthetics	N		N	Wetlands lack plant diversity. Wetland type is common for the region of the State.
ES Endangered Species Habitat	N		N	SRE did not observe any endangered species nor adequate endangered habitat within these wetlands along I-89.
Other				

Wetland I.D. A6, A8, A14, A15 and A59
 Latitude _____ Longitude _____
 Prepared by: CMB, MSW Date 12/22/2020

Wetland Impact: _____ Area _____
 Type _____

Evaluation based on:
 Office Field
 Corps manual wetland delineation completed? Y X N

Notes:

* Refer to backup list of numbered considerations.

Wetlands A21 and A22

SRE determined wetlands A21 and A22 similar characteristics including stream channel type, wetland vegetation, soils and hydrological influences. The following discussion therefore encompasses the above referenced wetlands.

Wetland A21 is classified as PFO1/4E and R3SB3, is located west of the rest area near SB station number 1392 and drains east via a culvert into Wetland A22. Wetland A22 is classified as PFO1/4E and R3SB3, is located in the median between SB station numbers 1387 and 1392 and drains east via a culvert into wetland A1. Details and locations of the classifications are noted on the included sheets.

Wetland ID	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland A21	STA.1392 Rest Area	PFO1/4E, R3SB3	Sheet 7
Wetland A22	STA. 1387 - 1392M	PFO1/4E, R3SB3	Sheet 7

These wetlands are dominated by Palustrine Forested Broad-Leaved Deciduous/Needle-Leaved Evergreen (PFO1/4E) and Riverine Upper Perennial Streambed Cobble-Gravel/Sand (R3SB3). Dominant vegetation throughout these wetlands is characterized by red maple, balsam fir, eastern hemlock, cinnamon fern, sensitive fern and scattered royal fern. Soils within these wetlands are primarily poorly drained. Hydrological influences for these wetlands are primarily hillside seeps, surface water runoff from the surrounding uplands and roadway and associated upper perennial stream.

Looking east at Wetland A22 from the SB lane.



Wetland Function and Values for Wetlands A21 and A22:

Groundwater Recharge/Discharge: Hillside seeps discharging into the adjacent upper perennial stream. Wetlands are small and function is moderate.

Floodflow Alteration: Wetlands are small and have topographical gradient sufficient to allow excess water to drain off.

Fish and Shellfish Habitat: Upper perennial stream associated with the wetlands is small and is not capable of supporting healthy fish or shellfish populations. No fish or shellfish were observed.

Sediment/Toxicant Retention: The uplands surrounding the wetlands are forested or paved. The only known sources of sediments/toxicants is winter road treatment.

Nutrient Removal: Plant diversity and density within the wetlands is low. No signs of nutrient flushing were observed.

Production Export: Wetlands lack plant diversity. No higher trophic level species observed during site work. Deer tracks were random. Wetlands are located near the highway and the rest area.

Sediment/Shoreline Stabilization: Wetlands are associated with an upper perennial stream. Wetlands bordering the upper perennial stream are small and surrounding uplands are stable.

Wildlife Habitat: Wetlands lack substantial food sources and are located adjacent to I-89.

Recreation: Hunting is not allowed within the NH DOT I-89 ROW. No public access is available for other purposes of recreation.

Educational/Scientific Value: Wetland and upper perennial stream types are common for the region of the state and no public access is available.

Uniqueness/Heritage: Wetlands are adjacent to I-89. No historical features (i.e. old foundations) were observed during site work.

Visual Quality/Aesthetics: Small wetland drainages located near I-89.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species/habitat for these wetlands during site work.

Wetland Function-Value Evaluation Form

Total area of wetland Unknown Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Highway Distance to nearest roadway or other development ~40 feet

Dominant wetland systems present PFO1/4E, R3SB3 Contiguous undeveloped buffer zone present No

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

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

Wetland I.D. A21 and A22

Latitude _____ Longitude _____

Prepared by: CMB, MSW Date 12/22/2020

Wetland Impact: Type _____ Area _____

Evaluation based on:

Office X Field X

Corps manual wetland delineation completed? Y X N _____















Function/Value

Suitability
Y / N

Rationale
(Reference #)*

Principal
Function(s)/Value(s)

Comments

	Groundwater Recharge/Discharge	Y	1,2,4,5,7,12	Y	Wetland systems are relatively narrow and contain an upper perennial stream with hillslope seeps. Groundwater discharge is a moderate function.
	Floodflow Alteration	Y	2,3,5,9,13,15	N	Moderate topographical gradient within the wetland is sufficient to move water off-site. Detention and retention times are low. Wetlands are small.
	Fish and Shellfish Habitat	N		N	Perennial stream associated with the wetlands is not capable of supporting a healthy fish or shellfish population. No fish or shellfish observed during site work.
	Sediment/Toxicant Retention	Y	2,6,8,9,10,13	N	Small wetlands associated with an upper perennial stream. Topographical gradient allows water to drain efficiently. Potential source of toxicants is highway runoff and road treatment. Vegetation density within the wetland is low.
	Nutrient Removal	N		N	No known sources of excess nutrients observed up slope of the wetlands. Wetland plant density and diversity is moderately low and water moves through the wetland efficiently.
	Production Export	N		N	Wetlands lack plant diversity and flowering plants. No sign of "flushing" of large amounts of organic plant materials observed.
	Sediment/Shoreline Stabilization	Y	2,6,7	N	Small wetlands associated with an upper perennial stream. Stream banks are stabilized by root material and cobble/boulders; however, the wetlands bordering the stream lack dense vegetation.
	Wildlife Habitat	N	17	N	Wetlands are small and located adjacent to or within the median of the highway. Low plant diversity throughout the plant stratum. Overland access impeded by the highway. Deer track observed.
	Recreation	N		N	Public access is restricted and hunting is not permitted within the 1-89 DOT ROW.
	Educational/Scientific Value	N		N	Wetlands lack plant diversity and no public parking or safe access is available in the nearby area.
	Uniqueness/Heritage	N		N	No archaeological or historical areas known/observed within the wetland. Public access is restricted.
	Visual Quality/Aesthetics	N		N	Wetlands lack plant diversity. Wetland types are common for the region of the State.
	ES Endangered Species Habitat	N		N	SRE did not observe any endangered species nor adequate habitat within these maintained wetlands along I-89.
	Other				

Notes:

* Refer to backup list of numbered considerations.

Wetlands A25, A26, A27, A28, A30, A35, A43, A51, A53 and A57

SRE determined wetlands A25, A26, A27, A28, A30, A35, A43, A51, A53 and A57 all have similar characteristics in plant communities/stratum, soils, hydrological influences and function and values. The following discussion therefore encompasses the above referenced wetlands.

Wetland A25 is classified as PFO/PSS/PEM1E, R4SB3 and PSS/PEM1Ex, is located between SB station numbers 1398 and 1413 (Sheet 7 through 9) and drains to a culvert near station number 1404 which then drains into Wetland A26 and then eventually Wetland A27. Details and locations of the classifications are noted on the included plans. Wetland A26 is classified as PEM1E, PSS1E, PFO1/4E and R4SB3/4, is located in the median between SB station numbers 1397 and 1404 and drains east via a culvert into Wetland 27 which eventually drains into the Stevens Brook wetland system. Wetland A27 is classified as PFO1/4E and PEM1E and R4SB6, is located between NB station numbers 1396 and 1398 (Sheets 7 and 8) and drains off ROW to the east and into the Stevens Brook wetland system. Wetland A28 is classified as PFO/PEM1E, is located in the median between NH station numbers 1403 and 1407 (Sheet 8) and drains east via a culvert into Wetland A29. Wetland A30 is classified as PFO1/4E, PSS/PEM1E and R4SB3/4, is located in the median between SB station numbers 1409 and 1421 (Sheets 8 through 10) and drains to the northeast via a culvert into Wetland A35. Note that Wetland 30 contains a potential vernal pool near SB station number 1410 (Sheet 8). If highway work within the potential vernal pool area noted on the included plan sheet is required, SRE recommends a field study be conducted during the breeding season to determine if the meets the DES definition of vernal pools. Wetland A35 is classified as PFO1/4E, PEM1E & PSS1E, is located on the NB side of the highway between station numbers 1413 through 1415 (Sheet 10) and drains east off ROW and eventually into Stevens Brook wetland system. Wetland A43 is classified as PFO1/4E and R4SB3/4, is located between NB station numbers 1453 and 1456 (Sheet 14) and drains off ROW to the northeast. Wetland A51 is classified as PFO1E, PEM1E and R4SB3, is located in the median between NB station numbers 1469 and 1479 and drains to the northeast via a culvert into wetland A53. Wetland A53 is classified as PFO/PSS/PEM1E, PFO1/4E, R4SB3/4 and R4SB3, is located between Exit NB on ramp station number 20 up to NB station number 1508 (Sheets 15 through 18) and drains off ROW to the east and southeast to Gile Pond Road and through a culvert into Wetland A49. The area along Wetland A53 is shown on the NH DES WPPT as being peat lands; however, soils within the project area were mineral based and were not peat based soils. Wetland A57 is classified as PFO/PSS1E and R4SB3/4, is located between SB station numbers 1485 and 1493 (Sheets 16 & 17) and drains southeast into a culvert near SB station 1486 and then into Wetland A53.

Wetland ID	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland A25	STA. 1398 - 1413SB	PEM1Ex, PSS1Ex, R4SB3, PFO1E	Sheets 7 thru 9
Wetland A26	STA. 1397 - 1404M	PFO1/4E, PSS1E, PEM1E, R4SB3/4, R4SB6	Sheets 7 & 8
Wetland A27	STA. 1396 - 1398NB	PFO1/4E, PEM1E, R4SB6	Sheets 7 & 8
Wetland A28	STA. 1403 - 1407M	PFO1/4E, PEM1E	Sheet 8
Wetland A30	STA. 1409 - 1421M	PFO1/4E, PEM1E, PSS1E, R4SB3/4	Sheets 8 thru 10
Wetland A35	STA. 1413 - 1415NB	PFO1/4E, PSS1E, PEM1E	Sheet 10
Wetland A43	STA. 1453 - 1456NB	PFO1/4E, R4SB3/4	Sheet 14

Wetland A51	STA. 1469 - 1479M	R4SB3, PEM1E, PFO1E	Sheets 15 & 16
Wetland A53	Exit 10 NB on ramp STA. 20 and up to STA. 1508NB	R4SB3/4, PFO1E, PSS1E, R4SB3, PEM1E, PFO1/4E	Sheets 15 thru 18
Wetland A57	STA. 1485 - 1493SB	R4SB3/4, PFO1E, PSS1E	Sheets 16 & 17

These wetlands are dominated by Palustrine Forested Broad-Leaved Deciduous/Needle-Leaved Evergreen (PFO1/4E), Palustrine Forested Broad-Leaved Deciduous Seasonally Flooded/Saturated (PFO1E), Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded/Saturated (PSS1E), Palustrine Emergent Persistent Seasonally Flooded/Saturated (PEM1E), Riverine Intermittent Streambed Cobble-Gravel/Sand (R4SB3/4), Riverine Intermittent Streambed Organic (R4SB6) and Riverine Intermittent Streambed Organic/Beaver (R4SB6b). Wetland A25 has inclusions of excavated wetlands indicated by the (x) following the classification (i.e. PEM1Ex and PSS1Ex). Dominant vegetation throughout these wetlands is characterized by red maple, balsam fir, eastern hemlock, *Alnus incana* (speckled alder), white meadowsweet, broadleaf cattail, cinnamon fern, sensitive fern, royal fern and areas of purple loosestrife and *Phragmites australis* (common reed grass) as noted on the included plans. Soils within these wetlands are poorly drained within much of the forested portion of the wetlands with very poorly drained soils throughout the majority of the scrub-shrub and emergent areas shown on the sheets. Hydrological influences for these wetlands are primarily hillside seeps, surface water drainage offsite wetlands and water from the surrounding uplands and roadway.

Looking at Wetland Looking at PFO1E within Wetland 51.



Looking at Wetland A57 near SB station number 1490.



Wetland Function and Values for Wetland A25, A26, A27, A28, A30, A35, A43, A51, A53 & A57:

Groundwater Recharge/Discharge: Wetlands are located in flat areas with organics underlain by fine sandy soils. Groundwater recharge is presumed to be moderately high.

Floodflow Alteration: Broad wetlands with dense resilient vegetation in flat areas capable of detaining and retaining larger volumes of water.

Fish and Shellfish Habitat: Intermittent streams are not capable of supporting healthy fish and/or shellfish populations.

Sediment/Toxicant Retention: Water flow through the wetlands is diffuse. The uplands surrounding the wetland are forested. The only known sources of sediments/toxicants is winter road treatment. Wetlands are able to detain and retain sediments and/or toxicants if needed.

Nutrient Removal: Plant diversity and density within the wetland is capable of utilizing nutrients. No signs of nutrient flushing were observed. Moderate level of nutrient removal is presumed.

Production Export: Low level of flowering plants was observed. Higher trophic level species (i.e. deer) are utilizing the wetland edges.

Sediment/Shoreline Stabilization: Dense/resilient vegetation within the wetland along the intermittent streams; however, wetlands occur in flat areas and flow velocities are low.

Wildlife Habitat: Broad wetlands adjacent to the I-89 ROW. Higher trophic level species (deer) are utilizing the wetland edges.

Recreation: Hunting is not allowed within the NH DOT I-89 ROW. No public access is available for other purposes of recreation.

Educational/Scientific Value: Wetland type is common for the region of the state and no public access is available.

Uniqueness/Heritage: No historical structures observed. Wetland is type is typical for the region.

Visual Quality/Aesthetics: No public access. Views are limited to only highway traffic.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species/habitat for this wetland during site work.

Wetland Function-Value Evaluation Form

Total area of wetland Unknown Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Roadway Distance to nearest roadway or other development ~40 feet

Dominant wetland systems present PFO/PSS/PEM1E, R4SB3/4, R4SB6(b) Contiguous undeveloped buffer zone present No

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

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

Wetland I.D. A25, A26, A27, A30, A43, A51, A53 and A57

Latitude _____ Longitude _____

Prepared by: CMB/MSW Date 12/22/2020

Wetland Impact: Type _____ Area _____

Evaluation based on:

Office Field

Corps manual wetland delineation completed? Y X _____ N _____

Comments

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	1,2,4,5,7,9,15	Y	Wetlands are relatively broad, contain deep organic. In the PEM1E portions. Organic soils are underlain by fine sands. Moderately high level of groundwater recharge assumed.
Floodflow Alteration	Y	2,3,5,6,7,8,9,13,14,15,18	Y	Wetlands are relatively broad and contain dense resilient scrub-shrub and herbaceous plants. Wetlands are associated with watercourses. Moderate level of floodflow alteration assumed.
Fish and Shellfish Habitat	N	2,10,15	N	Wetland and intermittent streams present. Wetlands lack persistent open water habitat sufficient to support a healthy fish and/or shellfish population.
Sediment/Toxicant Retention	Y	3,4,5,6,7,8,9,10,11,12,13,14	Y	Flow of water through the wetlands is diffuse and the wetlands are able to detain and retain sediments and/or toxicants if needed. No known sources up-slope other than winter road treatment.
Nutrient Removal	Y	3,5,6,7,8,9,10,11,12,13,14	Y	Plant density and diversity is sufficient to utilize nutrients. Wetlands are relatively broad. Moderate level of nutrient removal is assumed.
Production Export	Y	1,2,4,5,7	N	Wetland lacks a dense population of flowering plants. Deer are using the wetland fringe. Overall production export is presumed low.
Sediment/Shoreline Stabilization	Y	5,12,15	N	Intermittent streams flow into/through the wetlands; however, stream channel are small and flow velocity is low due to the flat topography. Not a principle function.
Wildlife Habitat	Y	8,11,13,17,19	N	A low to moderate amount of food source grows within the wetland; however, highway surrounds the wetland. Deer carcasses were observed. Old beaver sign present. Not a principal function.
Recreation	N		N	Wetland is located in the median of a highway with no public access. Hunting is not permitted within the 1-99 ROW.
Educational/Scientific Value	N		N	Wetland type is common for the region of the state. No public access.
Uniqueness/Heritage	N	4,7,12,17,19	N	No historical features (i.e. old foundations) were observed. No public access. Wetlands are adjacent to the 1-89 ROW.
Visual Quality/Aesthetics	N	1,2,3,6,11,12	N	Visible quality is low as seen from the highway. Wetlands are adjacent to the 1-99 ROW. Not a suitable function or value.
ES Endangered Species Habitat	N		N	SRE did not observe any endangered species nor adequate habitat within these maintained wetlands along 1-89.
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetlands A9, A31 and A34

SRE determined wetlands A9, A31 and A34 all have similar characteristics in plant communities/stratum, soils, hydrological influences, potential vernal pools and function and values. The following discussion therefore encompasses the above referenced wetlands.

Wetland A9 is classified as PFO1E, is located in the median between NH station numbers 1339 and 1341 (Sheet 3), contains a potential vernal pool and overall the wetland drains northeast via a culvert into Wetland A1. Wetland A31 is classified as PFO1/4E, is located between NH station numbers 1408 and 1409 (Sheet 8) and is an isolated wetland which contains a potential vernal pool. Wetland A34 is classified as PFO1/4E, is located between NB station numbers 1411 and 1414 (Sheet 10) and is an isolated wetland which contains a potential vernal pool.

Wetland ID	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland A9	STA. 1339 - 1341M	PFO1E	Sheet 3
Wetland A31	STA. 1408 - 1409NB	PFO1/4E	Sheet 8
Wetland A34	STA. 1411 - 1412NB	PFO1/4E	Sheet 10

These wetlands are dominated by Palustrine Forested Broad-Leaved Deciduous/Needle-Leaved Evergreen (PFO1/4E) and Palustrine Forested Broad-Leaved Deciduous Seasonally Flooded/Saturated (PFO1E). These wetlands are isolated and are located in small topographical depressions and may contain potential vernal pools. If highway work within these areas is required SRE recommends a field study be conducted during the breeding season to determine if these wetlands meet the DES definition of vernal pools. Dominant vegetation throughout these wetlands is characterized by red maple, eastern hemlock, yellow birch, cinnamon fern, sensitive fern and royal fern. Soils within these wetlands are poorly drained. Pondered water was present during fields work and the wetlands hydrological influences for these wetlands are primarily hillside seeps and water draining from the surrounding uplands and roadway.

Looking east at Wetland A34.



Wetland Function and Values for Wetlands A9, A31 & A34:

Groundwater Recharge/Discharge: Small pocket wetlands located in topographical depressions.

Floodflow Alteration: Small wetlands located in topographical depressions not associated with a watercourse, lake or pond.

Fish and Shellfish Habitat: Wetlands are not associated with a watercourse, lake or pond.

Sediment/Toxicant Retention: Uplands surrounding the wetlands are forested/stable.

Nutrient Removal: Plant diversity and density within the wetlands is low. No potential for nutrient flushing due to wetlands location within topographical depressions.

Production Export: Low level of flowering plants was observed. Plant diversity and density within the wetlands is low.

Sediment/Shoreline Stabilization: Wetlands occur in topographical depressions and are not associated with a watercourse, lake or pond. Surrounding uplands are forested.

Wildlife Habitat: Wetlands are near the I-89 ROW. Wetlands have the potential to support an amphibian population. Deer tracks were observed but not common.

Recreation: Hunting is not allowed within the NH DOT I-89 ROW. No public access is available for other purposes of recreation.

Educational/Scientific Value: Wetland type is common for the region of the state and no public access is available.

Uniqueness/Heritage: No historical structures observed. Wetland types are common for the region.

Visual Quality/Aesthetics: No public access. Views are limited to only highway traffic.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species during site work. Wetlands have the potential to contain an amphibian population.

Wetland Function-Value Evaluation Form













Total area of wetland Unknown Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Roadway Distance to nearest roadway or other development ~60 feet

Dominant wetland systems present PFO1E, PFO14E Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? YES If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	Y	4,5	N	Wetlands are small isolated pocket wetlands.
 Floodflow Alteration	N	2,5,9	N	Wetlands are small isolated pocket wetlands with low water storage potential. Wetlands are not associated with a watercourse, lake or pond.
 Fish and Shellfish Habitat	N		N	Isolated pocket wetlands. No fish or shellfish habitat present.
 Sediment/Toxicant Retention	N	4,5,8,9	N	Uplands surrounding these wetlands are forested. Long duration of water retention time is due to the wetlands located in topographical depressions. Wetlands are small.
 Nutrient Removal	N	5,7	N	Wetlands are small and lack plant diversity and density.
 Production Export	N		N	Wetlands are located in topographical depressions and lack plant diversity, flowering plants and community structure. No indications of production export observed.
 Sediment/Shoreline Stabilization	N		N	Wetlands are not associated with a watercourse, lake or pond. Wetlands are isolated pocket wetlands.
 Wildlife Habitat	Y	7, 17, 19, 20	N	Wetlands have the potential to contain insect and amphibian populations.
 Recreation	N		N	Wetlands are within the NH DOT highway ROW with no public access.
 Educational/Scientific Value	N		N	Wetland plant community types are common for the area of the state. Wetlands are located near the highway and there is no public access.
 Uniqueness/Heritage	N		N	Wetland types are common for the area of the state. No old foundations or other historical features were observed during site work.
 Visual Quality/Aesthetics	N		N	Wetlands are small and located near the highway.
ES Endangered Species Habitat	N		N	SRE did not observe any endangered species during site work. The wetlands may contain a population of amphibians.
Other				

Wetland I.D. A9, A31 & A34

Latitude _____ Longitude _____

Prepared by: CMB/MSW Date 12/22/20

Wetland Impact: Type _____ Area _____

Evaluation based on:

Office Field

Corps manual wetland delineation completed? Y X _____ N _____

Notes:

* Refer to backup list of numbered considerations.

Wetlands A7-A, A13, A16, A17, A18, A42 and A55

SRE determined wetlands A7-A, A13, A16, A17, A18, A42 and A55 all have similar characteristics in plant communities/stratum, soils, hydrological influences and function and values. The following discussion therefore encompasses the above referenced wetlands. Note that wetlands listed here are all isolated.

Wetland A7-A is classified as PFO1E, is located in the median between SB station numbers 1332 and 1335 (Sheets 2 & 3) and is isolated. Wetland A13 is classified as PFO/PSS1E, is located near SB station number 1364 (Sheet 5) and is isolated. Wetland A16 is classified as PSS1E, is located near SB station number 1379 (Sheet 6) and is isolated. Wetland A17 is classified as PFO1/4E and PSS1Ex, is located between SB station numbers 1383 and 1385 (Sheet 6) and is isolated. Wetland A18 is classified as PFO1/4E, is located in the median between SB station numbers 1383 and 1385 (Sheet 6) and is isolated. Wetland A42 is classified as PFO1/4E, is located near NB station number 1452 (Sheet 14) and is isolated. Wetland A55 is classified as PFO1E, is located in the median between NB station numbers 1480 and 1482 (Sheet 16) and is isolated.

Wetland ID	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland A7-A	STA. 1332 - 1335M	PFO1E	Sheets 2 & 3
Wetland A13	STA. 1364SB	PFO1E/PSS1E	Sheet 5
Wetland A16	STA. 1379SB	PSS1E	Sheet 6
Wetland A17	STA. 1383 - 1385SB	PSS1Ex, PFO1/4E	Sheet 6
Wetland A18	STA. 1383 - 1385M	PFO1/4E	Sheet 6
Wetland A42	STA. 1452NB	PFO1/4E	Sheet 14
Wetland A55	STA. 1480 - 1482M	PFO1E	Sheet 16

These wetlands are dominated by Palustrine Forested Broad-Leaved Deciduous/Needle-Leaved Evergreen (PFO1/4E), Palustrine Forested Broad-Leaved Deciduous Seasonally Flooded/Saturated (PFO1E), Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded/Saturated (PSS1E) with inclusions of Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flood/Saturated Excavated (PSS1Ex). Dominant vegetation throughout these wetlands is characterized by red maple, eastern hemlock, yellow birch, white meadowsweet, cinnamon fern, sensitive fern and royal fern. Soils within these wetlands are poorly drained with inclusions of mucky A horizons. Hydrological influences for these wetlands are primarily hillside seeps and surface water drainage from the surrounding uplands and roadway.

Looking at Wetland A55.



Wetland Function and Values for Wetland A7-A, A13, A16, A17, A18, A42 & A55:

Groundwater Recharge/Discharge: Wetlands are small and isolated.

Floodflow Alteration: Area of wetlands is small and wetlands are not associated with a watercourse, lake or pond.

Fish and Shellfish Habitat: Wetlands are not associated with a watercourse, lake or pond. No fish or shellfish habitat was observed.

Sediment/Toxicant Retention: Uplands surrounding the wetlands are forested/stable.

Nutrient Removal: Plant diversity and density within the wetlands is moderately low. No potential for nutrient flushing due to wetlands location within the topography.

Production Export: Low level of flowering plants was observed. Plant diversity and density within the wetlands is moderately low.

Sediment/Shoreline Stabilization: Wetlands occur in topographical low areas and are not associated with a watercourse, lake or pond. Surrounding uplands are forested.

Wildlife Habitat: Wetlands are near the I-89 ROW. Wetlands lack the potential to support a large amphibian population. Deer tracks were observed but not common.

Recreation: Hunting is not allowed within the NH DOT I-89 ROW. No public access is available for other purposes of recreation.

Educational/Scientific Value: Wetland types are common for the region of the state and no public access is available.

Uniqueness/Heritage: No historical structures observed. Wetland types are common for the region.

Visual Quality/Aesthetics: No public access. Views are limited to only highway traffic.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species during site work.

Wetland Function-Value Evaluation Form

Total area of wetland Unknown Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Roadway Distance to nearest roadway or other development ~35 feet















Dominant wetland systems present PFO/PSS1E, PFO1/4E, PSS1EX Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? YES If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Function/Value Suitability Rationale Principal Comments

Y / N (Reference #)* Function(s)/Value(s)

	Groundwater Recharge/Discharge	Y	4,5	N	Individual wetland areas are small and they are isolated. Groundwater recharge is presumed to be low due to size of wetlands.
	Floodflow Alteration	N	2,5,9	N	Small isolated wetlands with low water storage potential. Wetlands are not associated with a watercourse, lake or pond.
	Fish and Shellfish Habitat	N		N	Isolated pocket wetlands. No fish or shellfish habitat present.
	Sediment/Toxicant Retention	N	4,5,8,9	N	Uplands surrounding these wetlands are forested. Long duration of water retention time is due to the wetlands located in the topography. Wetlands are small.
	Nutrient Removal	N	5,7	N	Wetlands are small and lack plant diversity and density.
	Production Export	N		N	Wetlands are located in topographical low areas and lack plant diversity, flowering plants and community structure. No indications of production export observed.
	Sediment/Shoreline Stabilization	N		N	Wetlands are not associated with a watercourse, lake or pond. Wetlands are isolated.
	Wildlife Habitat	Y	7,17	N	Wetlands are small and are located near the I-89 highway corridor.
	Recreation	N		N	Wetlands are within the NH DOT highway ROW with no public access.
	Educational/Scientific Value	N		N	Wetland plant community types are common for the area of the state. Wetlands are located near the highway and there is no public access.
	Uniqueness/Heritage	N		N	Wetland types are common for the area of the state. No old foundations or other historical features were observed during site work.
	Visual Quality/Aesthetics	N		N	Wetlands are small and located near the highway.
	ES Endangered Species Habitat	N		N	SRE did not observe any endangered species during site work.
	Other				

Wetland ID: A7-A, A13, A16, A17, A18, A42, A55

Latitude _____ Longitude _____

Prepared by: CMBMSW Date 12/22/20

Wetland Impact: Type _____ Area _____

Evaluation based on:

Office Field

Corps manual wetland delineation completed? Y X _____ N _____

Notes:

* Refer to backup list of numbered considerations.

Stream Channels A12, A12-A and A39

SRE determined wetlands A12, A12-A and A39 all have similar characteristics in plant communities/stratum, soils, hydrological influences and function and values. The following discussion therefore encompasses the above referenced wetlands.

Channel A12-A is classified as R4SB3/4, is located near SB station number 1356 (Sheet 4) and receives water from off ROW jurisdictional features to the west. Channel A12-A drains west into a culvert that flows into Channel A12. Channel A12 is classified as R4SB3/4, is located in the median between NB station numbers 1352 and 1353 and receives water from channel A12 via a culvert. Channel A12 drains west into a culvert that outlets into Wetland A1 near NB station number 1352 (Sheet 4). Channel A39 is classified as R4SB3/4, is located between NB station numbers 1437 and 1438 (Sheet 13) and receives water from Wetland A38 via a culvert. Channel A39 drains west off ROW.

Channel ID	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Channel A12-A	STA. 1356	R4SB3/4	Sheet 4
Channel A12	STA. 1352 - 1353M	R4SB3/4	Sheet 4
Channel A39	STA. 1437 - 1438NB	R4SB3/4	Sheet 13

These stream channels are all jurisdictional Tier 1 surface waters and classified as Riverine Intermittent Streambed Cobble-Gravel/Sand (R4SB3/4). These jurisdictional surface waters are not vegetated and function only as conveyance of surface water. Hydrological influences for these channel is surface water drainage associated wetlands. The principal function for these channels is groundwater/surface water discharge and do not support any principal values for the local public. These intermittent stream channels do not support other functions or values. These stream are not capable of supporting fish populations.

Wetlands B1, B2 and B5

SRE determined wetlands B1, B2 and B5 all have similar characteristics in plant communities/stratum, soils, hydrological influences and function and values. The following discussion therefore encompasses the above referenced wetlands. These wetlands are all dominated by excavated (x) classifications.

Wetland B1 is classified as PSS/PEM1Ex, PFO1E and PFO1/4E, is located between SB station numbers 1521 and 1540 (Sheets 19 & 20) and drains northwest from the drainage split near mile marker 28.2 to a culvert that then drains into Wetland B4 and then into Wetland B9 before leaving the ROW. Wetland B2 is classified as PEM1Ex, is located in the median between SB station numbers 1521 and 1526 (Sheet 19) and drains northwest from the drainage split at near mile marker 28.2 and into an underdrain system near station 1526 which then emerges into Wetland B4 near SB station 1530. Wetland B5 is classified as PEM1Ex with a small amount of PSS1Ex and PFO1/4E, is located between NB station numbers 1522 and 1531 (Sheet 19) and drains northwest before exiting the ROW near NB station 1531.

Wetland System B ID#'s	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland B1	STA. 1521 - 1540SB	PEM1Ex, PFO1E, PSS1Ex, PFO1/4E	Sheets 19 & 20
Wetland B2	STA. 1521 - 1526SB	PEM1Ex	Sheet 19
Wetland B5	STA. 1522 - 1531NB	PEM1Ex, PSS1Ex, PFO1/4E	Sheet 19

These wetlands are dominated by Palustrine Emergent Persistent Seasonally Flooded/Saturated Excavated (PEM1Ex) and Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded/Saturated Excavated (PSS1Ex) with inclusions of Palustrine Forested Broad-Leaved Deciduous Seasonally Flood/Saturated Excavated (PFO1E) and Palustrine Forested Broad-Leaved Deciduous Seasonally Flooded/Saturated (PFO1E). Dominant vegetation throughout these red maple, eastern hemlock, yellow birch, white meadowsweet, broadleaf cattail and cinnamon fern. Soils within these wetlands are poorly drained mineral soils with small inclusions of mucky minerals. Hydrological influences for these wetlands are primarily hillside seeps and surface water drainage from the surrounding uplands and roadway.

Wetland Function and Values for Wetlands B1, B2 and B5:

Groundwater Recharge/Discharge: Wetlands are primarily roadside ditches that receive roadway runoff and some hillside seepage. Function is moderate.

Floodflow Alteration: Wetlands are small and have topographical gradient sufficient to allow excess water to drain off.

Fish and Shellfish Habitat: Wetlands are not associated with a watercourse or pond.

Sediment/Toxicant Retention: The uplands surrounding the wetlands are forested or paved. The only known sources of sediments/toxicants is winter road treatment.

Nutrient Removal: Plant diversity and density within the wetlands is low. No signs of nutrient flushing were observed.

Production Export: Maintained roadside wetlands. No higher trophic level species observed within the wetlands.

Sediment/Shoreline Stabilization: Wetland is not associated with a watercourse or pond. Wetlands are small and surrounding uplands are stable.

Wildlife Habitat: Wetlands lack substantial food sources and are located adjacent to I-89.

Recreation: Hunting is not allowed within the NH DOT I-89 ROW. No public access is available for other purposes of recreation.

Educational/Scientific Value: Wetland type is common for roadside ditches in the region of the state and no public access is available.

Uniqueness/Heritage: Maintained roadside wetland drainages.

Visual Quality/Aesthetics: Maintained roadside wetland drainages.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species/habitat for these wetlands during site work. Maintained roadside wetland drainages.

Wetland Function-Value Evaluation Form

Total area of wetland Unknown Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Highway Distance to nearest roadway or other development ~15 feet

Dominant wetland systems present PEM1Ex,PSS1Ex,PFO1E, PFO14E Contiguous undeveloped buffer zone present No

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. B1, B2 & B5

Latitude _____ Longitude _____

Prepared by: CMB, MSW Date 12/22/2020

Wetland Impact: Type _____ Area _____

Evaluation based on:

Office Field

Corps manual wetland delineation completed? Y X N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	1,2,4,5	N	Hydrology is driven primarily by sheet flow from the highway during rain events and some hillside seepage.
Floodflow Alteration	Y	2,3,9	N	Wetlands are small and topographical gradient allows water to move through the wetlands.
Fish and Shellfish Habitat	N		N	Roadside man-made excavated wetlands not associated with a watercourse, nor do they contain standing water.
Sediment/Toxicant Retention	Y	1,2,6	N	Wetlands can retain sediments received (i.e. winter road treatment sand). Primary source of sediments/toxicants is from winter road treatment. Maintained roadside ditches.
Nutrient Removal	Y	3,9	N	Plant diversity is low. Maintained roadside ditches. No know sources of excess nutrients above the wetland.
Production Export	N		N	Maintained ditch wetlands. Wetlands lack plant diversity and ability to flourish due to routine highway maintenance.
Sediment/Shoreline Stabilization	N		N	Wetlands are not associated with a watercourse, lake or pond.
Wildlife Habitat	N		N	Wetland ditches adjacent to the highway lacking plant diversity and community structure.
Recreation	N		N	Wetland ditches adjacent to the highway.
Educational/Scientific Value	N		N	Wetland ditches adjacent to the highway.
Uniqueness/Heritage	N		N	Wetland ditches adjacent to the highway.
Visual Quality/Aesthetics	N		N	Wetland ditches adjacent to the highway.
ES Endangered Species Habitat	N		N	SRE did not observe any endangered species nor adequate habitat within these maintained wetlands along I-89.
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland B3

Wetland B3 is an isolated wetland within the Wetland B drainage system. This wetland contains a potential vernal pool. If highway work within this area is required SRE recommends a field study be conducted during the breeding season to determine if this wetland meets the DES definition of vernal pools. Wetland B3 is classified as PFO1/4E, is located in the median between NB station numbers 1526 and 1527 (Sheet 19) and is an isolated wetland. Dominant vegetation within the wetland is red maple, *Ulmus americana* (American elm), eastern hemlock and sensitive fern. Soil within the wetland are poorly drained. Wetland hydrology is driven by hillside seeps.

Wetland System B ID#'s	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland B3	STA. 1526 - 1527M	PFO1/4E	Sheet 19

Looking at isolated pocket wetland with potential vernal pool (Wetland B3).



Wetland Function and Values for Wetland B3:

- Groundwater Recharge/Discharge:* Small pocket wetland located in a topographical depression.
- Floodflow Alteration:* Small wetland located in topographical depression and is not associated with a watercourse, lake or pond.
- Fish and Shellfish Habitat:* Wetland is not associated with a watercourse, lake or pond.
- Sediment/Toxicant Retention:* Uplands surrounding the wetland are forested/stable.
- Nutrient Removal:* Plant diversity and density within the wetland is low. No potential for nutrient flushing due to the wetlands location in the topography.

Production Export: Low level of flowering plants was observed. Plant diversity and density within the wetlands is low.

Sediment/Shoreline Stabilization: Wetland occurs in topographical depression and is not associated with a watercourse, lake or pond. Surrounding uplands are forested.

Wildlife Habitat: Wetland is near the I-89 ROW. Wetland has the potential to support an amphibian population. Deer tracks were observed but not common.

Recreation: Hunting is not allowed within the NH DOT I-89 ROW. No public access is available for other purposes of recreation.

Educational/Scientific Value: Wetland type is common for the region of the state and no public access is available.

Uniqueness/Heritage: No historical structures observed. Wetland is type is typical for the region.

Visual Quality/Aesthetics: No public access. Wetland is not visible from the highway.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species during site work. Wetland has the potential to contain an amphibian population.

Wetland Function-Value Evaluation Form













Total area of wetland Unknown Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Roadway Distance to nearest roadway or other development ~60 feet

Dominant wetland systems present PFO1/4E Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? YES If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/V value(s)	Comments
 Groundwater Recharge/Discharge	Y	4,5	N	Wetland is a small isolated pocket wetlands.
 Floodflow Alteration	N	2,5,9	N	Wetland is a small isolated pocket wetlands with low water storage potential. Wetland is not associated with a watercourse, lake or pond.
 Fish and Shellfish Habitat	N		N	Isolated pocket wetland. No fish or shellfish habitat present.
 Sediment/Toxicant Retention	N	4,5,8,9	N	Uplands surrounding the wetland is forested/stable. Long duration of water retention time is due to the wetland being located in a topographical depression. Wetland is small.
 Nutrient Removal	N	5,7	N	Wetland is small and lacks plant diversity and density.
 Production Export	N		N	Wetland is located in a topographical depression and lacks plant diversity, flowering plants and community structure. No indications of production export observed.
 Sediment/Shoreline Stabilization	N		N	Wetland is not associated with a watercourse, lake or pond. Wetlands are isolated pocket wetlands.
 Wildlife Habitat	Y	7,17,19,20	N	Wetland has the potential to contain insect and amphibian populations.
 Recreation	N		N	Wetland is within the NH DOT highway ROW with no public access.
 Educational/Scientific Value	N		N	Wetland plant community type is common for the area of the state. Wetland is located near the highway and there is no public access.
 Uniqueness/Heritage	N		N	Wetland type is common for the area of the state. No old foundations or other historical features were observed during site work.
 Visual Quality/Aesthetics	N		N	Wetland is small and located near the highway.
ES Endangered Species Habitat	N		N	SRE did not observe any endangered species during site work. The wetland may contain a population of amphibians.
Other				

Wetland I.D. **B3**

Latitude _____ Longitude _____

Prepared by: CMBMSW Date 12/22/20

Wetland Impact:
Type _____ Area _____

Evaluation based on:
Office Field

Corps manual wetland delineation completed? Y X _____ N _____

Notes:

* Refer to backup list of numbered considerations.

Wetland B4

Wetland B4 is a linear wetland within the I-89 median classified as Palustrine Forested Broad-Leaved Deciduous/Needle-Leaved Evergreen (PFO1/4E), Palustrine Forested Broad-Leaved Deciduous Seasonally Flooded/Saturated (PFO1E) with Palustrine Emergent Persistent Seasonally Flooded/Saturated Excavated (PEM1Ex) located along the edge of the highway in places (NB station numbers 1522 to 1549 (Sheets 19 through 21)). This wetland contains a potential vernal pool near NB station 1526 (Sheet 19). If highway work within this area is required SRE recommends a field study be conducted during the breeding season to determine if this wetland meets the DES definition of vernal pools. Dominant vegetation throughout this wetland is characterized by red maple, eastern hemlock, yellow birch within the forested areas, and *Panicum viragatum* (wand panic grass), cinnamon fern, broad-leaved cattail, sensitive fern and royal fern within the PEM1Ex portion of the wetland. Soils within these wetlands are poorly drained mineral soils. Hydrological influences for this wetlands are primarily hillside seeps and water draining from the surrounding uplands and roadway.

Wetland System B ID#'s	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland B4	STA. 1522 - 1549M	PEM1Ex, PFO1/4E, PFO1E, R4SB3	Sheets 19 thru 21

Looking at R4SB3 within Wetland B4.



General view of PFO1/4E wetland classification (Wetland B4).



Wetland Function and Values for Wetland B4:

Groundwater Recharge/Discharge: Wetlands receive runoff surrounding uplands/roadway and a moderate amount of hillside seepage. An intermittent stream is associated with this wetland. Moderate level of function for groundwater discharge for principal function.

Floodflow Alteration: Wetland bordering the intermittent stream is relatively small and topographical gradient is present.

Fish and Shellfish Habitat: Intermittent stream associated with the wetland is not capable of supporting a healthy fish or shellfish populations.

Sediment/Toxicant Retention: The uplands surrounding the wetlands are forested or paved. The only known sources of sediments/toxicants is winter road treatment.

Nutrient Removal: Plant diversity and density within the wetlands is moderately low. No signs of nutrient flushing were observed.

Production Export: Wetlands lack plant diversity and density. No higher trophic level species observed within the wetlands. Deer tracks were observed but not common.

Sediment/Shoreline Stabilization: Wetlands are associated with intermittent streams. Wetlands bordering the intermittent streams are small and surrounding uplands are stable.

Wildlife Habitat: Wetlands lack substantial food sources and are located adjacent to I-89. The portion of the wetland near NB station number 1526 (Sheet 19) has the potential to support an amphibian population.

Recreation: Hunting/recreating is not allowed within this portion of the NH DOT I-89 ROW. No public access is available for other purposes of recreation.

Educational/Scientific Value: Wetland and intermittent stream types are common for the region of the state and no public access is available.

Uniqueness/Heritage: Wetlands are adjacent to I-89. No historical features (i.e. old foundations) were observed during site work.

Visual Quality/Aesthetics: Wetland drainage located within the median portion of the NH DOT I-89 ROW. No public access.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species for this wetland during site work.

Wetland Function-Value Evaluation Form













Total area of wetland Unknown Human made? Partly Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Highway Distance to nearest roadway or other development ~15 feet

Dominant wetland systems present PEM1Ex/PSS1Ex/PRO14/ER4SBS3/4/R4SBS3 Contiguous undeveloped buffer zone present No

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

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

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	Y	1,2,4,5,9,12,13	Y	Hydrology is driven primarily by hillside seeps with additional hydrology coming from runoff from the surrounding uplands. Intermittent stream is associated with the wetland.
 Floodflow Alteration	Y	2,3,5,14,15	N	Wetland is located within the I-89 median and topographical gradient allows water to move efficiently through the wetland. Roadside wetland ditches present in portions of the wetland.
 Fish and Shellfish Habitat	N	1	N	Intermittent stream within the wetland is not capable of supporting a fish population. No evidence of a shellfish population.
 Sediment/Toxicant Retention	Y	1,4,6,8,10,14	Y	Topographical gradient allows water to move through wetland efficiently. Sediment and toxicant retention can occur within the PEM1Ex ditches associated with the wetland nearest the highway.
 Nutrient Removal	Y	3,5,7,12	N	Plant diversity is moderately low. Maintained roadside ditches associated with the wetland. No known sources of excess nutrients above the wetland.
 Production Export	N		N	Maintained roadside ditch wetland associated with the wetland along the edge of the highway. Wetland lacks plant diversity and abundance of flowering plants. Deer tracks observed but not common.
 Sediment/Shoreline Stabilization	Y	2,3,6,9	N	Wetland is associated with and intermittent stream; however, wetland bordering the intermittent stream is narrow. Surrounding uplands are densely vegetated. Low level of function.
 Wildlife Habitat	N	8,19,20	N	Wetland is adjacent to the highway and lack plant diversity and community structure. Deer tracks were observed but not common. Potential of supporting and amphibian population near NB station number 1526.
 Recreation	N		N	Wetland is located within the median of the NH DOT I-89 ROW. No public access.
 Educational/Scientific Value	N		N	Wetland types are common for the region. No public access.
 Uniqueness/Heritage	N		N	Wetland types are common for the region. No historical areas observed (i.e. old foundations).
 Visual Quality/Aesthetics	N		N	Views of wetland along I-89 are limited to the roadside PEM1Ex. Wetland portions within the woods are limited. No public access.
ES Endangered Species Habitat	N		N	SRE did not observe any endangered species during site work.
Other				

Wetland I.D. **B4**

Latitude _____ Longitude _____

Prepared by: CMB, MSW Date 12/22/2020

Wetland Impact:
Type _____ Area _____

Evaluation based on:
Office Field

Corps manual wetland delineation completed? Y X N

Notes:

* Refer to backup list of numbered considerations.

Wetlands B6, B7, B8 and B10:

Wetland System B ID#'s	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Wetland B6	STA. 1532 - 1538NB	PFO1/4E	Sheet 20
Wetland B7	STA. 1541 - 1542NB	PFO1/4E	Sheet 20
Wetland B8	STA. 1541 - 1545SB	PFO1/4E	Sheets 20 & 21
Wetland B10	STA. 1544 - 1546SBM	PFO1/4E, R4SB3	Sheet 21

SRE determined wetlands B6, B7, B8 and B10 all have similar characteristics in plant communities/stratum, soils and hydrological influences. The following discussion therefore encompasses the above referenced wetlands.

These wetlands are dominated by Palustrine Forested Broad-Leaved Deciduous/Needle-Leaved Evergreen (PFO1/4E) with one inclusion of Riverine Intermittent Streambed Cobble-Gravel (R4SB3). Dominant vegetation throughout these wetlands is characterized by red maple, eastern hemlock, yellow birch, cinnamon fern and sensitive fern. Soils within these wetlands are poorly drained mineral soils. Hydrological influences for these wetlands are primarily hillside seeps and surface water from the surrounding uplands and roadway during rain events.

Looking at typical poorly drained mineral soils.



Typical PFO1/4E for these wetlands (Wetland B8).



Wetland Function and Values for Wetland B6, B7, B8 and B10:

Groundwater Recharge/Discharge: Wetlands receive runoff surrounding uplands/roadway and a moderate amount of hillside seepage. An intermittent stream originates within Wetland B10. Moderate level of function for groundwater discharge for principal function.

Floodflow Alteration: Wetlands are small and a topographical gradient is present.

Fish and Shellfish Habitat: Intermittent stream that originates within Wetland B10 cannot support a fish or shellfish population.

Sediment/Toxicant Retention: The uplands surrounding the wetlands are forested or paved. The only known sources of sediments/toxicants is winter road treatment.

Nutrient Removal: Plant diversity and density within the wetlands is moderately low. No signs of nutrient flushing were observed.

Production Export: Wetlands lack plant diversity and density. No higher trophic level species observed within the wetlands. Deer tracks were observed but not common.

Sediment/Shoreline Stabilization: Wetland B10 bordering the origination point of an intermittent stream does not have a dense resilient plant community and surrounding uplands are stable.

Wildlife Habitat: Wetlands lack substantial food sources and are located adjacent to I-89.

Recreation: Hunting/recreating is not allowed within this portion of the NH DOT I-89 ROW. No public access is available for other purposes of recreation.

Educational/Scientific Value: Wetland and intermittent stream types are common for the region of the state and no public access is available.

Uniqueness/Heritage: Wetlands are adjacent to I-89. No historical features (i.e. old foundations) were observed during site work.

Visual Quality/Aesthetics: Wetlands located adjacent to the NH DOT I-89 ROW. No public access.

Endangered Species Habitat: SRE did not observe any rare, threatened or endangered species for this wetland during site work.

Wetland Function-Value Evaluation Form

Total area of wetland Unknown Human made? No Is wetland part of a wildlife corridor? No or a "habitar island"? No

Adjacent land use Highway Distance to nearest roadway or other development ~30 feet

Dominant wetland systems present PFO1/4E, R4SB3 Contiguous undeveloped buffer zone present No

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. B6, B7, B8 & B10













Latitude _____ Longitude _____

Prepared by: CMB, MSW Date 12/22/2020

Wetland Impact: Type _____ Area _____

Evaluation based on: Office Field

Corps manual wetland delineation completed? Y X _____ N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
 Groundwater Recharge/Discharge	Y	1,2,4,5,7,13	Y	Wetlands are diffuse and hillside seeps were observed. Groundwater discharge is a low/moderate function. Intermittent stream originates within Wetland B10.
 Floodflow Alteration	Y	2,3,5,13	N	Gradient within the wetland is sufficient to move water off-site and not retain nor detain a significant amount of water. Detention and retention times are low. Intermittent stream originates within Wetland B10.
 Fish and Shellfish Habitat	N		N	The intermittent stream that originates within Wetland B10 is not of sufficient size to support fish nor a shellfish population.
 Sediment/Toxicant Retention	Y	2,4,6,8	N	Surrounding uplands are forested/praved. Potential source of toxicants is highway runoff and road treatment.
 Nutrient Removal	N		N	No known sources of excess nutrients observed up slope of the wetlands. Wetland plant density and diversity is moderately low in these wetlands. No evidence of nutrient flushing observed.
 Production Export	N	4	N	Wetlands lacks high plant diversity and flowering plants. No sign of "flushing" of large amounts of organic plant materials observed. Deer tracks were observed, but not common.
 Sediment/Shoreline Stabilization	N		N	Intermittent stream originates within Wetland B10. Other wetlands are not associated with a watercourse, lake or pond.
 Wildlife Habitat	Y	17	N	Wetlands are small and located adjacent to the highway or within the median. Deer tracks were observed, but not common. Low plant diversity throughout the plant stratum.
 Recreation	N		N	Public access is restricted and hunting is not permitted within the NH DOT I-89 ROW.
 Educational/Scientific Value	N		N	Wetlands lack plant diversity and no public parking or access is available in the nearby area.
 Uniqueness/Heritage	N		N	No archaeological or historical area know within the wetland. SRE did not observe any old foundations or other items of significance during site work. No public access.
 Visual Quality/Aesthetics	N		N	Wetland lacks plant diversity. Wetland types are common for the region of the State.
ES Endangered Species Habitat	N		N	SRE did not observe any endanger species during site work.
Other				

Notes:

* Refer to backup list of numbered considerations.

Channels B9 and B11

Wetland System B ID#'s	Project Stationing	Wetland Classification(s)	Sheet Number(s)
Channel B9	STA. 1543NB	R4SB3	Sheet 20
Channel B11	STA. 1547 - 1548NB	R4SB3	Sheet 21

These stream channels are both jurisdictional Tier 1 surface waters and classified as Riverine Intermittent Streambed Cobble-Gravel (R4SB3). These jurisdictional surface waters are not vegetated and the principal function and value is conveyance of surface water (Groundwater Discharge). Hydrological influences for these channel is surface water drainage from associated wetlands located southwest of the northbound lane of I-89.

Channel B9 is classified as R4SB3, is located near NB station number 1543 (Sheet 20) and receives water from Wetland B4 & B8 located to the west. Channel B9 drains north off ROW. Channel B11 is classified as R4SB3, is located near NB station numbers 1547 and 1548 (Sheet 21) and receives water from Wetland B10 via a culvert. Channel B11 drains west off ROW.

The principal function for these channels is groundwater discharge and do not support any principal values for the local public. These intermittent stream channels do not support other functions or values. These stream are not capable of supporting fish populations.

Looking at Channel B9.



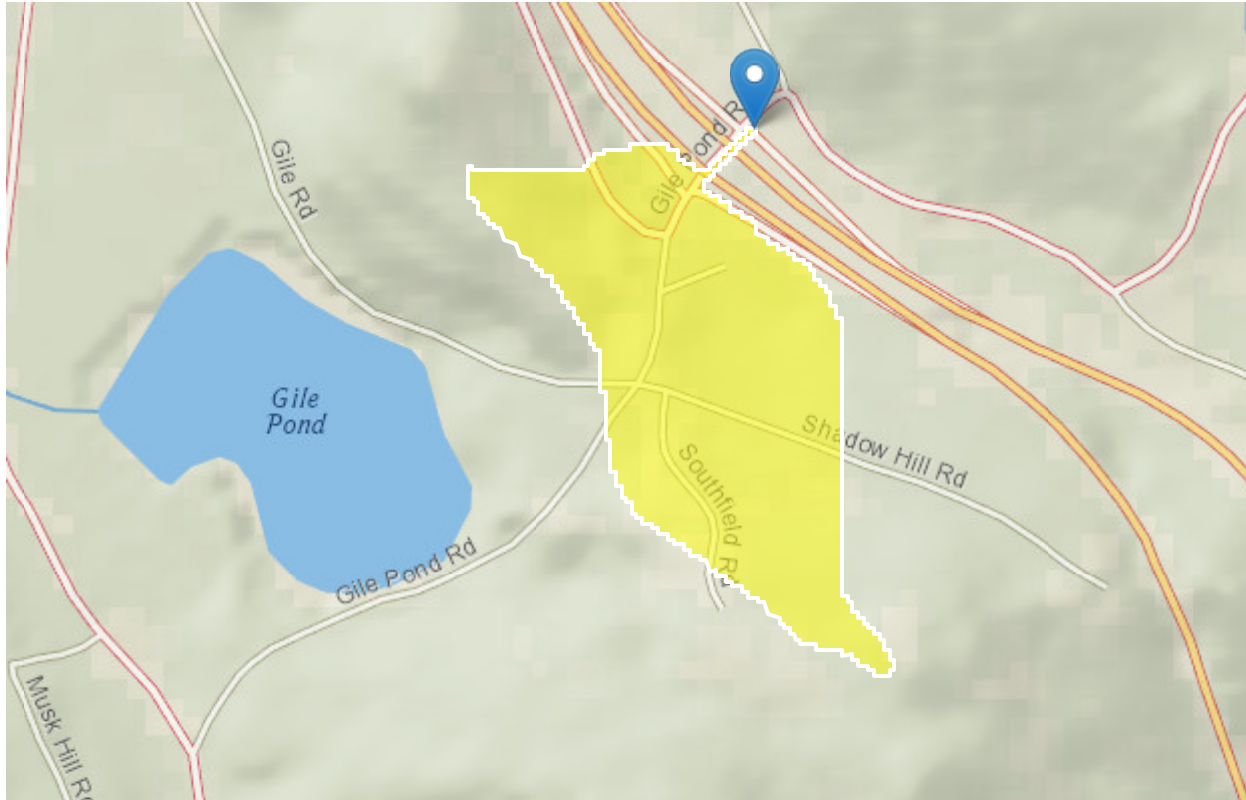
Sutton 42419 NB10 Ramp

Region ID: NH

Workspace ID: NH20190626115834331000

Clicked Point (Latitude, Longitude): 43.35606, -71.92279

Time: 2019-06-26 07:58:53 -0400



I89 NB Exit 10 Off Ramp MM27.2 --- 0.12 sq. miles = 76.8 acres = Tier 1

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.12	square miles
CONIF	Percentage of land surface covered by coniferous forest	17.2003	percent

Parameter Code	Parameter Description	Value	Unit
PREBC0103	Mean annual precipitation of basin centroid for January 1 to March 15 winter period	8.23	inches
BSLDEM30M	Mean basin slope computed from 30 m DEM	8.422	percent
MIXFOR	Percentage of land area covered by mixed deciduous and coniferous forest	25.3242	percent
PREG_03_05	Mean precipitation at gaging station location for March 16 to May 31 spring period	9.6	inches
TEMP	Mean Annual Temperature	44.24	degrees F
TEMP_06_10	Basinwide average temperature for June to October summer period	60.467	degrees F
PREG_06_10	Mean precipitation at gaging station location for June to October summer period	18.6	inches
ELEVMAX	Maximum basin elevation	1106.89	feet

Seasonal Flow Statistics Parameters_[Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.12	square miles	3.26	689
CONIF	Percent Coniferous Forest	17.2003	percent	3.07	56.2
PREBC0103	Jan to Mar Basin Centroid Precip	8.23	inches	5.79	15.1
BSLDEM30M	Mean Basin Slope from 30m DEM	8.422	percent	3.19	38.1
MIXFOR	Percent Mixed Forest	25.3242	percent	6.21	46.1
PREG_03_05	Mar to May Gage Precipitation	9.6	inches	6.83	11.5
TEMP	Mean Annual Temperature	44.24	degrees F	36	48.7

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
TEMP_06_10	Jun to Oct Mean Basinwide Temp	60.467	degrees F	52.9	64.4
PREG_06_10	Jun to Oct Gage Precipitation	18.6	inches	16.5	23.1
ELEVMAX	Maximum Basin Elevation	1106.89	feet	260	6290

Seasonal Flow Statistics Disclaimers^[Low Flow Statewide]

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

Seasonal Flow Statistics Flow Report^[Low Flow Statewide]

Statistic	Value	Unit
Jan to Mar15 60 Percent Flow	0.0718	ft ³ /s
Jan to Mar15 70 Percent Flow	0.0591	ft ³ /s
Jan to Mar15 80 Percent Flow	0.0519	ft ³ /s
Jan to Mar15 90 Percent Flow	0.037	ft ³ /s
Jan to Mar15 95 Percent Flow	0.0291	ft ³ /s
Jan to Mar15 98 Percent Flow	0.0243	ft ³ /s
Jan to Mar15 7 Day 2 Year Low Flow	0.0505	ft ³ /s
Jan to Mar15 7 Day 10 Year Low Flow	0.0252	ft ³ /s
Mar16 to May 60 Percent Flow	0.228	ft ³ /s
Mar16 to May 70 Percent Flow	0.179	ft ³ /s
Mar16 to May 80 Percent Flow	0.138	ft ³ /s
Mar16 to May 90 Percent Flow	0.101	ft ³ /s
Mar16 to May 95 Percent Flow	0.0759	ft ³ /s
Mar16 to May 98 Percent Flow	0.0536	ft ³ /s
Mar16 to May 7 Day 2 Year Low Flow	0.0745	ft ³ /s
Mar16 to May 7 Day 10 Year Low Flow	0.0385	ft ³ /s

Statistic	Value	Unit
Jun to Oct 60 Percent Flow	0.0105	ft ³ /s
Jun to Oct 70 Percent Flow	0.00718	ft ³ /s
Jun to Oct 80 Percent Flow	0.00498	ft ³ /s
Jun to Oct 90 Percent Flow	0.00278	ft ³ /s
Jun to Oct 95 Percent Flow	0.00164	ft ³ /s
Jun to Oct 98 Percent Flow	0.00143	ft ³ /s
Jun to Oct 7 Day 2 Year Low Flow	0.00335	ft ³ /s
Jun to Oct 7 Day 10 Year Low Flow	0.000729	ft ³ /s
Nov to Dec 60 Percent Flow	0.124	ft ³ /s
Nov to Dec 70 Percent Flow	0.0921	ft ³ /s
Nov to Dec 80 Percent Flow	0.069	ft ³ /s
Nov to Dec 90 Percent Flow	0.0422	ft ³ /s
Nov to Dec 95 Percent Flow	0.0245	ft ³ /s
Nov to Dec 98 Percent Flow	0.0132	ft ³ /s
Oct to Nov 7 Day 2 Year Low Flow	0.0645	ft ³ /s
Oct to Nov 7 Day 10 Year Low Flow	0.0236	ft ³ /s
<i>Seasonal Flow Statistics Citations</i>		
<p>Flynn, R.H. and Tasker, G.D.,2002, Development of Regression Equations to Estimate Flow Durations and Low-Flow-Frequency Statistics in New Hampshire Streams: U.S.Geological Survey Scientific Investigations Report 02-4298, 66 p. (http://pubs.water.usgs.gov/wrir02-4298)</p>		

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Application Version: 4.3.8

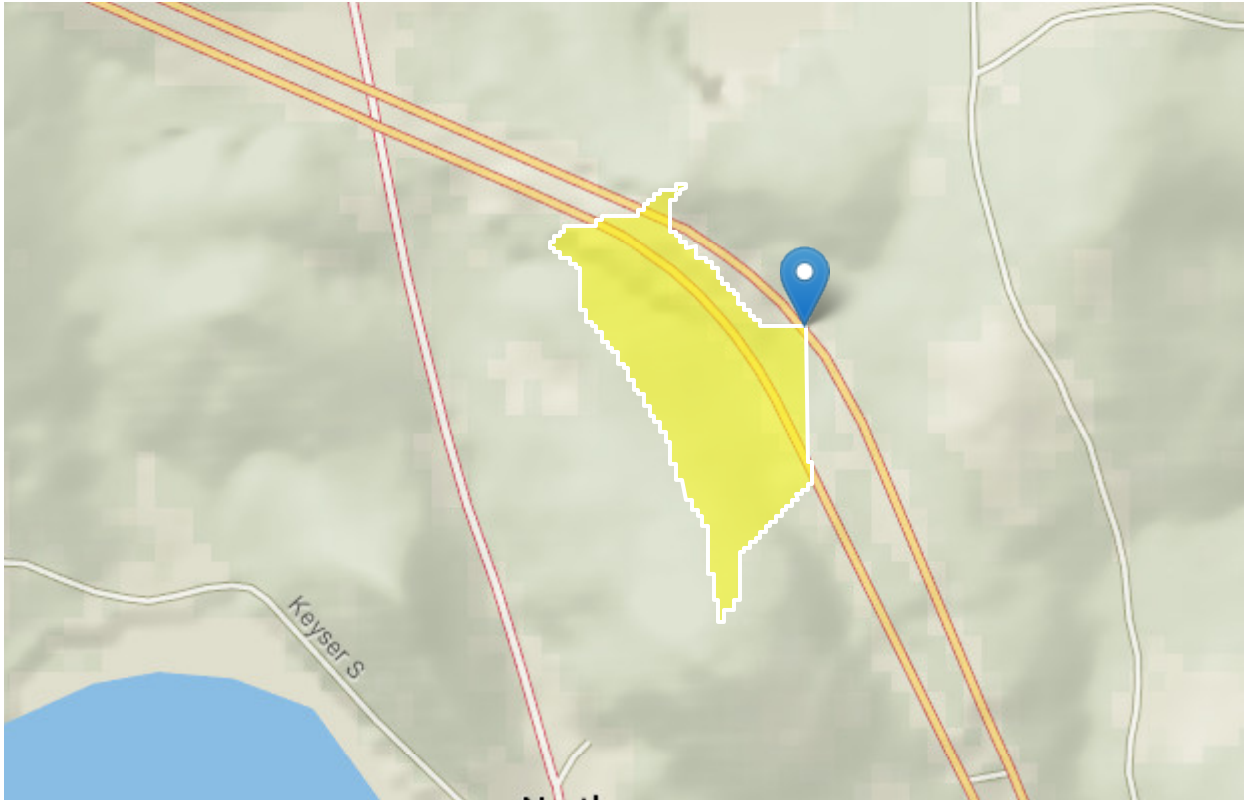
Sutton 42419 NB14

Region ID: NH

Workspace ID: NH20190626135250918000

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Time: 2019-06-26 09:53:09 -0400



189 NB MM28.4 --- 0.06 sq. miles = 38.4 acres = Tier 1

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.06	square miles
CONIF	Percentage of land surface covered by coniferous forest	40.707	percent

Parameter Code	Parameter Description	Value	Unit
PREBC0103	Mean annual precipitation of basin centroid for January 1 to March 15 winter period	7.68	inches
BSLDEM30M	Mean basin slope computed from 30 m DEM	9.386	percent
MIXFOR	Percentage of land area covered by mixed deciduous and coniferous forest	23.6032	percent
PREG_03_05	Mean precipitation at gaging station location for March 16 to May 31 spring period	9.3	inches
TEMP	Mean Annual Temperature	44.24	degrees F
TEMP_06_10	Basinwide average temperature for June to October summer period	60.476	degrees F
PREG_06_10	Mean precipitation at gaging station location for June to October summer period	18.1	inches
ELEVMAX	Maximum basin elevation	1163.905	feet

Seasonal Flow Statistics Parameters[Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.06	square miles	3.26	689
CONIF	Percent Coniferous Forest	40.707	percent	3.07	56.2
PREBC0103	Jan to Mar Basin Centroid Precip	7.68	inches	5.79	15.1
BSLDEM30M	Mean Basin Slope from 30m DEM	9.386	percent	3.19	38.1
MIXFOR	Percent Mixed Forest	23.6032	percent	6.21	46.1
PREG_03_05	Mar to May Gage Precipitation	9.3	inches	6.83	11.5
TEMP	Mean Annual Temperature	44.24	degrees F	36	48.7

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
TEMP_06_10	Jun to Oct Mean Basinwide Temp	60.476	degrees F	52.9	64.4
PREG_06_10	Jun to Oct Gage Precipitation	18.1	inches	16.5	23.1
ELEVMAX	Maximum Basin Elevation	1163.905	feet	260	6290

Seasonal Flow Statistics Disclaimers^[Low Flow Statewide]

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

Seasonal Flow Statistics Flow Report^[Low Flow Statewide]

Statistic	Value	Unit
Jan to Mar15 60 Percent Flow	0.0245	ft ³ /s
Jan to Mar15 70 Percent Flow	0.0199	ft ³ /s
Jan to Mar15 80 Percent Flow	0.0182	ft ³ /s
Jan to Mar15 90 Percent Flow	0.0135	ft ³ /s
Jan to Mar15 95 Percent Flow	0.0108	ft ³ /s
Jan to Mar15 98 Percent Flow	0.00962	ft ³ /s
Jan to Mar15 7 Day 2 Year Low Flow	0.0188	ft ³ /s
Jan to Mar15 7 Day 10 Year Low Flow	0.00927	ft ³ /s
Mar16 to May 60 Percent Flow	0.117	ft ³ /s
Mar16 to May 70 Percent Flow	0.0913	ft ³ /s
Mar16 to May 80 Percent Flow	0.0706	ft ³ /s
Mar16 to May 90 Percent Flow	0.0511	ft ³ /s
Mar16 to May 95 Percent Flow	0.0383	ft ³ /s
Mar16 to May 98 Percent Flow	0.0272	ft ³ /s
Mar16 to May 7 Day 2 Year Low Flow	0.0316	ft ³ /s
Mar16 to May 7 Day 10 Year Low Flow	0.016	ft ³ /s

Statistic	Value	Unit
Jun to Oct 60 Percent Flow	0.00363	ft ³ /s
Jun to Oct 70 Percent Flow	0.00243	ft ³ /s
Jun to Oct 80 Percent Flow	0.00199	ft ³ /s
Jun to Oct 90 Percent Flow	0.00109	ft ³ /s
Jun to Oct 95 Percent Flow	0.000624	ft ³ /s
Jun to Oct 98 Percent Flow	0.00057	ft ³ /s
Jun to Oct 7 Day 2 Year Low Flow	0.00132	ft ³ /s
Jun to Oct 7 Day 10 Year Low Flow	0.000256	ft ³ /s
Nov to Dec 60 Percent Flow	0.0609	ft ³ /s
Nov to Dec 70 Percent Flow	0.0437	ft ³ /s
Nov to Dec 80 Percent Flow	0.0317	ft ³ /s
Nov to Dec 90 Percent Flow	0.0185	ft ³ /s
Nov to Dec 95 Percent Flow	0.0101	ft ³ /s
Nov to Dec 98 Percent Flow	0.00521	ft ³ /s
Oct to Nov 7 Day 2 Year Low Flow	0.0305	ft ³ /s
Oct to Nov 7 Day 10 Year Low Flow	0.0103	ft ³ /s
<i>Seasonal Flow Statistics Citations</i>		
<p>Flynn, R.H. and Tasker, G.D.,2002, Development of Regression Equations to Estimate Flow Durations and Low-Flow-Frequency Statistics in New Hampshire Streams: U.S.Geological Survey Scientific Investigations Report 02-4298, 66 p. (http://pubs.water.usgs.gov/wrir02-4298)</p>		

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Application Version: 4.3.8

Sutton 42419 SB2

Region ID: NH

Workspace ID: NH20190625183235212000

Clicked Point (Latitude, Longitude): 43.32655, -71.90329

Time: 2019-06-25 14:32:51 -0400



I89 SB MM24.7 --- 0.14 sq. miles = 89.6 acres = Tier 1

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.14	square miles
CONIF	Percentage of land surface covered by coniferous forest	34.4795	percent

Parameter Code	Parameter Description	Value	Unit
PREBC0103	Mean annual precipitation of basin centroid for January 1 to March 15 winter period	8.31	inches
BSLDEM30M	Mean basin slope computed from 30 m DEM	11.886	percent
MIXFOR	Percentage of land area covered by mixed deciduous and coniferous forest	35.6023	percent
PREG_03_05	Mean precipitation at gaging station location for March 16 to May 31 spring period	9.7	inches
TEMP	Mean Annual Temperature	44.24	degrees F
TEMP_06_10	Basinwide average temperature for June to October summer period	60.404	degrees F
PREG_06_10	Mean precipitation at gaging station location for June to October summer period	18.5	inches
ELEVMAX	Maximum basin elevation	1142.193	feet

Seasonal Flow Statistics Parameters[Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.14	square miles	3.26	689
CONIF	Percent Coniferous Forest	34.4795	percent	3.07	56.2
PREBC0103	Jan to Mar Basin Centroid Precip	8.31	inches	5.79	15.1
BSLDEM30M	Mean Basin Slope from 30m DEM	11.886	percent	3.19	38.1
MIXFOR	Percent Mixed Forest	35.6023	percent	6.21	46.1
PREG_03_05	Mar to May Gage Precipitation	9.7	inches	6.83	11.5
TEMP	Mean Annual Temperature	44.24	degrees F	36	48.7

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
TEMP_06_10	Jun to Oct Mean Basinwide Temp	60.404	degrees F	52.9	64.4
PREG_06_10	Jun to Oct Gage Precipitation	18.5	inches	16.5	23.1
ELEVMAX	Maximum Basin Elevation	1142.193	feet	260	6290

Seasonal Flow Statistics Disclaimers^[Low Flow Statewide]

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

Seasonal Flow Statistics Flow Report^[Low Flow Statewide]

Statistic	Value	Unit
Jan to Mar15 60 Percent Flow	0.0686	ft ³ /s
Jan to Mar15 70 Percent Flow	0.0563	ft ³ /s
Jan to Mar15 80 Percent Flow	0.0505	ft ³ /s
Jan to Mar15 90 Percent Flow	0.0373	ft ³ /s
Jan to Mar15 95 Percent Flow	0.0298	ft ³ /s
Jan to Mar15 98 Percent Flow	0.0258	ft ³ /s
Jan to Mar15 7 Day 2 Year Low Flow	0.0513	ft ³ /s
Jan to Mar15 7 Day 10 Year Low Flow	0.026	ft ³ /s
Mar16 to May 60 Percent Flow	0.297	ft ³ /s
Mar16 to May 70 Percent Flow	0.231	ft ³ /s
Mar16 to May 80 Percent Flow	0.17	ft ³ /s
Mar16 to May 90 Percent Flow	0.119	ft ³ /s
Mar16 to May 95 Percent Flow	0.0871	ft ³ /s
Mar16 to May 98 Percent Flow	0.0601	ft ³ /s
Mar16 to May 7 Day 2 Year Low Flow	0.081	ft ³ /s
Mar16 to May 7 Day 10 Year Low Flow	0.0421	ft ³ /s

Statistic	Value	Unit
Jun to Oct 60 Percent Flow	0.011	ft ³ /s
Jun to Oct 70 Percent Flow	0.00747	ft ³ /s
Jun to Oct 80 Percent Flow	0.00598	ft ³ /s
Jun to Oct 90 Percent Flow	0.00337	ft ³ /s
Jun to Oct 95 Percent Flow	0.002	ft ³ /s
Jun to Oct 98 Percent Flow	0.00175	ft ³ /s
Jun to Oct 7 Day 2 Year Low Flow	0.00403	ft ³ /s
Jun to Oct 7 Day 10 Year Low Flow	0.000896	ft ³ /s
Nov to Dec 60 Percent Flow	0.137	ft ³ /s
Nov to Dec 70 Percent Flow	0.0991	ft ³ /s
Nov to Dec 80 Percent Flow	0.0721	ft ³ /s
Nov to Dec 90 Percent Flow	0.0427	ft ³ /s
Nov to Dec 95 Percent Flow	0.0241	ft ³ /s
Nov to Dec 98 Percent Flow	0.0128	ft ³ /s
Oct to Nov 7 Day 2 Year Low Flow	0.0696	ft ³ /s
Oct to Nov 7 Day 10 Year Low Flow	0.024	ft ³ /s

Seasonal Flow Statistics Citations

Flynn, R.H. and Tasker, G.D.,2002, Development of Regression Equations to Estimate Flow Durations and Low-Flow-Frequency Statistics in New Hampshire Streams: U.S.Geological Survey Scientific Investigations Report 02-4298, 66 p. (<http://pubs.water.usgs.gov/wrir02-4298>)

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Application Version: 4.3.8

NH Department of Transportation
Bureau of Highway Design
Roadway Section
Env-Wt 904.08 Repair, Rehabilitation, or Replacement of Tier 1 or Tier 2 Crossings
Stream Crossing Form
Prepared by: C. Spetelunas, P.E.

Env-Wt 904.08(a)- The repair, rehabilitation, or replacement of a tier 1 or Tier 2 stream crossing shall be limited to stream crossings where the contributing watershed is as specified for the tier and the certification specified in (b) is provided.

Crossing's Drainage Area: 0.12 square miles (76.8 acres)

Project Description: The Sutton 41429 project is located along I-89 NB and SB from approximately MM 24.2 to MM 28.8 and includes the Exit 10 ramps and SB Rest Area. The purpose of this project is to rehabilitate the existing pavement, replace or rehabilitate aged drainage, guardrail and signs, and improve safety.

The location for this crossing is at MM 27.1, Station 1463+30 NB and Station 308+07 NB off ramp, (sheet 20; Drainage note 26N) and is a 36" cmp in the existing condition.

Env-Wt 904.08(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 crossing does not have a history of causing or contributing to flooding that damages the crossing or other human infrastructure or protected species habitat;

This crossing does not have a history of causing or contributing to flooding that damages the crossing or other human infrastructure or protected species habitat.

(2) The proposed stream crossing will:

a. Meet the general criteria specified in Env-Wt 904.01;

see page 2 for Env-Wt 904.01 form

b. Maintain or enhance the hydraulic capacity of the stream crossing;

The proposed work will maintain the hydraulic capacity of the stream crossing.

c. Maintain or enhance the capacity of the crossing to accommodate aquatic organism passage;

The proposed work will maintain the capacity of the crossing to accommodate aquatic organism passage.

d. Maintain or enhance the connectivity of the stream reaches upstream or downstream of the crossing; and

The proposed work maintains the connectivity of the stream reaches upstream or downstream of the crossing.

e. Not cause or contribute to the increase in the frequency of flooding or overtopping of the banks upstream or downstream of the crossing.

The proposed work will not cause an increase in the frequency of flooding or overtopping of the banks upstream or downstream of the crossing. The crossing does not have a history of overtopping its banks.

Env-Wt 904.08(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. (if applicable, indicate the type of rehabilitation)

This crossing is proposed to be rehabilitated by slip lining. The existing 36" corrugated metal pipe will be slip lined with a 30" smooth plastic pipe, resulting in very similar hydraulic characteristics. The thickness of the 30" spp is approximately 1" and will sit on the bottom of the existing 36" cpp, resulting in a change of invert elevation at both the inlet and outlet by 1". Additional work includes repair and/or repointing the inlet headwall.

Env-Wt 904.01 General Design Considerations

Applicable to All Stream Crossings

The crossing meets or exceeds the general design criteria specified in Env-Wt 904.01, as follows:

(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;

The proposed work will not alter the stream crossing's sediment transport competence.

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

The proposed work will not alter the stream crossings ability to maintain high and low flows.

StreamStats reports a 2-year low flow of 0.00335 cfs, and a 50-year peak flow of 40.8 cfs for the existing and proposed conditions.

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

The proposed work will not alter the stream crossing's ability to accommodate the movement of indigenous life beyond the duration of construction.

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

The proposed work will 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

The proposed work will not increase potential for inlet obstruction by sediment, wood, or debris.

b. Preserving the natural alignment of the stream channel;

The proposed project does not change the alignment of the stream channel

(6) Preserve watercourse connectivity where it currently exists;

The proposed work will preserve the existing watercourse connectivity.

(7) Restore watercourse connectivity where:

a. Connectivity previously was disrupted as a result of human activity(ies); and

The proposed work will not alter the existing watercourse connectivity.

b. Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both;

The proposed work will not alter the existing watercourse connectivity.

(8) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and

The use of erosion control measures during construction, and the stabilization of disturbed areas, will ensure that there is no erosion, aggradation, or scour as a result of the proposed work.

(9) Not cause water quality degradation

The proposed work will extend the functionality of the existing drainage system and maintain current water quality levels.

- (b) For stream crossing over tidal waters, the stream crossing shall be designed to:
 - (1) Match the velocity, depth, cross-sectional area, and substrate of the natural stream: and
This project does not impact tidal waters.
 - (2) Be of sufficient size to not restrict bi-directional tidal flow over the natural tide range above, below, and through the crossing.
This project does not impact tidal waters.



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: <input style="width: 50px;" type="text" value="76.8"/> acres	
<input checked="" 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 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 style="width: 50px;" type="text"/>	
Elevation of the 100-year floodplain at the inlet: <input style="width: 50px;" 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): <input style="width: 50px;" type="text"/> CFS	Calculation method: <input style="width: 50px;" type="text"/>
Estimated bankfull discharge at the crossing location: <input style="width: 50px;" type="text"/> CFS	Calculation method: <input style="width: 50px;" type="text"/>

➡ **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: <input style="width: 50px;" type="text"/> feet	Mean Bankfull Depth: <input style="width: 50px;" type="text"/> feet
Bankfull Cross Sectional Area: <input style="width: 50px;" type="text"/> 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: <input style="width: 100px;" type="text"/>
Reference reach watershed size: <input style="width: 50px;" type="text"/> acres

Parameter	Cross Section 1 Describe bed form <input style="width: 50px;" type="text"/> <i>(e.g. pool, riffle, glide)</i>	Cross Section 2 Describe bed form <input style="width: 50px;" type="text"/> <i>(e.g. pool, riffle, glide)</i>	Cross Section 3 Describe bed form <input style="width: 50px;" type="text"/> <i>(e.g. pool, riffle, glide)</i>	Range
Bankfull Width	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet
Bankfull Cross Sectional Area	<input style="width: 50px;" type="text"/> SF	<input style="width: 50px;" type="text"/> SF	<input style="width: 50px;" type="text"/> SF	<input style="width: 50px;" type="text"/> SF
Mean Bankfull Depth	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet
Width to Depth Ratio	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>
Max Bankfull Depth	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet
Flood Prone Width	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet
Entrenchment Ratio	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>

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

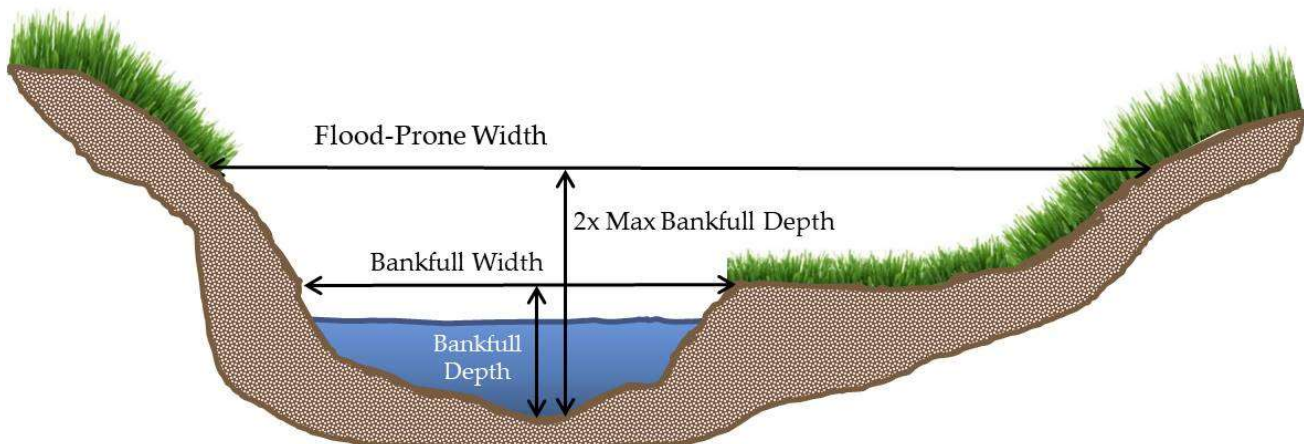


Figure 1: Determining the Reference Reach Attributes.

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: <input style="width: 50px;" type="text"/>
Average Channel Slope at the Crossing Location: <input style="width: 50px;" type="text"/>

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: <input style="width: 50px;" type="text"/>
Sinuosity of the Crossing Location: <input style="width: 50px;" type="text"/>

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:	█ %
% of reach that is boulder:	█ %
% of reach that is cobble:	█ %
% of reach that is gravel:	█ %
% of reach that is sand:	█ %
% of reach that is silt:	█ %
SECTION 9 - STREAM TYPE OF REFERENCE REACH	
<i>For tier 2, tier 3 and tier 4 crossings only.</i>	
Stream Type of Reference Reach:	█

Refer to Rosgen Classification Chart (Figure 2) below:

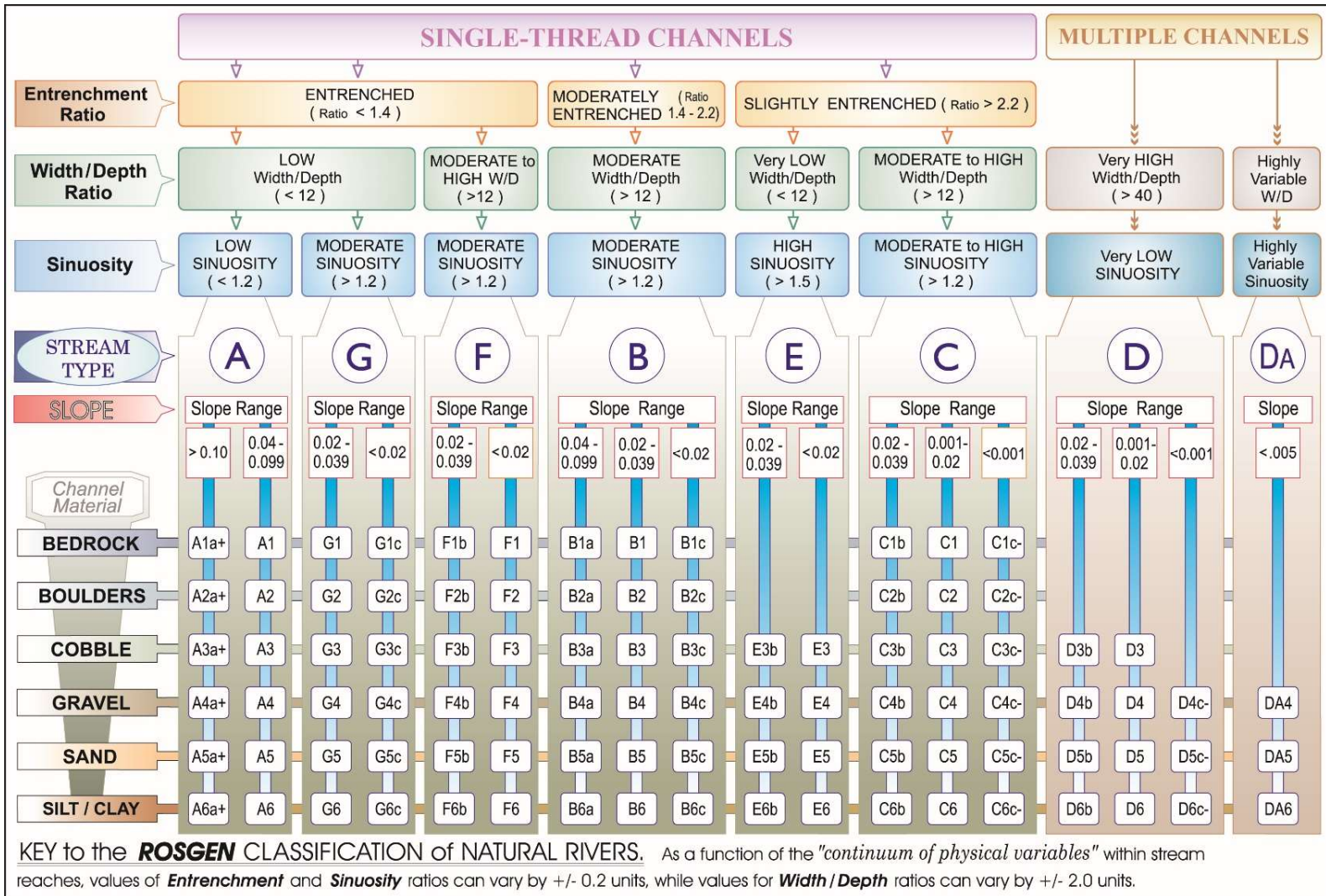


Figure 2: Reference from Applied River Morphology, Rosgen, 1996.

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

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

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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: <i>(perpendicular to flow)</i> 3 feet	Culvert Diameter: 3 feet		Inlet Elevation: El. 902.25 feet	
	Existing Crossing Length: <i>(parallel to flow)</i> 249 feet	Outlet Elevation: El. 890.53 feet		Culvert Slope: 4.7%	
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 type="checkbox"/>		<input type="checkbox"/>
	Closed-bottom Culvert	<input checked="" 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: <i>(perpendicular to flow)</i> 2.5 feet	Culvert Diameter: 2.5 feet		Inlet Elevation: El. 902.33 feet	
Proposed Structure Length: <i>(parallel to flow)</i> 249 feet	Outlet Elevation: El. 890.61 feet		Culvert Slope: 4.7%		
Proposed Entrenchment Ratio:* <input type="text"/>					
<i>For Tier 2, Tier 3 and Tier 4 Crossings Only. To accommodate the entrenchment ratio, floodplain drainage structures may be utilized.</i>					

* 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.

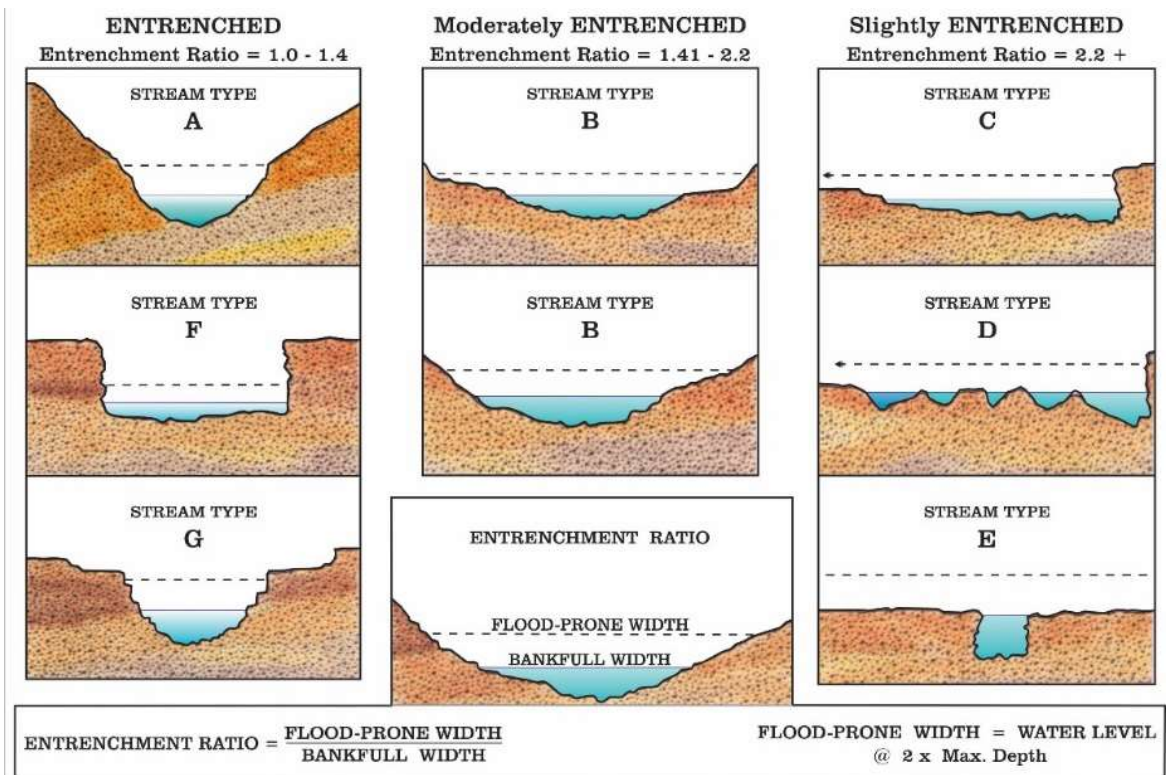


Figure 3: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 11 - CROSSING STRUCTURE HYDRAULICS		
	Existing	Proposed
100 year flood stage elevation at inlet:	906.95	908.29
Flow velocity at outlet in feet per second (FPS):	7.27	10.47
Calculated 100 year peak discharge (Q) for the <i>proposed</i> structure in CFS:		51.40
Calculated 50 year peak discharge (Q) for the <i>proposed</i> structure in CFS:		40.80
SECTION 12 - CROSSING STRUCTURE OPENNESS RATIO		
<i>For tier 2, tier 3 and tier 4 crossings only.</i>		
Crossing Structure Openness Ratio* = <input type="text"/>		
* 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:		
<input checked="" type="checkbox"/> Not be a barrier to sediment transport.		
<input checked="" type="checkbox"/> Prevent the restriction of high flows and maintain existing low flows.		
<input checked="" type="checkbox"/> Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.		
<input checked="" type="checkbox"/> Not cause an increase in the frequency of flooding or overtopping of banks.		
<input checked="" type="checkbox"/> 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.		
<input checked="" type="checkbox"/> Preserve watercourse connectivity where it currently exists.		
<input checked="" type="checkbox"/> 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.		
<input checked="" type="checkbox"/> Not cause erosion, aggradation, or scouring upstream or downstream of the crossing.		
<input checked="" type="checkbox"/> 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.		
<input checked="" type="checkbox"/> 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.		
<input type="checkbox"/> I have submitted an alternative design and addressed each requirement listed in Env-Wt 904.10.		

NH Department of Transportation
Bureau of Highway Design
Roadway Section
Env-Wt 904.08 Repair, Rehabilitation, or Replacement of Tier 1 or Tier 2 Crossings
Stream Crossing Form
Prepared by: C. Spetelunas

Env-Wt 904.08(a)- The repair, rehabilitation, or replacement of a tier 1 or Tier 2 stream crossing shall be limited to stream crossings where the contributing watershed is as specified for the tier and the certification specified in (b) is provided.

Crossing's Drainage Area: 0.06 square miles (38.4 acres)

Project Description: The Sutton 41429 project is located along I-89 NB and SB from approximately MM 24.2 to MM 28.8 and includes the Exit 10 ramps and SB Rest Area. The purpose of this project is to rehabilitate the existing pavement, replace or rehabilitate aged drainage, guardrail and signs, and improve safety.

The location for this crossing is at MM 28.7, Station 1545+95 NB (sheet 26; drainage note 55N), and is a 24" cmp in the existing condition.

Env-Wt 904.08(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 crossing does not have a history of causing or contributing to flooding that damages the crossing or other human infrastructure or protected species habitat;

This crossing does not have a history of causing or contributing to flooding that damages the crossing or other human infrastructure or protected species habitat.

(2) The proposed stream crossing will:

a. Meet the general criteria specified in Env-Wt 904.01;

see page 2 for Env-Wt 904.01 form

b. Maintain or enhance the hydraulic capacity of the stream crossing;

The proposed work will maintain the hydraulic capacity of the stream crossing.

c. Maintain or enhance the capacity of the crossing to accommodate aquatic organism passage;

The proposed work will improve the capacity of the crossing to accommodate aquatic organism passage due to the elimination of the outlet perch.

d. Maintain or enhance the connectivity of the stream reaches upstream or downstream of the crossing; and

The proposed work enhances the connectivity of the stream reaches upstream or downstream of the crossing. The crossing is currently perched; proposed work includes stone riprap apron at the inlet and outlet which will connect to the culvert's inverts.

e. Not cause or contribute to the increase in the frequency of flooding or overtopping of the banks upstream or downstream of the crossing.

The proposed work will not cause an increase in the frequency of flooding or overtopping of the banks upstream or downstream of the crossing. The crossing does not have a history of overtopping its banks.

Env-Wt 904.08(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. (if applicable, indicate the type of rehabilitation)

This crossing is proposed to be rehabilitated by slip lining. The existing 24” corrugated metal pipe will be slip lined with an 18” smooth plastic pipe, resulting in very similar hydraulic characteristics. The thickness of the 30” spp is approximately 1” and will sit on the bottom of the existing 36” cpp, resulting in a change of invert elevation at both the inlet and outlet by 1”. Additional work includes construction of new headwalls at the inlet and outlet and stone apron protection at both the inlet and outlet.

**Env-Wt 904.01 General Design Considerations
Applicable to All Stream Crossings**

The crossing meets or exceeds the general design criteria specified in Env-Wt 904.01, as follows:

(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;

The proposed work will not alter the stream crossing’s sediment transport competence.

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

The proposed work will not alter the stream crossings ability to maintain high and low flows. StreamStats reports a 2-year low flow of 0.00132 cfs, and a 50-year peak flow of 17.8 cfs for the existing and proposed condition.

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

The proposed work will not alter the stream crossing’s ability to accommodate the movement of indigenous life beyond the duration of construction. The crossing is currently perched at the outlet; the proposed work will improve connectivity by installing riprap outlet ramps/ protection.

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

The proposed work will 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

The proposed work will not increase potential for inlet obstruction by sediment, wood, or debris.

b. Preserving the natural alignment of the stream channel;

The proposed project does not change the alignment of the stream channel

(6) Preserve watercourse connectivity where it currently exists;

The proposed work will improve the existing watercourse connectivity. The crossing is currently perched at the outlet; the proposed work will improve connectivity by installing riprap outlet ramps/ protection.

(7) Restore watercourse connectivity where:

a. Connectivity previously was disrupted as a result of human activity(ies); and

The proposed work will improve the existing watercourse connectivity. The crossing is currently perched at the outlet; the proposed work will improve connectivity by installing riprap outlet ramps/ protection.

b. Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both;

The proposed work will improve the existing watercourse connectivity.

(8) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and
The use of erosion control measures during construction, and the stabilization of disturbed areas, will ensure that there is no erosion, aggradation, or scour as a result of the proposed work.

(9) Not cause water quality degradation

The proposed work will prolong the functioning of the existing drainage system and maintain current water quality levels.

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

(1) Match the velocity, depth, cross-sectional area, and substrate of the natural stream: and

This project does not impact tidal waters.

(2) Be of sufficient size to not restrict bi-directional tidal flow over the natural tide range above, below, and through the crossing.

This project does not impact tidal waters.



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: <input style="width: 50px;" type="text" value="38.4"/> acres	
<input checked="" 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 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 style="width: 50px;" type="text"/>	
Elevation of the 100-year floodplain at the inlet: <input style="width: 50px;" 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): <input style="width: 50px;" type="text"/> CFS	Calculation method: <input style="width: 50px;" type="text"/>
Estimated bankfull discharge at the crossing location: <input style="width: 50px;" type="text"/> CFS	Calculation method: <input style="width: 50px;" type="text"/>

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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: <input style="width: 50px;" type="text"/> feet	Mean Bankfull Depth: <input style="width: 50px;" type="text"/> feet
Bankfull Cross Sectional Area: <input style="width: 50px;" type="text"/> 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: <input style="width: 100px;" type="text"/>
Reference reach watershed size: <input style="width: 50px;" type="text"/> acres

Parameter	Cross Section 1 Describe bed form <input style="width: 50px;" type="text"/> <i>(e.g. pool, riffle, glide)</i>	Cross Section 2 Describe bed form <input style="width: 50px;" type="text"/> <i>(e.g. pool, riffle, glide)</i>	Cross Section 3 Describe bed form <input style="width: 50px;" type="text"/> <i>(e.g. pool, riffle, glide)</i>	Range
Bankfull Width	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet
Bankfull Cross Sectional Area	<input style="width: 50px;" type="text"/> SF	<input style="width: 50px;" type="text"/> SF	<input style="width: 50px;" type="text"/> SF	<input style="width: 50px;" type="text"/> SF
Mean Bankfull Depth	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet
Width to Depth Ratio	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>
Max Bankfull Depth	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet
Flood Prone Width	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet
Entrenchment Ratio	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>

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

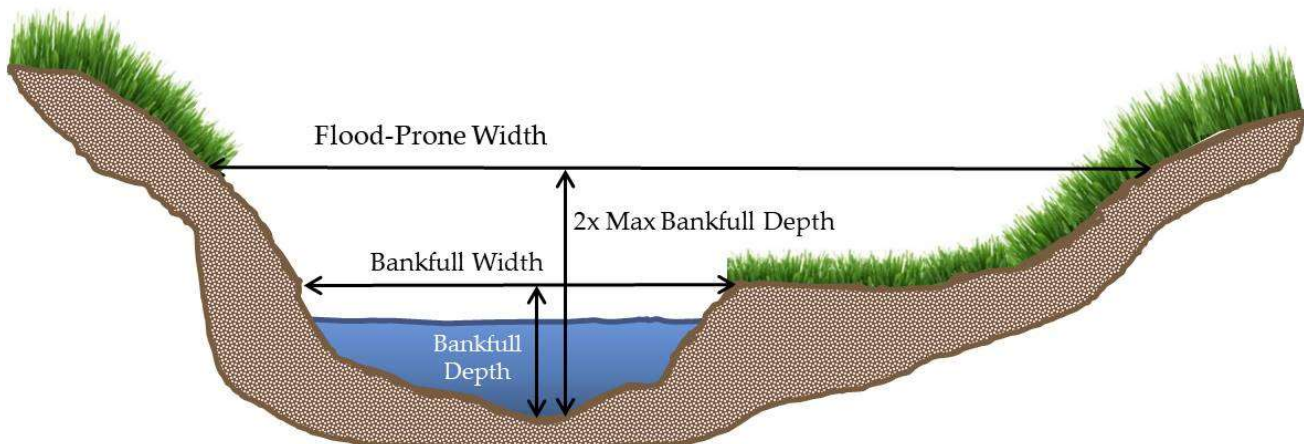


Figure 1: Determining the Reference Reach Attributes.

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: <input style="width: 50px;" type="text"/>
Average Channel Slope at the Crossing Location: <input style="width: 50px;" type="text"/>

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: <input style="width: 50px;" type="text"/>
Sinuosity of the Crossing Location: <input style="width: 50px;" type="text"/>

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:	█ %
% of reach that is boulder:	█ %
% of reach that is cobble:	█ %
% of reach that is gravel:	█ %
% of reach that is sand:	█ %
% of reach that is silt:	█ %
SECTION 9 - STREAM TYPE OF REFERENCE REACH	
<i>For tier 2, tier 3 and tier 4 crossings only.</i>	
Stream Type of Reference Reach:	█

Refer to Rosgen Classification Chart (Figure 2) below:

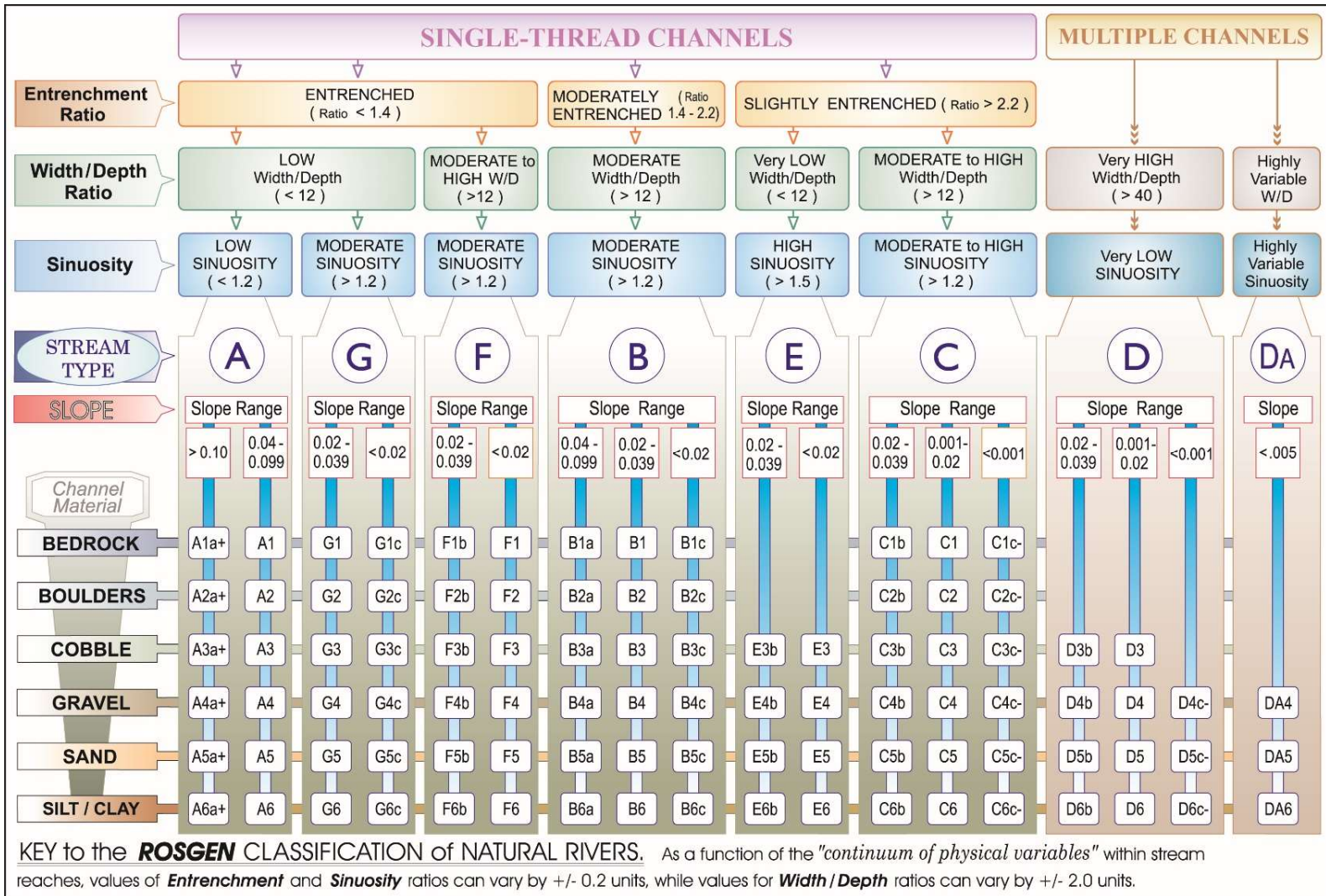


Figure 2: Reference from Applied River Morphology, Rosgen, 1996.

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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: <i>(perpendicular to flow)</i> 2 feet	Culvert Diameter: 2 feet Inlet Elevation: El. 944.04 feet			
	Existing Crossing Length: <i>(parallel to flow)</i> 130 feet	Outlet Elevation: El. 941.51 feet Culvert Slope: 1.9%			
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 type="checkbox"/>		<input type="checkbox"/>
	Closed-bottom Culvert	<input checked="" 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: <i>(perpendicular to flow)</i> 1.5 feet	Culvert Diameter: 1.5 feet Inlet Elevation: El. 944.12 feet			
Proposed Structure Length: <i>(parallel to flow)</i> 130 feet	Outlet Elevation: El. 941.59 feet Culvert Slope: 1.9%				
Proposed Entrenchment Ratio:* <input type="text"/> <i>For Tier 2, Tier 3 and Tier 4 Crossings Only. To accommodate the entrenchment ratio, floodplain drainage structures may be utilized.</i>					

* 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.

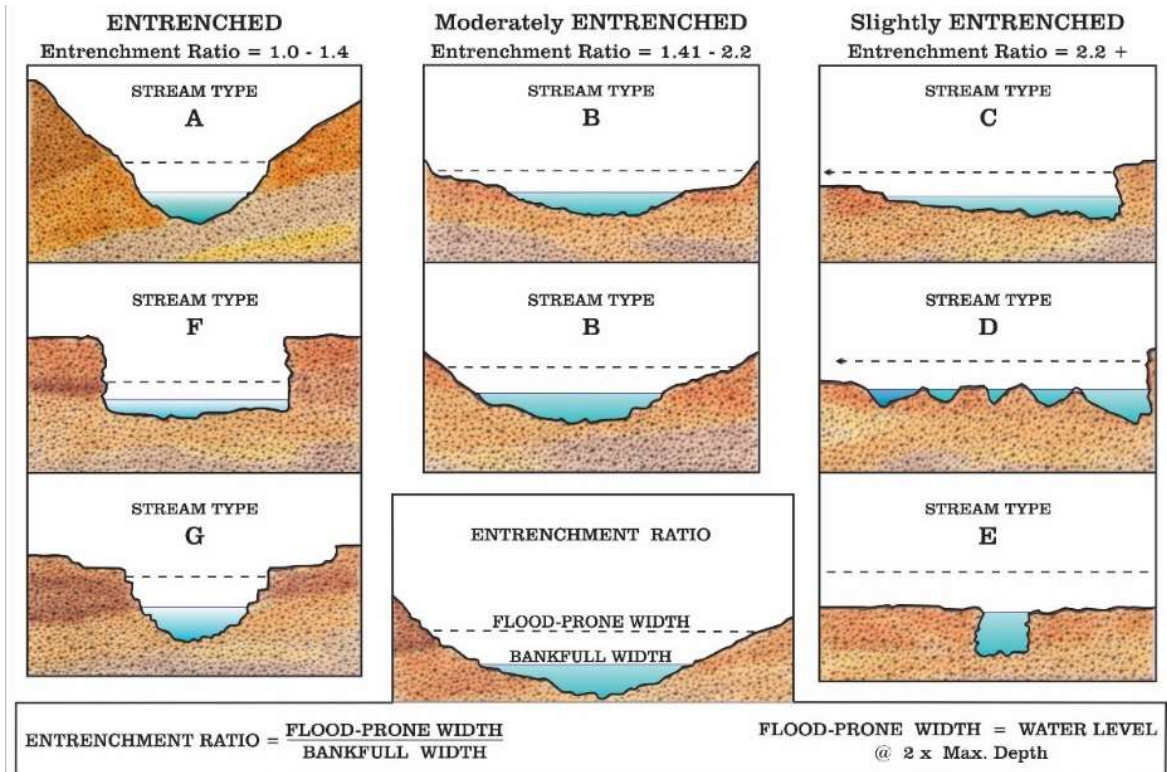


Figure 3: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 11 - CROSSING STRUCTURE HYDRAULICS		
	Existing	Proposed
100 year flood stage elevation at inlet:	948.17	950.02
Flow velocity at outlet in feet per second (FPS):	7.23	12.85
Calculated 100 year peak discharge (Q) for the <i>proposed</i> structure in CFS:		22.70
Calculated 50 year peak discharge (Q) for the <i>proposed</i> structure in CFS:		17.80
SECTION 12 - CROSSING STRUCTURE OPENNESS RATIO		
<i>For tier 2, tier 3 and tier 4 crossings only.</i>		
Crossing Structure Openness Ratio* = <input type="text"/>		
* 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:		
<input checked="" type="checkbox"/> Not be a barrier to sediment transport.		
<input checked="" type="checkbox"/> Prevent the restriction of high flows and maintain existing low flows.		
<input checked="" type="checkbox"/> Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.		
<input checked="" type="checkbox"/> Not cause an increase in the frequency of flooding or overtopping of banks.		
<input checked="" type="checkbox"/> 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.		
<input checked="" type="checkbox"/> Preserve watercourse connectivity where it currently exists.		
<input checked="" type="checkbox"/> 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.		
<input checked="" type="checkbox"/> Not cause erosion, aggradation, or scouring upstream or downstream of the crossing.		
<input checked="" type="checkbox"/> 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.		
<input checked="" type="checkbox"/> 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.		
<input type="checkbox"/> I have submitted an alternative design and addressed each requirement listed in Env-Wt 904.10.		

NH Department of Transportation
Bureau of Highway Design
Roadway Section
Env-Wt 904.08 Repair, Rehabilitation, or Replacement of Tier 1 or Tier 2 Crossings
Stream Crossing Form
Prepared by: C. Spetelunas

Env-Wt 904.08(a)- The repair, rehabilitation, or replacement of a tier 1 or Tier 2 stream crossing shall be limited to stream crossings where the contributing watershed is as specified for the tier and the certification specified in (b) is provided.

Crossing's Drainage Area: 0.14 square miles (89.6 acres)

Project Description: The Sutton 41429 project is located along I-89 NB and SB from approximately MM 24.2 to MM 28.8 and includes the Exit 10 ramps and SB Rest Area. The purpose of this project is to rehabilitate the existing pavement, replace or rehabilitate aged drainage, guardrail and signs, and improve safety.

The location for this crossing is at MM 24.7, Station 1335+80 SB (sheet 8; drainage note 5S), and is a 24" cmp in the existing condition.

Env-Wt 904.08(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 crossing does not have a history of causing or contributing to flooding that damages the crossing or other human infrastructure or protected species habitat;

This crossing does not have a history of causing or contributing to flooding that damages the crossing or other human infrastructure or protected species habitat.

(2) The proposed stream crossing will:

a. Meet the general criteria specified in Env-Wt 904.01;

see page 2 for Env-Wt 904.01 form

b. Maintain or enhance the hydraulic capacity of the stream crossing;

The proposed work will maintain the hydraulic capacity of the stream crossing.

c. Maintain or enhance the capacity of the crossing to accommodate aquatic organism passage;

The proposed work will enhance the capacity of the crossing to accommodate aquatic organism passage due to the elimination of the outlet perch.

d. Maintain or enhance the connectivity of the stream reaches upstream or downstream of the crossing; and

The proposed work enhances the connectivity of the stream reaches upstream or downstream of the crossing. The crossing is currently perched; proposed work includes stone riprap apron at the inlet and outlet which will connect to the culvert's inverts.

e. Not cause or contribute to the increase in the frequency of flooding or overtopping of the banks upstream or downstream of the crossing.

The proposed work will not cause an increase in the frequency of flooding or overtopping of the banks upstream or downstream of the crossing. The crossing does not have a history of overtopping its banks.

Env-Wt 904.08(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. (if applicable, indicate the type of rehabilitation)

This crossing is proposed to be rehabilitated by slip lining. The existing 24" corrugated metal pipe will be slip lined with an 18" smooth plastic pipe, resulting in very similar hydraulic characteristics. The thickness of the 30" spp is approximately 1" and will sit on the bottom of the existing 36" cpp, resulting in a change of invert elevation at both the inlet and outlet by 1". Additional work includes replacing the existing metal end section with a steel end section at the outlet and construct stone apron outlet protection.

Env-Wt 904.01 General Design Considerations Applicable to All Stream Crossings

The crossing meets or exceeds the general design criteria specified in Env-Wt 904.01, as follows:

(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;

The proposed work will not alter the stream crossing's sediment transport competence.

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

The proposed work will not alter the stream crossings ability to maintain high and low flows. StreamStats reports a 2-year low flow of 0.00403 cfs and a 50-year peak flow of 42.3 cfs for the existing and proposed condition.

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

The proposed work will not alter the stream crossing's ability to accommodate the movement of indigenous life beyond the duration of construction. The crossing is currently perched at the outlet; the proposed work will improve connectivity by installing riprap outlet ramps/ protection.

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

The proposed work will 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

The proposed work will not increase potential for inlet obstruction by sediment, wood, or debris.

b. Preserving the natural alignment of the stream channel;

The proposed project does not change the alignment of the stream channel

(6) Preserve watercourse connectivity where it currently exists;

The proposed work will improve the existing watercourse connectivity. The crossing is currently perched at the outlet; the proposed work will improve connectivity by installing riprap outlet ramps/ protection.

(7) Restore watercourse connectivity where:

a. Connectivity previously was disrupted as a result of human activity(ies); and

The proposed work will improve the existing watercourse connectivity. The crossing is currently perched at the outlet; the proposed work will improve connectivity by installing riprap outlet ramps/ protection.

b. Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both;

The proposed work will improve the existing watercourse connectivity.

- (8) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and
The use of erosion control measures during construction, and the stabilization of disturbed areas, will ensure that there is no erosion, aggradation, or scour as a result of the proposed work.
- (9) Not cause water quality degradation
The proposed work will prolong the functioning of the existing drainage system and maintain current water quality levels.
- (b) For stream crossing over tidal waters, the stream crossing shall be designed to:
 - (1) Match the velocity, depth, cross-sectional area, and substrate of the natural stream: and
This project does not impact tidal waters.
 - (2) Be of sufficient size to not restrict bi-directional tidal flow over the natural tide range above, below, and through the crossing.
This project does not impact tidal waters.



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: 89.6 acres	
<input checked="" 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 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): <input type="text"/> CFS	Calculation method: <input type="text"/>
Estimated bankfull discharge at the crossing location: <input type="text"/> CFS	Calculation method: <input type="text"/>

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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: <input style="width: 50px;" type="text"/> feet	Mean Bankfull Depth: <input style="width: 50px;" type="text"/> feet
Bankfull Cross Sectional Area: <input style="width: 50px;" type="text"/> 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: <input style="width: 100px;" type="text"/>
Reference reach watershed size: <input style="width: 50px;" type="text"/> acres

Parameter	Cross Section 1 Describe bed form <input style="width: 50px;" type="text"/> <i>(e.g. pool, riffle, glide)</i>	Cross Section 2 Describe bed form <input style="width: 50px;" type="text"/> <i>(e.g. pool, riffle, glide)</i>	Cross Section 3 Describe bed form <input style="width: 50px;" type="text"/> <i>(e.g. pool, riffle, glide)</i>	Range
Bankfull Width	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet
Bankfull Cross Sectional Area	<input style="width: 50px;" type="text"/> SF	<input style="width: 50px;" type="text"/> SF	<input style="width: 50px;" type="text"/> SF	<input style="width: 50px;" type="text"/> SF
Mean Bankfull Depth	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet
Width to Depth Ratio	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>
Max Bankfull Depth	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet
Flood Prone Width	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet	<input style="width: 50px;" type="text"/> feet
Entrenchment Ratio	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>	<input style="width: 50px;" type="text"/>

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

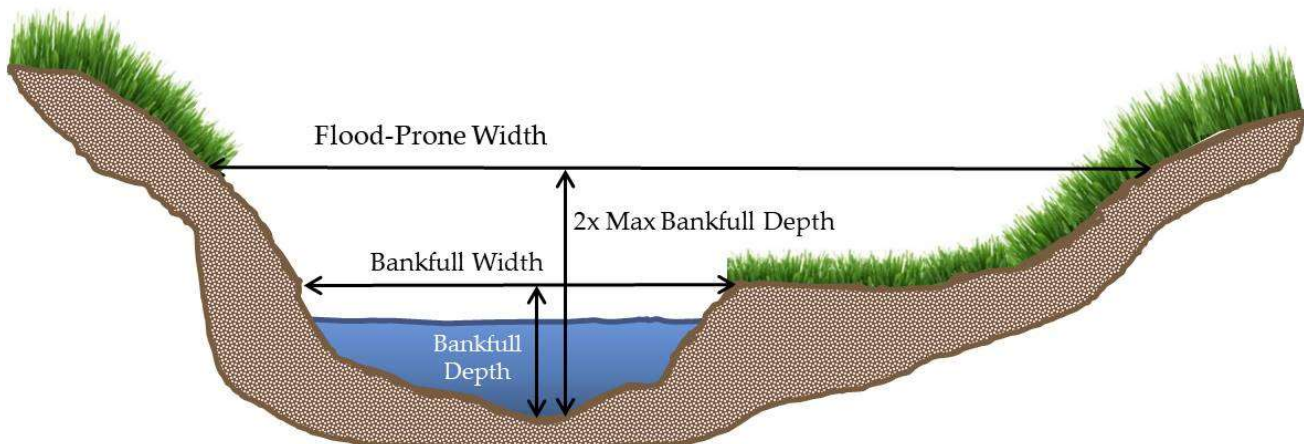


Figure 1: Determining the Reference Reach Attributes.

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: <input style="width: 50px;" type="text"/>
Average Channel Slope at the Crossing Location: <input style="width: 50px;" type="text"/>

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: <input style="width: 50px;" type="text"/>
Sinuosity of the Crossing Location: <input style="width: 50px;" type="text"/>

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:	█ %
% of reach that is boulder:	█ %
% of reach that is cobble:	█ %
% of reach that is gravel:	█ %
% of reach that is sand:	█ %
% of reach that is silt:	█ %
SECTION 9 - STREAM TYPE OF REFERENCE REACH	
<i>For tier 2, tier 3 and tier 4 crossings only.</i>	
Stream Type of Reference Reach:	█

Refer to Rosgen Classification Chart (Figure 2) below:

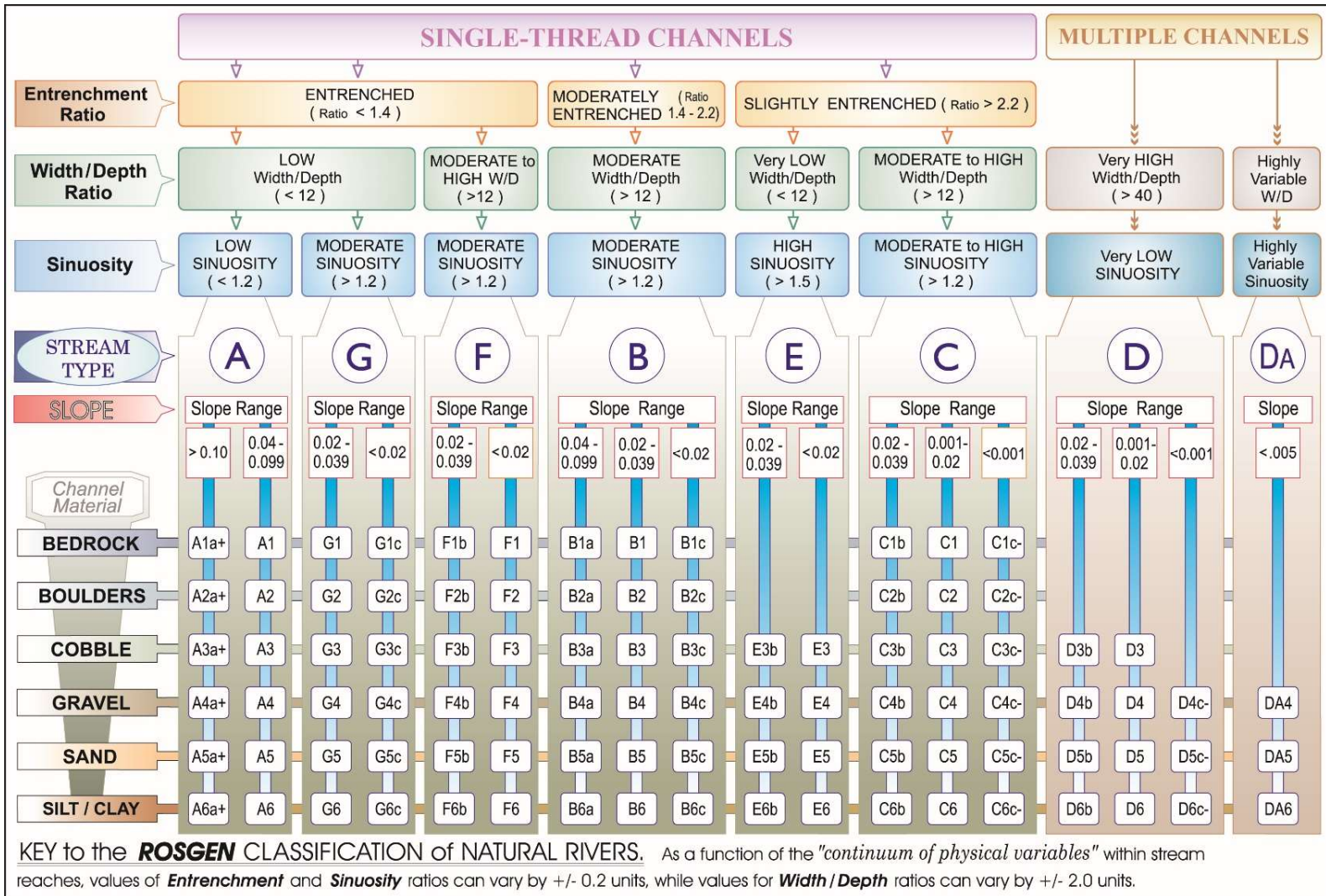


Figure 2: Reference from Applied River Morphology, Rosgen, 1996.

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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: <i>(perpendicular to flow)</i> 2 feet	Culvert Diameter: 2 feet Inlet Elevation: El. 804.37 feet			
	Existing Crossing Length: <i>(parallel to flow)</i> 127 feet	Outlet Elevation: El. 794.67 feet Culvert Slope: 7.6%			
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 type="checkbox"/>		<input type="checkbox"/>
	Closed-bottom Culvert	<input checked="" 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: <i>(perpendicular to flow)</i> 1.5 feet	Culvert Diameter: 1.5 feet Inlet Elevation: El. 804.45 feet			
Proposed Structure Length: <i>(parallel to flow)</i> 127 feet	Outlet Elevation: El. 794.75 feet Culvert Slope: 7.6%				
Proposed Entrenchment Ratio:* <input type="text"/> <i>For Tier 2, Tier 3 and Tier 4 Crossings Only. To accommodate the entrenchment ratio, floodplain drainage structures may be utilized.</i>					

* 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.

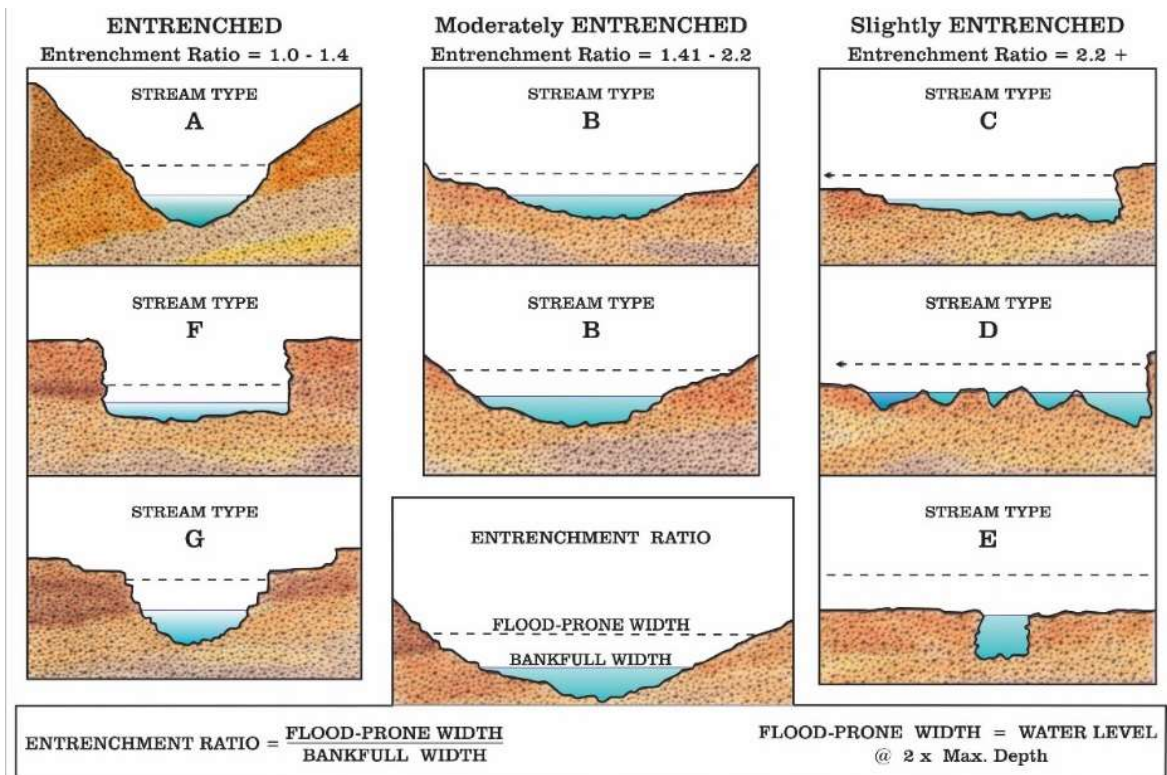


Figure 3: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 11 - CROSSING STRUCTURE HYDRAULICS		
	Existing	Proposed
100 year flood stage elevation at inlet:	807.23	807.55
Flow velocity at outlet in feet per second (FPS):	10.80	12.28
Calculated 100 year peak discharge (Q) for the <i>proposed</i> structure in CFS:		21.70
Calculated 50 year peak discharge (Q) for the <i>proposed</i> structure in CFS:		21.63
SECTION 12 - CROSSING STRUCTURE OPENNESS RATIO		
<i>For tier 2, tier 3 and tier 4 crossings only.</i>		
Crossing Structure Openness Ratio* = <input type="text"/>		
* 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:		
<input checked="" type="checkbox"/> Not be a barrier to sediment transport.		
<input checked="" type="checkbox"/> Prevent the restriction of high flows and maintain existing low flows.		
<input checked="" type="checkbox"/> Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.		
<input checked="" type="checkbox"/> Not cause an increase in the frequency of flooding or overtopping of banks.		
<input checked="" type="checkbox"/> 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.		
<input checked="" type="checkbox"/> Preserve watercourse connectivity where it currently exists.		
<input checked="" type="checkbox"/> 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.		
<input checked="" type="checkbox"/> Not cause erosion, aggradation, or scouring upstream or downstream of the crossing.		
<input checked="" type="checkbox"/> 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.		
<input checked="" type="checkbox"/> 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.		
<input type="checkbox"/> I have submitted an alternative design and addressed each requirement listed in Env-Wt 904.10.		

New Hampshire Natural Heritage Bureau NHB DataCheck Results Letter

To: Melilotus Dube
7 Hazen Drive
Concord, NH 03301

From: NH Natural Heritage Bureau

Date: 1/19/2021 (This letter is valid through 1/19/2022)

Re: Review by NH Natural Heritage Bureau of request dated 1/19/2021

Permit Types: Stormwater Pollution Prevention
Wetland Routine Roadway Registration
Wetland Standard Dredge & Fill - Major
General Permit
Federal: NEPA Review

NHB ID: NHB21-0158

Applicant: Melilotus Dube

Location: Sutton
Tax Map: N/A, Tax Lot: N/A
Address: N/A

Proj. Description: Sutton 42419, previously NHB19-2007. The proposed 4R project involves roadway rehabilitation on I89 from MM24.2-MM28.7, including ramps at Exit 10 and the SB rest area, in the Town of Sutton. Potential work includes resurfacing, guardrail replacement and extension, bridge maintenance efforts, drainage repairs and replacement, right-of-way fence replacement, tree clearing and rock scaling.

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: NHB21-0158





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:

January 19, 2021

Consultation Code: 05E1NE00-2019-SLI-2061

Event Code: 05E1NE00-2021-E-03261

Project Name: Sutton 42419

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: 05E1NE00-2019-SLI-2061

Event Code: 05E1NE00-2021-E-03261

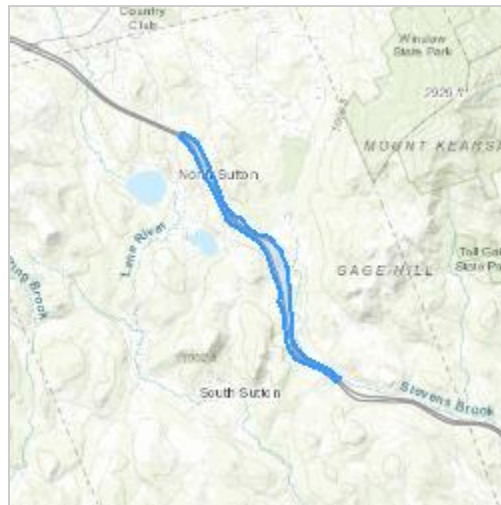
Project Name: Sutton 42419

Project Type: TRANSPORTATION

Project Description: The proposed project is a 4R roadway rehabilitation project on Interstate 89 northbound and southbound from MM 24.2 to MM 28.7 including ramps at Exit 10 and the southbound rest area. Potential work will include resurfacing, drainage repairs and replacement, guardrail replacement and extension, signage upgrades, rock scaling, tree clearing, and right-of-way fence replacement.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@43.348204957995705,-71.91213660639693,14z>



Counties: Merrimack County, New Hampshire

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA 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

Critical habitats

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



United States Department of the Interior



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IPaC Record Locator: 795-98519131

March 30, 2021

Subject: Consistency letter for the 'Sutton 42419' project (no current TAILS record) under the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request to verify that the **Sutton 42419** (Proposed Action) may rely on the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures, and may affect, and is likely to adversely affect the endangered Indiana bat (*Myotis sodalis*) and/or the threatened Northern long-eared bat (*Myotis septentrionalis*). Consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) is required.

This "may affect - likely to adversely affect" determination becomes effective when the lead Federal action agency or designated non-federal representative requests the Service rely on the PBO to satisfy the agency's consultation requirements for this project. Please provide this consistency letter to the lead Federal action agency or its designated non-federal representative for review, and as the agency deems appropriate, transmit to this Service Office for verification that the project is consistent with the PBO.

This Service Office will respond by letter to the requesting Federal action agency or designated non-federal representative within 30 calendar days to:

- verify that the Proposed Action is consistent with the scope of actions covered under the PBO;

- verify that all applicable avoidance, minimization, and compensation measures are included in the action proposal;
- identify any action-specific monitoring and reporting requirements, consistent with the monitoring and reporting requirements of the PBO, and
- identify anticipated incidental take.

ESA Section 7 compliance for this Proposed Action is not complete until the Federal action agency or its designated non-federal representative receives a verification letter from the Service.

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

If the Proposed Action may affect any other federally-listed or proposed species and/or designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please advise the lead Federal action agency accordingly.

Project Description

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

Name

Sutton 42419

Description

The proposed project is a 4R roadway rehabilitation project on Interstate 89 northbound and southbound from MM 24.2 to MM 28.7 including ramps at Exit 10 and the southbound rest area. Potential work will include resurfacing, drainage repairs and replacement, guardrail replacement and extension, signage upgrades, rock scaling, tree clearing, and right-of-way fence replacement.

Determination Key Result

Based on your answers provided, this project is likely to adversely affect the endangered Indiana bat and/or the threatened Northern long-eared bat. Therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the conclusion and Incidental Take Statement provided in the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

Qualification Interview

1. Is the project within the range of the Indiana bat^[1]?

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

Automatically answered

No

2. Is the project within the range of the Northern long-eared bat^[1]?

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

Automatically answered

Yes

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

A) *Federal Highway Administration (FHWA)*

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

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

No

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

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

No

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

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

No

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

No

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

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

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

Yes

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

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

Yes

10. Will the project clear more than 20 acres of suitable habitat per 5-mile section of road/rail?
No

11. Have presence/probable absence (P/A) summer surveys^{[1][2]} been conducted^{[3][4]} **within** the suitable habitat located within your project action area?

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

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

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

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

No

12. Does the project include activities **within documented NLEB habitat**^{[1][2]}?

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

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

No

13. Will the removal or trimming of habitat or trees occur **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors?

Yes

14. What time of year will the removal or trimming of habitat or trees **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors occur?

A) During the active season

15. Will *any* tree trimming or removal occur **within** 100 feet of existing road/rail surfaces?

Yes

16. Will **more than** 10 trees be removed **between** 0-100 feet of the road/rail surface *during* the active season^[1]?

[1] Areas containing more than 10 trees will be assessed by the local Service Field Office on a case-by-case basis with the project proponent.

Yes

17. Will *any* tree trimming or removal occur **between** 100-300 feet of existing road/rail surfaces?

Yes

18. Are *all* trees that are being removed clearly demarcated?

Yes

19. Will the removal of habitat or the removal/trimming of trees involve the use of **temporary** lighting?

No

20. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing **permanent** lighting?

No

21. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

No

22. Does the project include slash pile burning?

No

23. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

No

24. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

No

25. Will the project involve the use of **temporary** lighting *during* the active season?

Yes

26. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **temporary** lighting will be used?

Yes

27. Will the project install new or replace existing **permanent** lighting?

No

28. Does the project include percussives or other activities (**not including tree removal/trimming or bridge/structure work**) that will increase noise levels above existing traffic/background levels?

Yes

29. Will the activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the active season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

30. Will *any* activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

31. Are *all* project activities that are **not associated with** habitat removal, tree removal/trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

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

Yes

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

No

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

Automatically answered

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

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

Automatically answered

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

35. Is the habitat removal portion of this project consistent with a Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because tree removal that occurs within the NLEB's active season occurs greater than 0.5 miles from the nearest hibernaculum, is less than 100 feet from the existing road/rail surface, and is not in documented NLEB roosting/foraging habitat or travel corridors, and a visual emergence survey has not been conducted

36. Is the habitat removal portion of this project consistent with a Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because tree removal that occurs within the NLEB's active season occurs greater than 0.5 miles from the nearest hibernaculum, is 100-300 feet from the existing road/rail surface and is not in documented NLEB roosting/foraging habitat or travel corridors.

37. **General AMM 1**

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

Yes

38. Tree Removal AMM 1

Can *all* phases/aspects of the project (e.g., temporary work areas, alignments) be modified, to the extent practicable, to avoid tree removal^[1] in excess of what is required to implement the project safely?

Note: Tree Removal AMM 1 is a minimization measure, the full implementation of which may not always be practicable. Projects may still be NLAA as long as Tree Removal AMMs 2, 3, and 4 are implemented and LAA as long as Tree Removal AMMs 3, 5, 6, and 7 are implemented.

[1] The word “trees” as used in the AMMs refers to trees that are suitable habitat for each species within their range. See the USFWS’ current summer survey guidance for our latest definitions of suitable habitat.

Yes

39. Tree Removal AMM 3

Can tree removal be limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits)?

Yes

40. Lighting AMM 1

Will *all* **temporary** lighting be directed away from suitable habitat during the active season?

Yes

41. For Indiana bat, if applicable, compensatory mitigation measures are required to offset adverse effects on the species (see Section 2.10 of the BA). Please select the mechanism in which compensatory mitigation will be implemented:

6. *Not Applicable*

Project Questionnaire

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

N/A

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

N/A

3. How many acres^[1] of trees are proposed for removal between 0-100 feet of the existing road/rail surface?

[1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

12.5

4. How many acres^[1] of trees are proposed for removal between 100-300 feet of the existing road/rail surface?

[1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

0.01

5. **Please verify:**

All tree removal will occur greater than 0.5 mile from any hibernaculum.

No, this is not the case.

6. Is the project location 0-100 feet from the edge of existing road/rail surface?

Yes

7. Is the project location 100-300 feet from the edge of existing road/rail surface?

Yes

8. **Please verify:**

No documented NLEB roosts or surrounding summer habitat within 150 feet of documented roosts will be impacted between June 1 and July 31.

Yes, I verify that no documented NLEB roosts or surrounding summer habitat within 150 feet of documented roosts will be impacted during this period.

9. You have indicated that the following Avoidance and Minimization Measures (AMMs) will be implemented as part of the proposed project:

- *Tree Removal AMM 1*
- *Lighting AMM 1*
- *Tree Removal AMM 3*
- *General AMM 1*

Avoidance And Minimization Measures (AMMs)

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

TREE REMOVAL AMM 1

Modify all phases/aspects of the project (e.g., temporary work areas, alignments) to avoid tree removal.

LIGHTING AMM 1

Direct temporary lighting away from suitable habitat during the active season.

TREE REMOVAL AMM 3

Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits).

GENERAL AMM 1

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

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

This key was last updated in IPaC on December 29, 2020. Keys are subject to periodic revision.

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

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



United States Department of the Interior



FISH AND WILDLIFE SERVICE

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

April 14, 2021

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

Re: NH DOT Project Sutton 42419, I89 Rehabilitation Project
TAILS: 05E1NE00-2019-F-2061

Dear Ms. Dube:

The U.S. Fish and Wildlife Service (Service) is responding to your March 30, 2021 electronic transmission, requesting we verify that the New Hampshire Department of Transportation (NHDOT) Project 42419 (Project), the proposed Interstate 89 (I89) rehabilitation project in Sutton, New Hampshire, may rely on the revised February 5, 2018, Programmatic Biological Opinion (BO) for federally funded or approved transportation projects that may affect the northern long-eared bat (*Myotis septentrionalis*) (NLEB). This letter provides the Service's response as to whether the Federal Highway Administration may rely on the BO to comply with section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; U.S.C. 1531 *et seq.*) for the Project's effects to the NLEB.

The NHDOT, as the non-Federal agency representative for the Federal Transportation Agency, has determined that the Project may affect, and is likely to adversely affect the NLEB. The Project consists of resurfacing, guardrail replacement, drainage work, selective hazard tree clearing, and site distance improvements. Approximately 0.01 acre of tree clearing will be required to construct access roads. Tree clearing may be implemented during the bat active season.

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

Conclusion

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

Incidental Take of the Northern Long-eared Bat

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

Reporting Dead or Injured Bats

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

Reinitiation Notice

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

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

Melilotus Dube
April 14, 2021

3

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

We appreciate your continued efforts to ensure that this Project is fully consistent with all applicable provisions of the BO. If you have any questions regarding our response, or if you need additional information, please contact Susi von Oettingen of this office at 603-227-6418.

Sincerely,

David Simmons
Acting Field Supervisor
New England Field Office

cc: Reading file
Melilotus Dube/NHDOT, via email
ES: SvonOettingen;jd:4-14-21:603-227-6418

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Date Reviewed: 1/19/2021
(Desktop or Field Review Date)

Project Name: Sutton

State Number: 42419

FHWA Number: X-A004(839)

Environmental Contact: Meli Dube

DOT

Email Address: Melilotus.Dube@dot.nh.gov

Project Tobey Reynolds

Manager:

Project Description: The proposed 4R project is on Interstate 89 from MM24.2 extending northerly 4.5 miles to MM28.7 in the Town of Sutton, including both north and south barrels as well as the southbound rest area and all ramps at Exit 10. The proposed work will include primarily pavement reclaim and resurfacing with a final anticipated 2” raise in profile. Additional work may include guardrail replacement and extension with new end units, rock scaling, tree clearing, right-of-way fence replacement or repair, minor bridge maintenance efforts, sign repairs, replacements or upgrades, and replacement or rehabilitation of existing drainage features including structures associated with the closed drainage system, such as underdrain, catch basins and slope pipes, as well as larger structures conveying local water resources under the highway system. A 1-mile section located on I89 southbound from MM25.9 to MM26.9 will receive minimal treatment with only potential right-of-way fence and tree clearing work proposed.

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: h. removal of trees, as part of roadway improvements k. Construction of turning lanes and pockets, auxiliary lanes (e.g. truck climbing, acceleration and deceleration lanes) and shoulder widening where only placement of fill material is involved, or within an area previously disturbed by vertical and ho
<input type="checkbox"/>	2. Installation of rumble strips or rumble stripes
<input type="checkbox"/>	3. Installation or replacement of pole-mounted signs
<input checked="" type="checkbox"/>	4. Guardrail replacement, provided any extension does not connect to a bridge older than 50 years old (unless it does already), and there is no change in access associated with the extension
Bridge and Culvert Improvements	
<input checked="" type="checkbox"/>	5. Culvert replacement (excluding stone box culverts), when the culvert is less than 60" in diameter and excavation for replacement is limited to previously disturbed areas
<input type="checkbox"/>	6. Bridge deck preservation and replacement, as long as no character defining features are impacted
<input checked="" type="checkbox"/>	7. Non-historic bridge and culvert maintenance, renovation, or total replacement, that may require minor additional right-of-way or easement , including: Choose an item. Choose an item.
<input type="checkbox"/>	8. Historic bridge maintenance activities within the limits of existing right-of-way, including: Choose an item. Choose an item.
<input type="checkbox"/>	9. Stream and/or slope stabilization and restoration activities (including removal of debris or sediment obstructing the natural waterway, or any non-invasive action to restore natural conditions)
Bicycle and Pedestrian Improvements	

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

<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, provided no historic railroad features are impacted , 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 checked="" type="checkbox"/>	20. Rehabilitation or replacement of existing storm drains.
<input checked="" 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.

This project is located entirely within previously disturbed areas of the built highway system of Interstate 89 and is therefore exempt from Section 106 of the National Historic Preservation Act. The proposed activities, however, are consistent with those approved under Appendix B of the Section 106 Programmatic Agreement.

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.
Please identify public outreach effort contacts; method of outreach and date:	<u>The Town of Sutton Town Officials were contacted via letter on June 29, 2019, no relevant response has been received to date.</u>		

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 <i>not</i> comply with Appendix B. Review will continue under Stipulation VII of the Programmatic Agreement. Please contact NHDOT Cultural Resources Staff to determine next steps.		
NHDOT comments:			

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Sheila Charles

1/20/2021

NHDOT Cultural Resources Staff

Date

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

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

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

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.



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Appendix B

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

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

All Projects:

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



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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?	x	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)		x
2.5 The overall project site is more than 40 acres?	x	
2.6 What is the area of the previously filled wetlands?		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

3.2 Would work occur in any area identified as either “Highest Ranked Habitat in N.H.” or “Highest Ranked Habitat in Ecological Region”? (These areas are colored magenta and green, respectively, on NH Fish and Game’s map, “2010 Highest Ranked Wildlife Habitat by Ecological Condition.”) Map information can be found at: <ul style="list-style-type: none"> • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html. 		X
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the GC 21?	X	
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		X
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?	N/A	
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 11 GC 8(d) of the GP document**		X

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

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/10/20
 Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A1 - Plot 1
 Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Slightly Concave Slope (%): <1%
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: PFO1E

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

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A1 - Plot 1</u>
Remarks: (Explain alternative procedures here or in a separate report.) Wetland plot is located within a man-made swale.	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-4</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>9</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: Hydrology indicators present A1, A2, A3, B9, B10, D2. Parameter is met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A1 - Plot 1

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Acer rubrum</i></u>	<u>25</u>	<u>Y</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Alnus incana</i></u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
2. <u><i>Quercus rubra</i></u>	<u>6</u>	<u>Y</u>	<u>FACU</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Solidago rugosa</i></u>	<u>8</u>	<u>Y</u>	<u>FAC</u>
2. <u><i>Doellingeria umbellata</i></u>	<u>6</u>	<u>N</u>	<u>FACW</u>
3. <u><i>Carex intumescens</i></u>	<u>5</u>	<u>N</u>	<u>FACW</u>
4. <u><i>Micranthes virginensis</i></u>	<u>5</u>	<u>N</u>	<u>FACU</u>
5. <u><i>Phalaris arundinacea</i></u>	<u>4</u>	<u>N</u>	<u>FACW</u>
6. <u><i>Osmundastrum cinnamomeum</i></u>	<u>3</u>	<u>N</u>	<u>FACW</u>
7. <u><i>Onoclea sensibilis</i></u>	<u>3</u>	<u>N</u>	<u>FACW</u>
8. <u><i>Rubus hispidus</i></u>	<u>1</u>	<u>N</u>	<u>FACW</u>
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Woody Vine Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

25 = Total Cover

16 = Total Cover

35 = Total Cover

0 = Total Cover

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
 Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland A1 - Plot 1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 7	10YR 2/1	100					FSL	Dense organic
7 - 18+	10YR 3/1	100					LS	Some coarse sand with muck

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histic Sol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:
 Hydric soil indicator A2, A4. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/10/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A1 - Plot 1

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slight slope Local relief (concave, convex, none): None Slope (%): ~10%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in primarily mowed area adjacent to edge of pavement and above Wetland flag A317.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A1 - Plot 1

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	8	Y	FAC
2. <i>Tilia americana</i>	7	Y	FACU
3. <i>Quercus rubra</i>	6	Y	FACU
4. <i>Betula alleghaniensis</i>	2	N	FAC
5. <i>Abies balsamea</i>	2	N	FAC
6. _____	_____	_____	_____
7. _____	_____	_____	_____

25 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Quercus rubra</i>	10	Y	FACU
2. <i>Acer rubrum</i>	8	Y	FAC
3. <i>Hamamelis virginiana</i>	2	N	FACU
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

20 = Total Cover

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Festuca rubra</i>	60	Y	FACU
2. <i>Andropogon virginicus</i>	20	Y	FACU
3. <i>Pseudognaphalium obtusifolium</i>	4	N	NI
4. <i>Pinus strobus</i>	2	N	FACU
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

86 = Total Cover

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

0 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 29% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No X

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

Less than or equal to 50% FAC or wetter. Parameter is not met.

SOIL

Sampling Point: Upland A1 - Plot 1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 2	2.5Y 3/2	100					FSL	
2 - 7	2.5Y 4/4	100					LFS	
7 - 18+	2.5Y 6/3	100					FS	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/10/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A1 - Plot 2

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Slightly Concave Slope (%): <1%

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

Soil Map Unit Name: _____ NWI classification: PFO1E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A1 - Plot 2</u>
Remarks: (Explain alternative procedures here or in a separate report.) Wetland plot is located within a man-made swale.	

HYDROLOGY

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

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A1 - Plot 2

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				
1. <u><i>Acer rubrum</i></u>	<u>35</u>	<u>Y</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>35</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <u><i>Prunus pensylvanica</i></u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <u><i>Frangula alnus</i></u>	<u>15</u>	<u>Y</u>	<u>FAC</u>	
3. <u><i>Acer rubrum</i></u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
4. <u><i>Fraxinus pennsylvanica</i></u>	<u>1</u>	<u>N</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>31</u>	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u><i>Panicum virgatum</i></u>	<u>70</u>	<u>Y</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u><i>Solidago rugosa</i></u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
3. <u><i>Solidago canadensis</i></u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
4. <u><i>Rubus hispidus</i></u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
5. <u><i>Onoclea sensibilis</i></u>	<u>3</u>	<u>N</u>	<u>FACW</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>88</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 ft</u>)				
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
Remarks: (Include photo numbers here or on a separate sheet.) Greater than 50% FAC or wetter. Parameter is met.				
				Hydrophytic Vegetation Present? Yes <u>X</u> No _____

SOIL

Sampling Point: Wetland A1 - Plot 2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 7	10YR 4/2	98	7.5YR 4/6	2	C	PL	LFS	
7 - 10	10YR 4/3	30	7.5YR 5/8	10			LFS	Pore line redox
	10YR 3/2	60						Mixed layer
10-14+	2.5Y 5/2	94	7.5YR 4/6	6			LS	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator S5. Parameter is met.
 Dense organic matter and roots to 4".

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/10/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A1 - Plot 2

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~10%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in primarily mowed area adjacent to edge of pavement and above Wetland flag A399.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A1 - Plot 2

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Acer rubrum</i></u>	15	Y	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	15			
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <u><i>Quercus rubra</i></u>	3	Y	FACU	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
	3			
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u><i>Festuca rubra</i></u>	70	Y	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u><i>Andropogon virginicus</i></u>	30	Y	FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	100			
Woody Vine Stratum (Plot size: <u>Truncated</u>)				
1. _____				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____				
3. _____				
4. _____				
	0			
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>				
Remarks: (Include photo numbers here or on a separate sheet.) Less than or equal to 50% FAC or wetter. Parameter is not met.				

SOIL

Sampling Point: Upland A1 - Plot 2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 8	2.5Y 3/3	100					FS	
8 - 12	2.5Y 5/4	100					FS	
12+								Refusal/rock fill

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/fill
 Depth (inches): 12

Hydric Soil Present? Yes _____ No X

Remarks:
 No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/9/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A3

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Slight slope Local relief (concave, convex, none): Concave Slope (%): <5%

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

Soil Map Unit Name: _____ NWI classification: PSS1Ex

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A3</u>
Remarks: (Explain alternative procedures here or in a separate report.) Wetland plot is located within a man-made swale.	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> Surface Water (A1)</td> <td><input checked="" type="checkbox"/> Water-Stained Leaves (B9)</td> </tr> <tr> <td><input type="checkbox"/> High Water Table (A2)</td> <td><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturation (A3)</td> <td><input type="checkbox"/> Marl Deposits (B15)</td> </tr> <tr> <td><input type="checkbox"/> Water Marks (B1)</td> <td><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><input type="checkbox"/> Sediment Deposits (B2)</td> <td><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</td> </tr> <tr> <td><input type="checkbox"/> Drift Deposits (B3)</td> <td><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><input type="checkbox"/> Iron Deposits (B5)</td> <td><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<p><u>Secondary Indicators (minimum of two required)</u></p> <table style="width:100%;"> <tr><td><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td><input type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td><input type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td><input type="checkbox"/> Dry-Season Water Table (C2)</td></tr> <tr><td><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td><input type="checkbox"/> Stunted or Stressed Plants (D1)</td></tr> <tr><td><input checked="" type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td><input type="checkbox"/> Microtopographic Relief (D4)</td></tr> <tr><td><input type="checkbox"/> FAC-Neutral Test (D5)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-Neutral Test (D5)
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<input type="checkbox"/> Microtopographic Relief (D4)																																
<input type="checkbox"/> FAC-Neutral Test (D5)																																
<p>Field Observations:</p> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0-1</u>	<p>Wetland Hydrology Present? Yes <u>X</u> No _____</p>																															
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:																																
Remarks: Hydrology indicators present A3, B9, D2. Parameter is met.																																

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A3

<u>Tree Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<u>Sapling/Shrub Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Alnus incana</i>	10	Y	FACW	
2. <i>Salix discolor</i>	8	Y	FACW	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>18</u>	= Total Cover		
<u>Herb Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Symphotrichum puniceum</i>	20	Y	OBL	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <i>Doellingeria umbellata</i>	10	N	FACW	
3. <i>Osmundastrum cinnamomeum</i>	10	N	FACW	
4. <i>Spiraea alba</i>	8	N	FACW	
5. <i>Carex crinita</i>	8	N	OBL	
6. <i>Onoclea sensibilis</i>	4	N	FACW	
7. <i>Solidago canadensis</i>	3	N	FACU	
8. <i>Rubus hispidus</i>	2	N	FACW	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>65</u>	= Total Cover		
<u>Woody Vine Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
Remarks: (Include photo numbers here or on a separate sheet.) Greater than 50% FAC or wetter. Parameter is met.				Hydrophytic Vegetation Present? Yes <u>X</u> No _____

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/9/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A3

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~8%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Truncated upland data plot in primarily mowed area directly adjacent to edge of pavement and above Wetland flag A84.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <u>X</u> Depth (inches): _____		Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.			

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A3

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
 Total Number of Dominant Species Across All Strata: 1 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Sapling/Shrub Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)
 Prevalence Index = B/A = _____

Herb Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Festuca rubra</i>	50	Y	FACU
2. <i>Onoclea sensibilis</i>	20	N	FACW
3. <i>Spiraea alba</i>	10	N	FACW
4. <i>Fragaria vesca</i>	3	N	UPL
5. <i>Potentilla simplex</i>	2	N	FACU
6. <i>Vicia cracca</i>	2	N	NI
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Woody Vine Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
 Less than or equal to 50% FAC or wetter. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/9/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A4

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Slight Slope Local relief (concave, convex, none): Concave Slope (%): <3%

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

Soil Map Unit Name: _____ NWI classification: PFO1/4E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A4</u>
Remarks: (Explain alternative procedures here or in a separate report.) Wetland plot is located within a man-made swale in the median.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-3</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>3</u> Saturation Present? (includes capillary fringe) Yes <u>X</u> No _____ Depth (inches): <u>0</u>	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: Hydrology indicators present A1, A2, A3, B9, D2. Parameter is met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A4

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	30	Y	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	8	Y	FAC
2. <i>Quercus rubra</i>	5	Y	FACU
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Panicum virgatum</i>	35	Y	FAC
2. <i>Onoclea sensibilis</i>	15	N	FACW
3. <i>Osmundastrum cinnamomeum</i>	8	N	FACW
4. <i>Glyceria melicaria</i>	30	Y	OBL
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Woody Vine Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

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

Greater than 50% FAC or wetter. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/9/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A4

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~10%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Truncated upland data plot in primarily mowed area directly adjacent to edge of pavement and above Wetland flag A62.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A4

<u>Tree Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
	<u>0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>Truncated</u>)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
<u>Herb Stratum</u> (Plot size: <u>Truncated</u>)					
1. <i>Festuca rubra</i>	50	Y	FACU		
2. <i>Pseudognaphalium obtusifolium</i>	30	N	NI		
3. <i>Spiraea alba</i>	8	N	FACW		
4. <i>Poa pratensis</i>	8	N	FACU		
5. <i>Andropogon virginicus</i>	4	N	FACU		
6. <i>Scirpus cyperinus</i>	1	N	OBL		
7. <i>Symphyotrichum puniceum</i>	1	N	OBL		
8. <i>Decodon verticillatus</i>	1	N	OBL		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
	<u>103</u>	= Total Cover		Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
<u>Woody Vine Stratum</u> (Plot size: <u>Truncated</u>)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	
Remarks: (Include photo numbers here or on a separate sheet.) Less than or equal to 50% FAC or wetter. Parameter is not met.					

SOIL

Sampling Point: Upland A4

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 2	2.5Y 3/2	100					FSL	
2 - 6	2.5Y 4/3	100					LFS	
6 - 9	2.5Y 5/4	100					LFS	
9 - 16+	5Y 6/3	100					FS	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:
 No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/9/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A7

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Drainage swale/Slight Slope Local relief (concave, convex, none): Concave Slope (%): <5%

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

Soil Map Unit Name: _____ NWI classification: PEM1Ex

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A7</u>
Remarks: (Explain alternative procedures here or in a separate report.) Truncated wetland plot due to adjacency to roadway, located within a man-made swale.	

HYDROLOGY

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

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A7

<u>Tree Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<u>Sapling/Shrub Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
<u>Herb Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Osmundastrum cinnamomeum</i>	20	Y	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <i>Solidago canadensis</i>	20	Y	FACU	
3. <i>Spiraea alba</i>	25	Y	FACW	
4. <i>Doellingeria umbellata</i>	10	N	FACW	
5. <i>Onoclea sensibilis</i>	10	N	FACW	
6. <i>Glyceria melicaria</i>	3	N	OBL	
7. <i>Potentilla simplex</i>	3	N	FACU	
8. <i>Fragaria vesca</i>	3	N	UPL	
9. <i>Rubus hispidus</i>	3	N	FACW	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>97</u>	= Total Cover		
<u>Woody Vine Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
Remarks: (Include photo numbers here or on a separate sheet.) Greater than 50% FAC or wetter. Parameter is met.				Hydrophytic Vegetation Present? Yes <u>X</u> No _____

SOIL

Sampling Point: Wetland A7

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 4	10YR 3/2	100					LFS	
4 - 10	2.5Y 4/3	75	10YR 6/6	25	C	PL	FS	Redox starting at 9"
10+								Refusal/rock fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/fill
 Depth (inches): 10

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator F3. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/9/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A7

Investigator(s): Cindy Balcus, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): ~8%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Truncated upland data plot in primarily mowed area directly adjacent to edge of pavement and above Wetland flag A267.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A7

<u>Tree Stratum</u> (Plot size: <u>Truncated</u>)	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>0</u> = Total Cover				Prevalence Index worksheet: <u> </u> Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
<u>Sapling/Shrub Stratum</u> (Plot size: <u>Truncated</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>0</u> = Total Cover				
<u>Herb Stratum</u> (Plot size: <u>Truncated</u>)				Hydrophytic Vegetation Indicators:
1. <u>Rubus spp. (presumed upland)</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Doellingeria umbellata</u>	<u>8</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Acer rubrum</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
4. <u>Fragaria vesca</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
5. <u>Solidago canadensis</u>	<u>3</u>	<u>N</u>	<u>FACU</u>	
6. <u>Vicia cracca</u>	<u>2</u>	<u>N</u>	<u>NI</u>	
7. <u>Populus tremuloides</u>	<u>1</u>	<u>N</u>	<u>FACU</u>	
8. <u>Daucus carota</u>	<u>1</u>	<u>N</u>	<u>UPL</u>	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>35</u> = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
<u>Woody Vine Stratum</u> (Plot size: <u>Truncated</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
Remarks: (Include photo numbers here or on a separate sheet.) Less than or equal to 50% FAC or wetter. Parameter is not met.				

SOIL

Sampling Point: Upland A7

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 7	2.5Y 4/3	100					FSL	
7+	2.5Y 5/4	100					FS	

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/10/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A11

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Slight Slope Local relief (concave, convex, none): Concave Slope (%): <5%

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

Soil Map Unit Name: _____ NWI classification: PFO1/4E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A11</u>
Remarks: (Explain alternative procedures here or in a separate report.) Wetland plot is located within a man-made swale in the median.	

HYDROLOGY

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

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A11

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	40	Y	FAC
2. <i>Betula alleghaniensis</i>	10	Y	FAC
3. <i>Tsuga canadensis</i>	5	N	FACU
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

55 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer pensylvanicum</i>	8	Y	FACU
2. <i>Acer rubrum</i>	10	Y	FAC
3. <i>Frangula alnus</i>	1	N	FAC
4. <i>Viburnum lantanoides</i>	2	N	FACU
5. <i>Fagus grandifolia</i>	1	N	FACU
6. <i>Quercus rubra</i>	1	N	FACU
7. _____	_____	_____	_____

23 = Total Cover

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Osmundastrum cinnamomeum</i>	15	Y	FACW
2. <i>Phegopteris connectilis</i>	15	Y	FACU
3. <i>Dryopteris spp.</i>	8	N	?
4. <i>Osmunda spectabilis</i>	6	N	OBL
5. <i>Symphytichum puniceum</i>	4	N	OBL
6. <i>Frangula alnus</i>	1	N	FAC
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

49 = Total Cover

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

0 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present?

Yes X No _____

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

Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland A11

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 14	7.5YR 2.5/2	100					L	
14 - 22	10YR 3/1	96	7.5YR 3/4	4	C	PL	VFSL	Pore line redox and soft masses
22 - 26+	5Y 2.5/1	97	7.5YR 3/4	3	C	PL	VFSL	Pore line redox and soft masses

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:
 Hydric soil indicator F6. Parameter is met.
 Dense organic matter and roots to 10".

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/10/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A11

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~15%

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

Soil Map Unit Name: _____ NWI classification: UPL

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in primarily mowed area in median and above Wetland flag A444.	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A11

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	5	Y	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	15	Y	FAC
2. <i>Viburnum lantanoides</i>	8	Y	FACU
3. <i>Acer pensylvanicum</i>	4	N	FACU
4. <i>Quercus rubra</i>	3	N	FACU
5. <i>Prunus spp.</i>	1	N	FACU
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Festuca rubra</i>	40	Y	FACU
2. <i>Pteridium aquilinum</i>	20	Y	FACU
3. <i>Andropogon virginicus</i>	10	N	FACU
4. <i>Solidago canadensis</i>	10	N	FACU
5. <i>Spiraea alba</i>	7	N	FACW
6. <i>Juncus effusus</i>	4	N	OBL
7. <i>Dryopteris spp.</i>	4	N	NO
8. <i>Onoclea sensibilis</i>	3	N	FACW
9. <i>Quercus rubra</i>	2	N	FACU
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across All Strata: 5 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 40% (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FACU species _____ x 3 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
 Less than or equal to 50% FAC or wetter. Parameter is not met.

SOIL

Sampling Point: Upland A1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 4	2.5Y 3/2	100					LFS	
4 - 15	2.5Y 5/4	100					LS	
15+								Refusal/rock fill

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

Hydric Soil Indicators:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)

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

Restrictive Layer (if observed):
 Type: Rock/fill
 Depth (inches): 15

Hydric Soil Present? Yes _____ No X

Remarks:
 No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/9/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A14

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Slightly concave Slope (%): <3%

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

Soil Map Unit Name: _____ NWI classification: PFO1/4E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A14</u>
Remarks: (Explain alternative procedures here or in a separate report.) Short stream channel forms at start of wetland from 36" reinforced concrete pipe (RCP) draining from under Interstate 89.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-4</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>5</u> Saturation Present? (includes capillary fringe) Yes <u>X</u> No _____ Depth (inches): <u>0</u>		Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Hydrology indicators present A1, A2, A3, B9, B10. Parameter is met.			

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A14

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30ft</u>)				
1. <u><i>Acer rubrum</i></u>	15	Y	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B) Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <u><i>Betula alleghaniensis</i></u>	20	Y	FAC	
3. <u><i>Tsuga canadensis</i></u>	5	N	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
	40			= Total Cover
Sapling/Shrub Stratum (Plot size: <u>15ft</u>)				
1. <u><i>Alnus incana</i></u>	10	Y	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	3			= Total Cover
Herb Stratum (Plot size: <u>5ft</u>)				
1. <u><i>Scirpus cyperinus</i></u>	45	Y	OBL	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. <u><i>Carex intumescens</i></u>	25	Y	FACW	
3. <u><i>Glyceria melicaria</i></u>	15	N	OBL	
4. <u><i>Mimulus ringens</i></u>	8	N	OBL	
5. <u><i>Solidago rugosa</i></u>	4	N	FAC	
6. <u><i>Polygonum sagittatum</i></u>	3	N	OBL	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	100			= Total Cover
Woody Vine Stratum (Plot size: <u>30ft</u>)				
1. _____				Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____				
3. _____				
4. _____				
	0			= Total Cover

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

Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland A14

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 23	10YR 2/1	100					Mucky	
23+	10YR 3/2	100					Mucky	Mucky mineral

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator A1, A4. Parameter is met.
 Dense organic matter. Roots to 6".

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project# 42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/9/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A14

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~15%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in primarily mowed area above Wetland flag A560.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A14

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Pinus strobus</i>	25	Y	FACU
2. <i>Tsuga canadensis</i>	5	Y	FACU
3. <i>Acer rubrum</i>	3	N	FAC
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Rhus typhina</i>	5	Y	UPL
2. <i>Juniperus communis</i>	5	Y	FACU
3. <i>Quercus rubra</i>	5	Y	FACU
4. <i>Fagus grandifolia</i>	2	N	FACU
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Festuca rubra</i>	50	Y	FACU
2. <i>Dactylis glomerata</i>	5	N	FACU
3. <i>Daucus carota</i>	5	N	UPL
4. <i>Solidago canadensis</i>	3	N	FACU
5. <i>Pinus strobus</i>	2	N	FACU
6. <i>Quercus rubra</i>	2	N	FACU
7. <i>Fagus grandifolia</i>	2	N	FACU
8. <i>Tsuga canadensis</i>	1	N	FACU
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
 Less than or equal to 50% FAC or wetter. Parameter is not met.

SOIL

Sampling Point: Upland A14

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 2	2.5Y 4/3	100					LFS	
2 - 10	2.5Y 5/4	100					LFS	
10+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 10+

Hydric Soil Present? Yes No

Remarks:

No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 12/3/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A15

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <3%

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

Soil Map Unit Name: _____ NWI classification: PFO1E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A15</u>
Remarks: (Explain alternative procedures here or in a separate report.) _____ _____	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>		<u>Secondary Indicators (minimum of two required)</u>	
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-6</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <u>X</u> No _____ Depth (inches): <u>0</u>		Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: _____ _____			
Remarks: Hydrology indicators present A1, A3, B9, B10. Parameter is met.			

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A15

Tree Stratum (Plot size: <u>30 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Acer rubrum</i>	40	Y	FAC
2.				
3.				
4.				
5.				
6.				
7.				

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Frangula alnus</i>	30	Y	FAC
2.	<i>Ilex verticillata</i>	20	Y	FACW
3.	<i>Rhus typhina</i>	20	Y	NI
4.				
5.				
6.				
7.				

Herb Stratum (Plot size: <u>5 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Panicum virgatum</i>	20	Y	FAC
2.	<i>Onoclea sensibilis</i>	15	N	FACW
3.	<i>Spiraea alba</i>	15	N	FACW
4.	<i>Typha latifolia</i>	5	N	OBL
5.	<i>Rubus hispidus</i>	5	N	FACW
6.	<i>Scirpus cyperinus</i>	40	Y	OBL
7.				
8.				
9.				
10.				
11.				
12.				

Woody Vine Stratum (Plot size: <u>30 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
 Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland A51

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

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0 - 24+	10YR 2/1	100				FSL	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator S7. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 12/3/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A15

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~20%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag A488.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <u>X</u> Depth (inches): _____		Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.			

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A15

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rhus typhina</u>	30	Y	NI
2. <u>Reynoutria japonica</u>	30	Y	FACU
3. <u>Comptonia peregrina</u>	10	N	NI
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Festuca rubra</u>	30	Y	FACU
2. <u>Andropogon virginicus</u>	30	Y	FACU
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No X

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

Less than or equal to 50% FAC or wetter. Parameter is not met.

SOIL

Sampling Point: Upland A15

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 6	10YR 2/2	100					FSL	
6 - 22+	2.5Y 5/4	100					LFS	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 12/3/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A28

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): <3%

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

Soil Map Unit Name: _____ NWI classification: PEM1E, PFO1/4E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A28</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

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

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A28

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Pinus strobus</i>	40	Y	FACU
2. <i>Acer rubrum</i>	30	Y	FAC
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

70 = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Alnus incana</i>	20	Y	FACW
2. <i>Acer rubrum</i>	10	Y	FAC
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

30 = Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Panicum virgatum</i>	30	Y	FAC
2. <i>Onoclea sensibilis</i>	15	N	FACW
3. <i>Osmundastrum cinnamomeum</i>	10	N	FACW
4. <i>Solidago rugosa</i>	10	N	FAC
5. <i>Phalaris arundinacea</i>	10	N	FACW
6. <i>Typha latifolia</i>	5	N	OBL
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

80 = Total Cover			
Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

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

Greater than 50% FAC or wetter. Parameter is met.

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	_____	Multiply by:	_____
OBL species	_____ x 1 =	_____	_____
FACW species	_____ x 2 =	_____	_____
FAC species	_____ x 3 =	_____	_____
FACU species	_____ x 4 =	_____	_____
UPL species	_____ x 5 =	_____	_____
Column Totals:	_____ (A)	_____ (B)	_____

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point: Wetland A28

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

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0 - 30+	10YR 2/1	100				LS	Mucky Mineral

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input checked="" type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

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

Restrictive Layer (if observed):	Hydric Soil Present? Yes <u> X </u> No <u> </u>
Type: _____ Depth (inches): _____	

Remarks:
Hydric soil indicator A4, S1. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 12/3/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A28

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~15%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag V56.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <u>X</u> Depth (inches): _____		Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.			

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A28

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
 Total Number of Dominant Species Across All Strata: 1 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)
 Prevalence Index = B/A = _____

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Festuca rubra</i>	55	Y	FACU
2. <i>Andropogon virginicus</i>	20	N	FACU
3. <i>Pseudognaphalium obtusifolium</i>	10	N	NI
4. <i>Vicia cracca</i>	5	N	NI
5. <i>Rubus hispidus</i>	5	N	FACW
6. <i>Daucus carota</i>	5	N	UPL
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No X

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

Less than or equal to 50% FAC or wetter. Parameter is not met.

SOIL

Sampling Point: Upland A28

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 6	10YR 4/3	100					FSL	
6 - 12	2.5Y 5/3	100					LFS	
12+								Refusal Rock/Fill

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 12

Hydric Soil Present? Yes No

Remarks:
 No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 12/3/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A30

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <1%

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

Soil Map Unit Name: _____ NWI classification: PSS1E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A30</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-4</u>			
Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>8</u>			
Saturation Present? (includes capillary fringe) Yes <u>X</u> No _____ Depth (inches): <u>0</u>	Wetland Hydrology Present? Yes <u>X</u> No _____		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Hydrology indicators present A1, A2, A3, B9, B10, C1. Parameter is met.			

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A30

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>10</u>	= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Ilex verticillata</i></u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
2. <u><i>Betula alleghaniensis</i></u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
3. <u><i>Salix bebbiana</i></u>	<u>5</u>	<u>N</u>	<u>FACW</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	<u>30</u>	= Total Cover	
Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Typha latifolia</i></u>	<u>40</u>	<u>Y</u>	<u>OBL</u>
2. <u><i>Osmunda spectabilis</i></u>	<u>20</u>	<u>Y</u>	<u>OBL</u>
3. <u><i>Onoclea sensibilis</i></u>	<u>15</u>	<u>N</u>	<u>FACW</u>
4. <u><i>Juncus effusus</i></u>	<u>5</u>	<u>N</u>	<u>OBL</u>
5. <u><i>Solidago rugosa</i></u>	<u>5</u>	<u>N</u>	<u>FAC</u>
6. <u><i>Glyceria melicaria</i></u>	<u>5</u>	<u>N</u>	<u>OBL</u>
7. <u><i>Carex intumescens</i></u>	<u>5</u>	<u>N</u>	<u>FACW</u>
8. <u><i>Spiraea alba</i></u>	<u>5</u>	<u>N</u>	<u>FACW</u>
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	<u>100</u>	= Total Cover	
Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	<u>0</u>	= Total Cover	

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
 Total Number of Dominant Species Across All Strata: 4 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
 Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland A30

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

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0 - 24+	10YR 2/1	100				Mucky	Mucky Mineral

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator A4, S1. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 12/3/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A30

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/forested slope Local relief (concave, convex, none): None Slope (%): 20%

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

Soil Map Unit Name: _____ NWI classification: UPL

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag UA55.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.			

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A30

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				
1. <u><i>Acer rubrum</i></u>	40	Y	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>12.5%</u> (A/B)
2. <u><i>Pinus strobus</i></u>	30	Y	FACU	
3. <u><i>Fagus grandifolia</i></u>	20	Y	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
	90	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <u><i>Fagus grandifolia</i></u>	10	Y	FACU	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <u><i>Betula alleghaniensis</i></u>	5	Y	FAC	
3. <u><i>Tsuga canadensis</i></u>	5	Y	FACU	
4. <u><i>Quercus rubra</i></u>	5	Y	FACU	
5. _____				
6. _____				
7. _____				
	25	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u><i>Festuca rubra</i></u>	30	Y	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u><i>Solidago rugosa</i></u>	10	N	FAC	
3. <u><i>Dryopteris marginalis</i></u>	5	N	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	45	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 ft</u>)				
1. _____				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____				
3. _____				
4. _____				
	0	= Total Cover		
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>				
Remarks: (Include photo numbers here or on a separate sheet.) Less than or equal to 50% FAC or wetter. Parameter is not met.				

SOIL

Sampling Point: Upland A30

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

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0 - 22+	10YR 4/1	100				FSL	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators present. Parameter is not met.
 Roots to 5".

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 12/3/20
 Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A35
 Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <1%
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: PEM1E

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

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A35</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <table style="width:100%;"> <tr> <td><input checked="" type="checkbox"/> Surface Water (A1)</td> <td><input checked="" type="checkbox"/> Water-Stained Leaves (B9)</td> </tr> <tr> <td><input type="checkbox"/> High Water Table (A2)</td> <td><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturation (A3)</td> <td><input type="checkbox"/> Marl Deposits (B15)</td> </tr> <tr> <td><input type="checkbox"/> Water Marks (B1)</td> <td><input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><input type="checkbox"/> Sediment Deposits (B2)</td> <td><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</td> </tr> <tr> <td><input type="checkbox"/> Drift Deposits (B3)</td> <td><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><input type="checkbox"/> Iron Deposits (B5)</td> <td><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<p><u>Secondary Indicators (minimum of two required)</u></p> <table style="width:100%;"> <tr><td><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td><input checked="" type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td><input type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td><input type="checkbox"/> Dry-Season Water Table (C2)</td></tr> <tr><td><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td><input type="checkbox"/> Stunted or Stressed Plants (D1)</td></tr> <tr><td><input type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td><input type="checkbox"/> Microtopographic Relief (D4)</td></tr> <tr><td><input type="checkbox"/> FAC-Neutral Test (D5)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)																															
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<input type="checkbox"/> FAC-Neutral Test (D5)																																
<p>Field Observations:</p> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-6</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>4</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____																															
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 																																
Remarks: Hydrology indicators present A1, A3, B9, B10, C1. Parameter is met.																																

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A35

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Typha latifolia</i>	35	Y	OBL
2. <i>Juncus effusus</i>	25	Y	OBL
3. <i>Panicum virgatum</i>	25	Y	FAC
4. <i>Solidago rugosa</i>	5	N	FAC
5. <i>Scirpus cyperinus</i>	5	N	OBL
6. <i>Osmunda spectabilis</i>	5	N	OBL
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

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

Greater than 50% FAC or wetter. Parameter is met.

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____	(A) _____ (B) _____
Prevalence Index = B/A = _____	

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point: Wetland A35

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

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0 - 4	10YR 2/1	100				Mucky	Mucky Mineral
4 - 20+	2.5Y 7/1	70				LS	
	GLEYS 3/5G_2	30				LS	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator A4, A11. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 12/3/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A35

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/forested slope Local relief (concave, convex, none): None Slope (%): ~20%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag UC6.	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A35

Tree Stratum (Plot size: <u>30 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Pinus strobus</i>	40	Y	FACU
2.	<i>Acer rubrum</i>	15	Y	FAC
3.				
4.				
5.				
6.				
7.				
		55	= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Tsuga canadensis</i>	10	Y	FACU
2.	<i>Quercus rubra</i>	5	Y	FACU
3.	<i>Pinus strobus</i>	5	Y	FACU
4.	<i>Fagus grandifolia</i>	5	Y	FACU
5.				
6.				
7.				
		25	= Total Cover	
Herb Stratum (Plot size: <u>5 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Festuca rubra</i>	10	Y	FACU
2.	<i>Andropogon virginicus</i>	10	Y	FACU
3.	<i>Pteridium aquilinum</i>	5	N	FACU
4.	<i>Rubus spp. (presumed upland)</i>	5	N	FACU
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		30	= Total Cover	
Woody Vine Stratum (Plot size: <u>30 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
		0	= Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 12.5% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
 Less than or equal to 50% FAC or wetter. Parameter is not met.

SOIL

Sampling Point: Upland A35

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 5	10YR 2/1	100					FSL	
5 - 14	2.5Y 5/4	100					LFS	
14+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 14

Hydric Soil Present? Yes _____ No X

Remarks:
 No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 12/3/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A38

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Drainage swale/Slight Slope Local relief (concave, convex, none): Concave Slope (%): <5%

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

Soil Map Unit Name: _____ NWI classification: PEM1Ex/PSS1Ex

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A38</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-3</u> Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: Hydrology indicators present A1, A3, B9, B10, B16. Parameter is met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A38

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Betula alleghaniensis</i>	10	Y	FAC
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			

10 = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Tsuga canadensis</i>	5	N	FACU
2. <i>Alnus incana</i>	25	Y	FACW
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			

30 = Total Cover			
Herb Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Panicum virgatum</i>	25	Y	FAC
2. <i>Onclea sensibilis</i>	15	Y	FACW
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			

40 = Total Cover			
Woody Vine Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			

0 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

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

Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland A38

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 3	10YR 2/2	100					L	
3 - 6	10YR 3/1	100					FSL	
6 - 12	2.5Y 4/2	100					LFS	
12+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 12

Hydric Soil Present? Yes X No

Remarks:

Hydric soil indicator A4, A11. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 12/3/20
 Applicant/Owner: NH DOT State: NH Sampling Point: Upland A38
 Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~15%
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag X2.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A38

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	15	Y	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)			
1. <i>Betula alleghaniensis</i>	10	Y	FAC
2. <i>Tsuga canadensis</i>	10	Y	FACU
3. <i>Betula populifolia</i>	5	N	FAC
4. <i>Frangula alnus</i>	5	N	FAC
5. <i>Acer rubrum</i>	5	N	FAC
6. <i>Quercus rubra</i>	5	N	FACU
7. <i>Pinus strobus</i>	5	N	FACU
	45	= Total Cover	
Herb Stratum (Plot size: <u>5 ft</u>)			
1. <i>Festuca rubra</i>	40	Y	FACU
2. <i>Andropogon virginicus</i>	30	Y	FACU
3. <i>Pteridium aquilinum</i>	10	N	FACU
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	80	= Total Cover	
Woody Vine Stratum (Plot size: <u>30 ft</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	0	= Total Cover	

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across All Strata: 5 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 40% (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
 Less than or equal to 50% FAC or wetter. Parameter is not met.

SOIL

Sampling Point: Upland A38

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 4	10YR 4/1	100					FSL	
4 - 8	2.5Y 5/4	100					LFS	
8+								Refusal Rock/Fill

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 8

Hydric Soil Present? Yes _____ No X

Remarks:
 No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 12/3/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A47

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <3%

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

Soil Map Unit Name: _____ NWI classification: PEM1E/PFO1E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A47</u>
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-3</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Saturation Present? (includes capillary fringe) Yes <u>X</u> No _____ Depth (inches): <u>0</u>	<p>Wetland Hydrology Present? Yes <u>X</u> No _____</p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: Hydrology indicators present A2, A3, C1. Parameter is met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A47

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	20	Y	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Frangula alnus</i>	10	Y	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Juncus effusus</i>	40	Y	OBL
2. <i>Typha latifolia</i>	20	N	OBL
3. <i>Panicum virgatum</i>	10	N	FAC
4. <i>Doellingeria umbellata</i>	10	N	FACW
5. <i>Scirpus cyperinus</i>	30	Y	OBL
6. <i>Glyceria melicaria</i>	15	N	OBL
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

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

Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland A47

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

Depth (inches)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0 - 4	10YR 2/2	70	5YR 4/6	30	C	M	Muck
4 - 20+	2.5Y 3/1	100					LS

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histic Sol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator A4, S1. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 12/3/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A47

Investigator(s): Cindy Balcus, Michael Waterhouse, Diane DeVries Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/forested slope Local relief (concave, convex, none): None Slope (%): 25%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag G217.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A47

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Pinus strobus</i>	40	Y	FACU
2. <i>Fagus grandifolia</i>	15	N	FACU
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

55 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Fagus grandifolia</i>	15	Y	FACU
2. <i>Pinus strobus</i>	5	Y	FACU
3. <i>Acer rubrum</i>	5	Y	FAC
4. <i>Quercus rubra</i>	5	Y	FACU
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

30 = Total Cover

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Festuca rubra</i>	30	Y	FACU
2. <i>Panicum virgatum</i>	10	N	FAC
3. <i>Andropogon virginicus</i>	10	N	FACU
4. <i>Solidago rugosa</i>	5	N	FAC
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

55 = Total Cover

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

0 = Total Cover

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 17% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0¹
- 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present?

Yes _____ No X

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

Less than or equal to 50% FAC or wetter. Parameter is not met.

SOIL

Sampling Point: Upland A47

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 12	10YR 4/2	100					FSL	
12 - 16	2.5Y 5/4	100					LFS	
16+								Refusal Rock/Fill

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

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

Restrictive Layer (if observed): Type: <u>Rock/Fill</u> Depth (inches): <u>16</u>	Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:
 No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/5/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A51 - Plot 1

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <1%

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

Soil Map Unit Name: _____ NWI classification: PEM1E/PFO1E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A51 - Plot 1</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-1</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>6</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: Hydrology indicators present A1, A2, A3, B9 & C7. Parameter is met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A51 - Plot 1

Tree Stratum (Plot size: <u>30 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Acer rubrum</i>	5	Y	FAC
2.	<i>Betula populifolia</i>	5	Y	FAC
3.				
4.				
5.				
6.				
7.				

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				
5.				
6.				
7.				

Herb Stratum (Plot size: <u>5 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<i>Scirpus cyperinus</i>	95	Y	OBL
2.	<i>Panicum virgatum</i>	20	N	FAC
3.	<i>Typha latifolia</i>	30	Y	OBL
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				

Woody Vine Stratum (Plot size: <u>30 ft</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.				
2.				
3.				
4.				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

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

Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland A51 - Plot 1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 5	5YR 2.5/1	100					Mucky	
5 - 8	2.5Y 2.5/1	100					LS	Mucky Mineral
8 - 14+	2.5Y 4/2	95	10YR4/6	5	C	PL	LFS	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:
 Hydric soil indicator A4, S1. Parameter is met.
 Roots to 8".

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/5/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A51 - Plot 1

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~15%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.)	
Upland data plot in mowed area above Wetland flag Q56	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u>	<u>Secondary Indicators (minimum of two required)</u>
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A51 - Plot 1

Tree Stratum (Plot size: <u>30 ft</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	45	Y	FAC
2. <i>Tsuga canadensis</i>	10	N	FACU
3. <i>Quercus rubra</i>	10	N	FACU
4. <i>Pinus strobus</i>	5	N	FACU
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

70 = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Pinus strobus</i>	5	Y	FACU
2. <i>Tsuga canadensis</i>	5	Y	FACU
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

10 = Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Pteridium aquilinum</i>	5	Y	FACU
2. <i>Osmunda spectabilis</i>	5	Y	OBL
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

10 = Total Cover			
Woody Vine Stratum (Plot size: <u>30 ft</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Remarks: (Include photo numbers here or on a separate sheet.)
 Less than or equal to 50% FAC or wetter. Parameter is not met.

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40% (A/B)

Prevalence Index worksheet:

Total % Cover of:	_____	Multiply by:	_____
OBL species	_____ x 1 =	_____	_____
FACW species	_____ x 2 =	_____	_____
FAC species	_____ x 3 =	_____	_____
FACU species	_____ x 4 =	_____	_____
UPL species	_____ x 5 =	_____	_____
Column Totals:	_____ (A)	_____ (B)	_____

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No X

SOIL

Sampling Point: Upland A51 - Plot1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 4	10YR 4/2	100					SL	
4 - 12	2.5Y 5/3	100					LFS	
12+								Refusal Rock/Fill

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 12

Hydric Soil Present? Yes _____ No X

Remarks:
 No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/5/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A51 - Plot 2

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Slightly Concave Slope (%): <3%

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

Soil Map Unit Name: _____ NWI classification: PFO1E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A51 - Plot 2</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	<input checked="" type="checkbox"/> Moss Trim Lines (B16)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-3</u>			
Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u>			
Saturation Present? (includes capillary fringe) Yes <u>X</u> No _____ Depth (inches): <u>0</u>			
		Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Hydrology indicators present A1, A2, A3, B9, B16. Parameter is met.			

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A51 - Plot 2

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	20	Y	FAC
2. <i>Betula populifolia</i>	20	Y	FAC
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Ilex verticillata</i>	25	Y	FACW
2. <i>Alnus incana</i>	5	N	FACW
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Panicum virgatum</i>	45	Y	FAC
2. <i>Typha latifolia</i>	25	Y	OBL
3. <i>Scirpus cyperinus</i>	5	N	OBL
4. <i>Osmunda spectabilis</i>	5	N	OBL
5. <i>Euthamia graminifolia</i>	5	N	FAC
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			

40 = Total Cover

30 = Total Cover

85 = Total Cover

0 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	_____	Multiply by:	_____
OBL species	_____ x 1 =		_____
FACW species	_____ x 2 =		_____
FAC species	_____ x 3 =		_____
FACU species	_____ x 4 =		_____
UPL species	_____ x 5 =		_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
 Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland A51 - Plot 2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 6	10YR 2/1	100					Mucky	
6 - 14	10YR 3/1	100					LS	Mucky Mineral
14+								Refusal Rock/Fill

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 14

Hydric Soil Present? Yes X No _____

Remarks:
 Hydric soil indicators A4, S1, S7. Parameter is met.
 Roots to 6".

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/5/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A51 - Plot 2

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/forested slope Local relief (concave, convex, none): None Slope (%): ~15%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag Q39.	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A51 - Plot2

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	20	Y	FAC
2. <i>Tsuga canadensis</i>	15	Y	FACU
3. <i>Quercus rubra</i>	10	N	FACU
4. <i>Pinus strobus</i>	10	N	FACU
5. <i>Fagus grandifolia</i>	5	N	FACU
6. <i>Betula papyrifera</i>	5	N	FACU
7. _____			
	65	= Total Cover	

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Quercus rubra</i>	40	Y	FACU
2. <i>Acer rubrum</i>	20	Y	FAC
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
	60	= Total Cover	

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Solidago rugosa</i>	5	Y	FAC
2. <i>Pinus strobus</i>	5	Y	FACU
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			
	10	= Total Cover	

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
	0	= Total Cover	

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No X

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

Less than or equal to 50% FAC or wetter. Parameter is not met.

SOIL

Sampling Point: Upland A51 - Plot 2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 3	7.5YR 3/3	100					SL	
3 - 12	10YR 4/3	100					LFS	
12+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 12

Hydric Soil Present? Yes _____ No X

Remarks:
 No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/5/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A52

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Drainage swale/Slight Slope Local relief (concave, convex, none): Concave Slope (%): <5%

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

Soil Map Unit Name: _____ NWI classification: PSS1Ex

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A52</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>8</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>6</u> (includes capillary fringe)	<p>Wetland Hydrology Present? Yes <u>X</u> No _____</p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: Hydrology indicators present A2, A3, B9. Parameter is met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A52

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix bebbiana</u>	10	Y	FACW	
2. <u>Ilex verticillata</u>	8	Y	FACW	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>18</u>	= Total Cover		
Herb Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Symphotrichum novae-angliae</u>	40	Y	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Spiraea alba</u>	15	N	FACW	
3. <u>Rubus hispidus</u>	15	N	FACW	
4. <u>Agrostis stolonifera</u>	10	N	FACW	
5. <u>Typha latifolia</u>	6	N	OBL	
6. <u>Juncus effusus</u>	5	N	OBL	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>91</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		Hydrophytic Vegetation Present? Yes <u>X</u> No _____

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

Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland P2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 3	10YR 2/2	90	7.5YR 4/6	10			FSL	
3 - 6	10YR 3/2	80	10YR 3/6	20	C	PL	FSL	
6 - 10+	10YR 5/1	60	10YR 3.5/6	40	C	PL	LS	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator S5. Parameter is met.
 Roots to 3".

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/5/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A52

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~10%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag P2.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A52

<u>Tree Stratum</u> (Plot size: <u>Truncated</u>)	<u>Absolute % Cover</u>	<u>Dominant Species?</u>	<u>Indicator Status</u>	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>0</u> = Total Cover				Prevalence Index worksheet: <u> </u> Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
<u>Sapling/Shrub Stratum</u> (Plot size: <u>Truncated</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>0</u> = Total Cover				
<u>Herb Stratum</u> (Plot size: <u>Truncated</u>)				
1. <u>Festuca rubra</u>	60	Y	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Solidago rugosa</u>	20	Y	FAC	
3. <u>Rubus spp. (presumed upland)</u>	10	N	FACU	
4. <u>Spiraea alba</u>	3	N	FACW	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>93</u> = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: <u>Truncated</u>)				
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				Hydrophytic Vegetation Present? Yes <u> </u> No <u> x </u>

Remarks: (Include photo numbers here or on a separate sheet.)
 Less than or equal to 50% FAC or wetter. Parameter is not met.

SOIL

Sampling Point: Upland A52

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 4	10YR 3/3	100					FSL	
4 - 14+	10YR 5/3	100					LS	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/5/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A53 - Plot 1

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <1%

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

Soil Map Unit Name: _____ NWI classification: PSS1E/PFO1E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A53</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-8</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>4</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<p>Wetland Hydrology Present? Yes <u>X</u> No _____</p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: Hydrology indicators present A1, A2, A3, B1 & B9. Parameter is met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A53 - Plot 1

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	30	Y	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Salix nigra</i>	30	Y	OBL
2. <i>Acer rubrum</i>	20	Y	FAC
3. <i>Ilex verticillata</i>	20	Y	FACW
4. <i>Spiraea alba</i>	3	N	FACW
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Typha latifolia</i>	40	Y	OBL
2. <i>Panicum virgatum</i>	30	Y	FAC
3. <i>Symphotrichum novae-angliae</i>	8	N	FACW
4. <i>Rubus hispidus</i>	5	N	FACW
5. <i>Doellingeria umbellata</i>	5	N	FACW
6. <i>Carex lurida</i>	5	N	OBL
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

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

Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland A53 - Plot 1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 8	10YR 2/1	100					FSL	
8 - 13	10YR 4/1	100					LS	
13+								Refusal Rock/Fill

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 13

Hydric Soil Present? Yes X No _____

Remarks:
 Hydric soil indicator A4. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/5/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A53 - Plot 1

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~10%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag P13.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A53 - Plot 1

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>0</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Acer rubrum</i>	20	Y	FAC	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>20</u> = Total Cover				
Herb Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Festuca rubra</i>	50	Y	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <i>Andropogon virginicus</i>	15	Y	FACU	
3. <i>Acer rubrum</i>	10	N	FAC	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>75</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
Less than or equal to 50% FAC or wetter. Parameter is not met.				
				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>

SOIL

Sampling Point: Upland A53 - Plot 1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 1	10YR 3/4	100					FSL	Organic
1 - 5	10YR 3/3	100					FSL	
5 - 6	2.5Y 4/3	100					LS	
6+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 6

Hydric Soil Present? Yes No

Remarks:

No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/6/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A53 - Plot 2

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): <1%

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

Soil Map Unit Name: _____ NWI classification: PSS1E/PFO1E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A53</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-16</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0-6</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: Hydrology indicators present A1, A2, A3, B10 and C7. Parameter is met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A53 - Plot 2

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	30	Y	FAC
2. <i>Betula populifolia</i>	10	Y	FAC
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	30	Y	FACW
2. <i>Viburnum recognitum</i>	10	Y	FAC
3. <i>Betula populifolia</i>	5	N	FAC
4. <i>Ilex verticillata</i>	5	N	FACW
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Typha latifolia</i>	60	Y	OBL
2. <i>Onoclea sensibilis</i>	25	Y	FACW
3. <i>Doellingeria umbellata</i>	5	N	FACW
4. <i>Vicia cracca</i>	5	N	OBL
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Woody Vine Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is ≤3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

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

Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland A53 - Plot 2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 9	10YR 2/1	100					Mucky	Mucky Mineral
9 - 23+	10YR 2/2	100					Mucky	Mucky Mineral

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicators A1, A4. Parameter is met.
 Roots to 12".

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/6/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A53 - Plot 2

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~10%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag P101.	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> Surface Water (A1)</td> <td><input type="checkbox"/> Water-Stained Leaves (B9)</td> </tr> <tr> <td><input type="checkbox"/> High Water Table (A2)</td> <td><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td><input type="checkbox"/> Saturation (A3)</td> <td><input type="checkbox"/> Marl Deposits (B15)</td> </tr> <tr> <td><input type="checkbox"/> Water Marks (B1)</td> <td><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><input type="checkbox"/> Sediment Deposits (B2)</td> <td><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</td> </tr> <tr> <td><input type="checkbox"/> Drift Deposits (B3)</td> <td><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><input type="checkbox"/> Iron Deposits (B5)</td> <td><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<p>Secondary Indicators (minimum of two required)</p> <table style="width:100%;"> <tr><td><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td><input type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td><input type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td><input type="checkbox"/> Dry-Season Water Table (C2)</td></tr> <tr><td><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td><input type="checkbox"/> Stunted or Stressed Plants (D1)</td></tr> <tr><td><input type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td><input type="checkbox"/> Microtopographic Relief (D4)</td></tr> <tr><td><input type="checkbox"/> FAC-Neutral Test (D5)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)																															
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)																															
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)																															
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)																															
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)																															
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)																															
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)																															
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)																															
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)																															
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)																																
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<input type="checkbox"/> FAC-Neutral Test (D5)																																
<p>Field Observations:</p> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>																															
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:																																
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.																																

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A53 - Plot 2

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

0 = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>Truncated</u>)			
1. <u>Pinus strobus</u>	5	Y	FACU
2. <u>Betula populifolia</u>	5	Y	FAC
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

10 = Total Cover			
Herb Stratum (Plot size: <u>Truncated</u>)			
1. <u>Andropogon virginicus</u>	60	Y	FACU
2. <u>Festuca rubra</u>	20	Y	FACU
3. <u>Rubus hispidus</u>	10	N	FACW
4. <u>Ilex verticillata</u>	5	N	FACW
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

95 = Total Cover			
Woody Vine Stratum (Plot size: <u>Truncated</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Remarks: (Include photo numbers here or on a separate sheet.)
 Less than or equal to 50% FAC or wetter. Parameter is not met.

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No X

SOIL

Sampling Point: Upland A53 - Plot 2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 9	10YR 3/2	100					FSL	
9+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 9

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/5/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A55

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0%

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

Soil Map Unit Name: _____ NWI classification: PFO1E

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland R1</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Saturation Present? (includes capillary fringe) Yes <u>X</u> No _____ Depth (inches): <u>0</u>		Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: Hydrology indicators present A2, A3, B9 & C7. Parameter is met.		

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A55

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Acer rubrum</i></u>	35	Y	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

15 = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Ilex verticillata</i></u>	35	Y	FACW
2. <u><i>Betula populifolia</i></u>	15	Y	FAC
3. <u><i>Quercus rubra</i></u>	5	N	FACU
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

55 = Total Cover			
Herb Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u><i>Osmunda spectabilis</i></u>	40	Y	OBL
2. <u><i>Typha latifolia</i></u>	20	Y	OBL
3. <u><i>Spiraea alba</i></u>	20	Y	FACW
4. <u><i>Doellingeria umbellata</i></u>	10	N	FACW
5. <u><i>Scirpus cyperinus</i></u>	5	N	OBL
6. <u><i>Onoclea sensibilis</i></u>	5	N	FACW
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

100 = Total Cover			
Woody Vine Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

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

Greater than 50% FAC or wetter. Parameter is met.

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point: Wetland A55

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 4	7.5YR 3/1	100					L	High organic content
4 - 6	10YR 2/1	100					Mucky	Mucky Mineral
6 - 18+	2.5Y 4/2	100					Mucky	Mucky Mineral

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator A4, S1. Parameter is met.
 Roots to 4".

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/5/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A55

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~10%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag R1.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A55

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>0</u> = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Populus tremuloides</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <u>Acer rubrum</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>10</u> = Total Cover			
Herb Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Festuca rubra</u>	<u>45</u>	<u>Y</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Gaultheria procumbens</u>	<u>25</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Andropogon virginicus</u>	<u>15</u>	<u>N</u>	<u>FACU</u>	
4. <u>Rubus hispidus</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
5. <u>Carex spp. (no seed head)</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
	<u>100</u> = Total Cover			
Woody Vine Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>0</u> = Total Cover			
Remarks: (Include photo numbers here or on a separate sheet.) Less than or equal to 50% FAC or wetter. Parameter is not met.				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>

SOIL

Sampling Point: Upland A55

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 1	10YR 4/2	100					FSL	
1 - 4	10YR 3/3	100					LFS	
4 - 12	5Y 5/3	100					LS	
12+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 12

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/6/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A56

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Drainage swale/Slight Slope Local relief (concave, convex, none): Concave Slope (%): <5%

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

Soil Map Unit Name: _____ NWI classification: PFO1Ex, PEM1Ex

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A56</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Marl Deposits (B15) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-6</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0-1</u> Saturation Present? (includes capillary fringe) Yes <u>X</u> No _____ Depth (inches): <u>0</u>		Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Hydrology indicators present A1, A3, C1 & C7. Parameter is met.			

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A56

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	10	Y	FAC
2. <i>Populus tremuloides</i>	5	N	FACU
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

15 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Salix bebbiana</i>	20	Y	FACW
2. <i>Ilex verticillata</i>	10	Y	FACW
3. <i>Populus tremuloides</i>	5	N	FACU
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

35 = Total Cover

Herb Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Panicum dichotomiflorum</i>	35	Y	FACW
2. <i>Typha latifolia</i>	45	Y	OBL
3. <i>Spiraea alba</i>	20	N	FACW
4. <i>Scirpus cyperinus</i>	10	N	OBL
5. <i>Juncus effusus</i>	5	N	OBL
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

115 = Total Cover

Woody Vine Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

0 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0¹
- 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

- Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
- Sapling/shrub** – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
- Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
- Woody vines** – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No _____

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

Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland A56

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 5	10YR 3/2	50					L	
	10YR 4/2	50					SL	
5 - 12	2.5Y 3/2	95	10YR4/6	5	C	PL	LS	
12+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 12

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator A4 & A12. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/6/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A56

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~10%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag P56.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A56

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Populus tremuloides</i>	5	Y	FACU
2. <i>Acer rubrum</i>	5	Y	FAC
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
	10	= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Salix discolor</i>	10	Y	FACW
2. <i>Pinus strobus</i>	5	N	FACU
3. <i>Acer rubrum</i>	5	N	FAC
4. _____			
5. _____			
6. _____			
7. _____			
	20	= Total Cover	
Herb Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Andropogon virginicus</i>	60	Y	FACU
2. <i>Festuca rubra</i>	30	Y	FACU
3. <i>Pteridium aquilinum</i>	20	Y	FACU
4. <i>Carex spp. (no seed head)</i>	10	N	FAC
5. <i>Spiraea alba</i>	10	N	FACW
6. <i>Rubus hispida</i>	5	N	FACW
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			
	100	= Total Cover	
Woody Vine Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
	0	= Total Cover	

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across All Strata: 6 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)
 Less than or equal to 50% FAC or wetter. Parameter is not met.

SOIL

Sampling Point: Upland A56

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 9	10YR 3/3	100					LFS	
9 - 12	2.5Y 6/4	100					LS	
12+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 12

Hydric Soil Present? Yes No

Remarks:
 No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/9/20

Applicant/Owner: NH DOT State: NH Sampling Point: Wetland A60

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Drainage swale Local relief (concave, convex, none): Concave Slope (%): <5%

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

Soil Map Unit Name: _____ NWI classification: PEM1Ex

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A60</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p>Secondary Indicators (minimum of two required)</p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-3</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>5</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<p>Wetland Hydrology Present? Yes <u>X</u> No _____</p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: Hydrology indicators present A1, A2, A3 & B9. Parameter is met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland A60

<u>Tree Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>0</u> = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<u>Sapling/Shrub Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u> </u> = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>
<u>Herb Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Juncus effusus</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Spiraea alba</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Scirpus cyperinus</u>	<u>20</u>	<u>Y</u>	<u>OBL</u>	
4. <u>Doellingeria umbellata</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
5. <u>Scirpus cyperinus</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
6. <u>Osmunda spectabilis</u>	<u>3</u>	<u>N</u>	<u>OBL</u>	
7. <u>Vicia sativa</u>	<u>3</u>	<u>N</u>	<u>FACU</u>	
8. <u>Lythrum salicaria</u>	<u>2</u>	<u>N</u>	<u>OBL</u>	
9. <u>Fragaria vesca</u>	<u>2</u>	<u>N</u>	<u>UPL</u>	
10. <u>Onoclea sensibilis</u>	<u>2</u>	<u>N</u>	<u>FACW</u>	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>92</u> = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.) Greater than 50% FAC or wetter. Parameter is met.				

SOIL

Sampling Point: Wetland A60

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 9	10YR 3/2	100					FSL	
9 - 16+	2.5Y 3/2	90	5YR 3/4	10	PL	C	LS	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicator A4. Parameter is met.
 Roots to 4".

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/9/20

Applicant/Owner: NH DOT State: NH Sampling Point: Upland A60

Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Maintained lawn/slight slope Local relief (concave, convex, none): None Slope (%): <5%

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

Soil Map Unit Name: _____ NWI classification: _____

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag N228.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <u>X</u> Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland A60

<u>Tree Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
	<u>0</u> = Total Cover			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
	<u>0</u> = Total Cover				
<u>Herb Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Festuca rubra</u>	65	Y	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u>Doellingeria umbellata</u>	8	N	FACW		
3. <u>Artemisia vulgaris</u>	5	N	UPL		
4. <u>Dactylis glomerata</u>	2	N	FACU		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
	<u>80</u> = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
	<u>0</u> = Total Cover			Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	

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

Less than or equal to 50% FAC or wetter. Parameter is not met.

SOIL

Sampling Point: Upland A60

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 6	2.5Y 3/2	100					FSL	
6 - 11	2.5Y 4/3	100					LFS	
11+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 11+

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/9/20
 Applicant/Owner: NH DOT State: NH Sampling Point: Wetland B1
 Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Slight Slope Local relief (concave, convex, none): None Slope (%): <2%
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: PFO1/4E

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

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland B1</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

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

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland B1

Tree Stratum (Plot size: <u>30 ft</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Betula alleghaniensis</i>	20	Y	FAC
2. <i>Tsuga canadensis</i>	30	Y	FACU
3. <i>Acer rubrum</i>	10	N	FAC
4. <i>Pinus strobus</i>	5	N	FACU
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
65 = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Tsuga canadensis</i>	10	Y	FACU
2. <i>Acer pensylvanicum</i>	5	N	FACU
3. <i>Acer rubrum</i>	10	Y	FACU
4. <i>Betula alleghaniensis</i>	5	N	FAC
5. <i>Fagus grandifolia</i>	1	N	FACU
6. <i>Fraxinus americana</i>	1	N	FACU
7. _____	_____	_____	_____
30 = Total Cover			
Herb Stratum (Plot size: <u>5 ft</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Nasturtium microphyllum</i>	30	Y	OBL
2. <i>Chrysosplenium americanum</i>	20	Y	OBL
3. <i>Osmundastrum cinnamomeum</i>	20	Y	FACW
4. <i>Phegopteris connectilis</i>	10	N	FACU
5. <i>Equisetum pratense</i>	4	N	FACW
6. <i>Glyceria melicaria</i>	2	N	OBL
7. <i>Tsuga canadensis</i>	1	N	FACU
8. <i>Solidago rugosa</i>	1	N	FAC
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
83 = Total Cover			
Woody Vine Stratum (Plot size: <u>30 ft</u>)			
	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
0 = Total Cover			

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
 Total Number of Dominant Species Across All Strata: 7 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 71% (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: _____ (A) _____ (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)
 Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland B1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 9	10YR 3/1	100					FSL	
9 - 16+	GLE Y1 4/5G /1	50					LS	
	GLE Y1 4/10Y	50					LS	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Hydric soil indicators S4, A11. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/9/20
 Applicant/Owner: NH DOT State: NH Sampling Point: Upland B1
 Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Maintained lawn/slight slope Local relief (concave, convex, none): None Slope (%): ~5%
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in primarily mowed area above Wetland flag N218.	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland B1

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>Truncated</u>)				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>0</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>Truncated</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Herb Stratum (Plot size: <u>Truncated</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
1. <i>Festuca rubra</i>	40	Y	FACU	
2. <i>Artemisia vulgaris</i>	15	N	UPL	
3. <i>Daucus carota</i>	15	N	UPL	
4. <i>Dactylis glomerata</i>	5	N	FACU	
5. <i>Rubus spp. (presumed upland)</i>	5	N	FACU	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>80</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>Truncated</u>)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
<u>0</u> = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.)				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
Less than or equal to 50% FAC or wetter. Parameter is not met.				

SOIL

Sampling Point: Upland B1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 3	7.5YR 3/2	100					FSL	
3 - 6	7.5YR 2.5/3	100					FSL	
6 - 10+	10YR 5/4	100					FS	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/6/20
 Applicant/Owner: NH DOT State: NH Sampling Point: Wetland B3
 Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0%
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: PFO1/4E

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

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland B3</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-6</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: Hydrology indicators present A1, A2, A3, B9, B16, D2, D4. Parameter is met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland B3

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 ft</u>)				
1. <i>Ulmus americana</i>	15	Y	FACW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>86%</u> (A/B)
2. <i>Tsuga canadensis</i>	10			
3. <i>Acer rubrum</i>	25			
4. _____				
5. _____				
6. _____				
7. _____				
	<u>50</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <i>Ulmus americana</i>	25	Y	FACW	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	<u>4</u>	= Total Cover		
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <i>Boehmeria cylindrica</i>	10	Y	OBL	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <i>Onoclea sensibilis</i>	5	Y	FACW	
3. <i>Phegopteris connectilis</i>	4	Y	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	<u>19</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 ft</u>)				
1. _____				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____				
3. _____				
4. _____				
	<u>0</u>	= Total Cover		
Hydrophytic Vegetation Present? Yes <u>X</u> No _____				
Remarks: (Include photo numbers here or on a separate sheet.) Greater than 50% FAC or wetter. Parameter is met.				

SOIL

Sampling Point: Wetland B3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 3	10YR 2/1	100					FSL	
3 - 16+	2.5Y 3/2	90	10YR4/6	10	C	PL	LFS	

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

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:
 Hydric soil indicator A11. Parameter is met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/6/20
 Applicant/Owner: NH DOT State: NH Sampling Point: Upland B3
 Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Maintained lawn/slight slope Local relief (concave, convex, none): None Slope (%): ~2%
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag O3.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <table style="width:100%; border: none;"> <tr> <td><input type="checkbox"/> Surface Water (A1)</td> <td><input type="checkbox"/> Water-Stained Leaves (B9)</td> </tr> <tr> <td><input type="checkbox"/> High Water Table (A2)</td> <td><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td><input type="checkbox"/> Saturation (A3)</td> <td><input type="checkbox"/> Marl Deposits (B15)</td> </tr> <tr> <td><input type="checkbox"/> Water Marks (B1)</td> <td><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><input type="checkbox"/> Sediment Deposits (B2)</td> <td><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</td> </tr> <tr> <td><input type="checkbox"/> Drift Deposits (B3)</td> <td><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><input type="checkbox"/> Iron Deposits (B5)</td> <td><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)																				
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)																				
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)																				
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)																				
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)																				
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)																				
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)																				
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)																				
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)																				
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)																					
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>																				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:																					
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.																					

VEGETATION – Use scientific names of plants.

Sampling Point: Upland B3

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: <u>30 ft</u>)					
1. <u><i>Tsuga canadensis</i></u>	30	Y	FACU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)	
2. <u><i>Acer rubrum</i></u>	15	Y	FAC		
3. <u><i>Fagus grandifolia</i></u>	10	N	FACU		
4. _____					
5. _____					
6. _____					
7. _____					
<u>55</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)					
1. <u><i>Tsuga canadensis</i></u>	30	Y	FACU		
2. <u><i>Acer rubrum</i></u>	20	Y	FAC		
3. <u><i>Fagus grandifolia</i></u>	5	N	FACU		
4. <u><i>Picea glauca</i></u>	5	N	FACU		
5. _____					
6. _____					
7. _____					
<u>60</u> = Total Cover					
Herb Stratum (Plot size: <u>5 ft</u>)					
1. <u><i>Tsuga canadensis</i></u>	2	Y	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
<u>2</u> = Total Cover				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Woody Vine Stratum (Plot size: <u>30 ft</u>)					
1. _____					
2. _____					
3. _____					
4. _____					
<u>0</u> = Total Cover				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	
Remarks: (Include photo numbers here or on a separate sheet.) Less than or equal to 50% FAC or wetter. Parameter is not met.					

SOIL

Sampling Point: Upland B3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 3	10YR 2/2	100					L	
3 - 8	2.5Y 4/3	100					LFS	
8+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 8+

Hydric Soil Present? Yes _____ No X

Remarks:

No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/6/20
 Applicant/Owner: NH DOT State: NH Sampling Point: Wetland B4
 Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Slight Slope Local relief (concave, convex, none): Concave Slope (%): <3%
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: PFO1/4E

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

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland B4</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-10"</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<p>Wetland Hydrology Present? Yes <u>X</u> No _____</p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: Hydrology indicators present A1, A2, A3, B9, B16, D2, D4. Parameter is met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland B4

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	10	Y	FAC
2. <i>Tsuga canadensis</i>	15	Y	FACU
3. <i>Betula alleghaniensis</i>	10	Y	FAC
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	35 = Total Cover		

Sapling/Shrub Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Betula alleghaniensis</i>	15	Y	FACU
2. <i>Vaccinium corymbosum</i>	8	Y	FACW
3. <i>Betula populifolia</i>	8	Y	FAC
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	31 = Total Cover		

Herb Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Osmundastrum cinnamomeum</i>	30	Y	FACW
2. <i>Glyceria melicaria</i>	8	N	OBL
3. <i>Osmunda spectabilis</i>	6	N	OBL
4. <i>Rubus hispidus</i>	5	N	FACW
5. <i>Onoclea sensibilis</i>	5	N	FACW
6. <i>Scirpus cyperinus</i>	5	N	OBL
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	59 = Total Cover		

Woody Vine Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 71% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

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

Greater than 50% FAC or wetter. Parameter is met.

SOIL

Sampling Point: Wetland B4

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 3	10YR 2/2	100					FSL	Organic
3 - 10	10YR 3/2	93	7.5YR 4/6	7	C	PL	LFS	Pore line redox and soft masses
10+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histic Sol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 10+

Hydric Soil Present? Yes X No

Remarks:

Hydric soil indicator A11. Parameter is met.
 Organic matter and roots to 4".

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/6/20
 Applicant/Owner: NH DOT State: NH Sampling Point: Upland B4
 Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Maintained lawn/slight slope Local relief (concave, convex, none): None Slope (%): <10%
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation No, Soil No, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in primarily mowed area above Wetland flag N127	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>10"</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0-1"</u> (includes capillary fringe)	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

SOIL

Sampling Point: Upland B4

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 7	2.5Y 3/3	100					FSL	
7 - 16	2.5Y 5/3	98	7.5YR 4/6	2	C	PL	LFS	Pore line redox and soft masses
16+								Refusal Rock/Fill

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Rock/Fill
 Depth (inches): 16+

Hydric Soil Present? Yes No

Remarks:

No hydric soil indicators present. Parameter is not met.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/6/20
 Applicant/Owner: NH DOT State: NH Sampling Point: Wetland B6
 Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Slightly Concave Slope (%): <1%
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: PFO1/4E

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

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland B6</u>
Remarks: (Explain alternative procedures here or in a separate report.) 	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<p><u>Secondary Indicators (minimum of two required)</u></p> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input checked="" type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
<p>Field Observations:</p> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>0-2</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>6</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 	
Remarks: Hydrology indicators present A1, A2, A3, B9 & B16. Parameter is met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland B6

Tree Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	40	Y	FAC
2. <i>Fraxinus americana</i>	8	N	FACU
3. <i>Tsuga canadensis</i>	10	N	FACU
4. <i>Abies balsamea</i>	5	N	FAC
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Acer rubrum</i>	20	Y	FAC
2. <i>Tsuga canadensis</i>	7	N	FACU
3. <i>Abies balsamea</i>	4	N	FAC
4. <i>Betula alleghaniensis</i>	10	Y	FAC
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Herb Stratum (Plot size: <u>5 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Onoclea sensibilis</i>	30	Y	FACW
2. <i>Equisetum pratense</i>	5	N	FACW
3. <i>Glyceria melicaria</i>	1	N	OBL
4. <i>Doellingeria umbellata</i>	3	N	FACW
5. <i>Carex intumescens</i>	3	N	FACW
6. <i>Osmundastrum cinnamomeum</i>	3	N	FACW
7. <i>Solidago rugosa</i>	2	N	FAC
8. <i>Dryopteris spp.</i>	2	N	_____
9. <i>Phegopteris connectilis</i>	2	N	FACU
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____

Woody Vine Stratum (Plot size: <u>Truncated</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

Remarks: (Include photo numbers here or on a separate sheet.)
 Greater than 50% FAC or wetter. Parameter is met.

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point: Wetland B6

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 3	10YR 2/1	100					L	
3 - 7	10YR 3/1	100					SL	
7- 16+	2.5YR 3/2	90	5YR 3/6	10	C	PL	SL	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils³:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

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

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:
 Hydric soil indicator A11. Parameter is met.
 Roots to 7".

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: NH DOT Project #42419 - Interstate 89 City/County: Sutton/Merrimack Sampling Date: 11/6/20
 Applicant/Owner: NH DOT State: NH Sampling Point: Upland B6
 Investigator(s): Cindy Balcius, Michael Waterhouse, Diane DeVries, Steven Moroni Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Maintained lawn/slope Local relief (concave, convex, none): None Slope (%): ~15%
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Upland data plot in mowed area above Wetland flag NN25.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: No primary or secondary indicators of hydrology present. Parameter is not met.	

VEGETATION – Use scientific names of plants.

Sampling Point: Upland B6

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>Truncated</u>)				
1. <u><i>Acer rubrum</i></u>	2	Y	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66%</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
	2	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>Truncated</u>)				
1. <u><i>Quercus rubra</i></u>	5	Y	FACU	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <u><i>Betula populifolia</i></u>	5	Y	FAC	
3. <u><i>Acer rubrum</i></u>	3	Y	FAC	
4. _____				
5. _____				
6. _____				
7. _____				
	13	= Total Cover		
Herb Stratum (Plot size: <u>Truncated</u>)				
1. <u><i>Festuca rubra</i></u>	50	Y	FACU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u><i>Spiraea alba</i></u>	20	Y	FACW	
3. <u><i>Fragaria vesca</i></u>	10	N	UPL	
4. <u><i>Andropogon virginicus</i></u>	10	N	FACU	
5. <u><i>Solidago rugosa</i></u>	5	N	FAC	
6. <u><i>Daucus carota</i></u>	5	N	UPL	
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
12. _____				
	100	= Total Cover		
Woody Vine Stratum (Plot size: <u>Truncated</u>)				
1. _____				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____				
3. _____				
4. _____				
	0	= Total Cover		
Hydrophytic Vegetation Present? Yes <u>X</u> No _____				
Remarks: (Include photo numbers here or on a separate sheet.) Greater than 50% FAC or wetter. Parameter is met.				

SOIL

Sampling Point: Upland B6

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 - 5	10YR 3/3	100					FSL	
5 - 8	2.5Y 4/4	100					LFS	
8+								Refusal Rock/Fill

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)	
<input type="checkbox"/> Sandy Redox (S5)		<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Stripped Matrix (S6)		<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)		<input type="checkbox"/> Other (Explain in Remarks)	

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

Restrictive Layer (if observed): Type: <u>Rock/Fill</u> Depth (inches): <u>8+</u>	Hydric Soil Present? Yes <u> </u> No <u> X </u>
--	---

Remarks:
 No hydric soil indicators present. Parameter is not met.

**Sutton 42419 Standard Dredge and Fill Application Photos
Taken by Stoney Ridge Environmental, LLC in November and December, 2020**



Impact Location A: Looking towards the inlet of the 15" CMP at approx. Sta. 1328 SB in Wetland # 13.



Impact Location A: Looking down at the inlet of the 15" CMP at approx. Sta. 1328 SB in Wetland # 13.



Impact Locations B and C: Looking towards the outlet of the 15" CMP at approx. Sta. 1328 SB Median in Wetland #s 14 and 15.



Impact Locations B and C: Looking away from the outlet of the 15" CMP at approx. Sta. 1328 SB Median in Wetland #s 14 and 15.



Impact Locations D, E and F: Looking towards the outlet of the 24" CMP at approx. Sta. 1336 SB Median in Wetland #s 27, 26 and 28.



Impact Locations D, E and F: Looking away from the outlet of the 24" CMP at approx. Sta. 1336 SB Median in Wetland #s 27, 26 and 28.



Impact Locations G and H: Looking towards the inlet of the 24" CMP at approx. Sta. 1336 SB in Wetland #s 20 and 26.



Impact Locations G and H: Looking away from the inlet of the 24" CMP at approx. Sta. 1336 SB in Wetland #s 20 and 26.



Impact Location HA: Looking north at potential BMP outlet pipe area at Sta. 1391 SB in Wetland # 72



Impact Location HA: Looking south at potential BMP outlet pipe area at Sta. 1391 SB in Wetland # 72



Impact Location I: Looking towards the inlet of the 30" CMP at approx. Sta. 1401 SB Median in Wetland # 90.



Impact Location I: Looking away from the inlet of the 30" CMP at approx. Sta. 1401 SB Median in Wetland # 90.



Impact Location J: Looking towards the outlet of the 30" RCP at approx. Sta. 1437 NB in Wetland # 117.



Impact Location J: Looking away from the outlet of the 30" RCP at approx. Sta. 1437 NB in Wetland # 117.



Impact Location K: Looking towards the inlet of the 24" SPP at approx. Sta. 1442 NB in Wetland # 119.



Impact Locations L & M: Looking at the ditch line wetlands from approx. Sta. 1441 SB to Sta. 1449 SB in Wetland #s 122 and 128.



Impact Location N: Looking away from the outlet of 12" CMP at approx. Sta. 1450 NB in Wetland #123.



Impact Locations O, P and Q: Looking towards the outlet of the 30" RCP at approx. Sta. 1452 NB in Wetland #s 124, 125 and 126.



Impact Locations O, P and Q: Looking away from the outlet of the 30" RCP at approx. Sta. 1452 NB in Wetland #s 124, 125 and 126.



Impact Locations R and S: Looking towards the inlet of the 36" CMP at approx. Sta. 1463 NB Median in Wetland #s 137 and 138.



Impact Location S: Looking towards the outlet of the 36" RCP at approx. Sta. 1459 SB Median in Wetland # 138.



Impact Locations T, U and V: Looking towards the outlet of the 36" CMP at approx. Sta. 308 NB Off-Ramp at Exit 10 in Wetland #s 135, 138 and 140.



Impact Locations T, U and V: Looking away from the outlet of the 36" CMP at approx. Sta. 308 NB Off-Ramp at Exit 10 in Wetland #s 135, 138 and 140.



Impact Location W: Looking away from the inlet of the 24" CMP at approx. Sta. 1465 SB in the median between the mainline and Exit 10 SB Off-Ramp in Wetland # 149.



Impact Location X: Looking towards the outlet of the 24" CMP at approx. Sta. 1470 SB Median in Wetland # 155.



Impact Location X: Looking away from the outlet of the 24" CMP at approx. Sta. 1470 SB Median in Wetland # 155.



Impact Location Y: Looking towards the inlet of the 24" CMP at approx. Sta. 607 SB Off-Ramp at Exit 10 in Wetland # 156.



Impact Location Y: Looking away from the inlet of the 24" CMP at approx. Sta. 607 SB Off-Ramp at Exit 10 in Wetland # 156.



Impact Locations Z & AA: Representative photo of Wetland # 157 from approx. Sta. 1477 NB to approx. Sta. 1489 NB.



Impact Location AB: Representative Photo of Wetland # 159 from approx. at Sta. 1483 SB Med/1486 NB Med



Impact Location AC: Looking at the ditchline wetland at approx. Sta. 1515 SB Median in Wetland # 178.



Impact Location AD (Left) and AE (Right): Looking towards north at approx. Sta. 1518 NB in Wetland # 179 for AD & # 180 for AE.



Impact Location AF: Looking (left) at approx. Sta. 1521 NB in Wetland # 179.



Impact Location AG: Looking (left) north up the SB barrel at approx. Sta. 1528 SB in Wetland # 187.



Impact Location AH: Looking (left) north up the SB barrel at approx. Sta. 1530 SB in Wetland # 187.



Impact Locations AI, AJ, AK: Looking north at approx. Sta. 1538 NB in Wetland #s 194 and 195.



Impact Locations AI, AJ, AK: Looking south at approx. Sta. 1538 NB in Wetland #s 194 and 195.



Impact Location AL: Looking towards the outlet of the 24" CMP at approx. Sta. 1546 NB in Wetland # 203.



Impact Location AL: Looking away from the outlet of the 24" CMP at approx. Sta. 1546 NB in Wetland # 203.



Impact Location AM: Looking towards the outlet of the 24" CMP at approx. Sta. 1546 NB Median in Wetland # 203.



Impact Location AM: Looking away from the outlet of the 24" CMP at approx. Sta. 1546 NB Median in Wetland # 203.



Impact Location AN: Looking towards the outlet of the 24" RCP at approx. Sta. 1542 SB Median in Wetland # 205.



Impact Location AN: Looking away from the outlet of the 24" RCP at approx. Sta. 1542 SB Median in Wetland # 205.



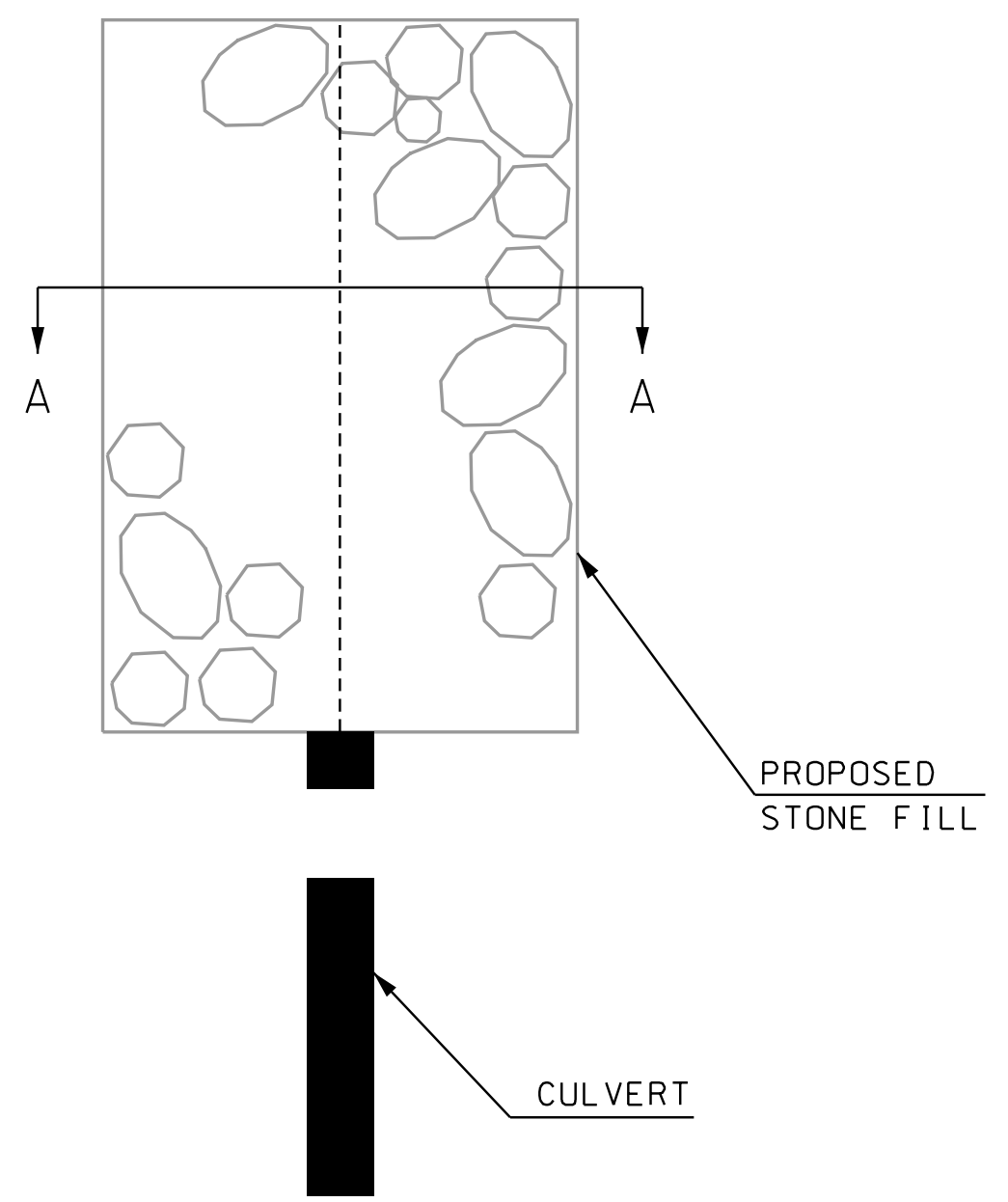
Impact Location AO: Looking towards the inlet of the 24" RCP at approx. Sta. 1542 SB in Wetland # 200.



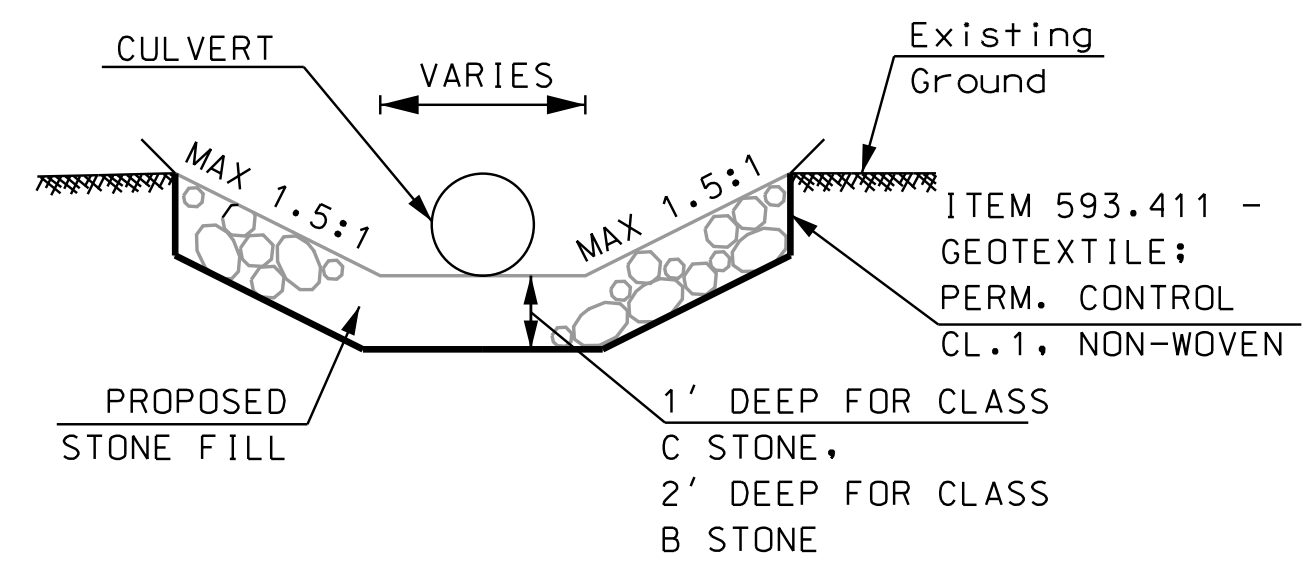
Impact Location AO: Looking away from the inlet of the 24" RCP at approx. Sta. 1542 SB in Wetland # 200.

SDR PROCESSED		NAME1	DATE	DATE1	DATE	DATE2	DATE	DATE3	DATE
NEW DESIGN		NAME2	DATE	DATE1	DATE	DATE2	DATE	DATE3	DATE
SHEET CHECKED		NAME3	DATE	DATE1	DATE	DATE2	DATE	DATE3	DATE
AS BUILT DETAILS			DATE						

REVISIONS AFTER PROPOSAL	DESCRIPTION
STATION	
STATION	
DATE	
NUMBER	

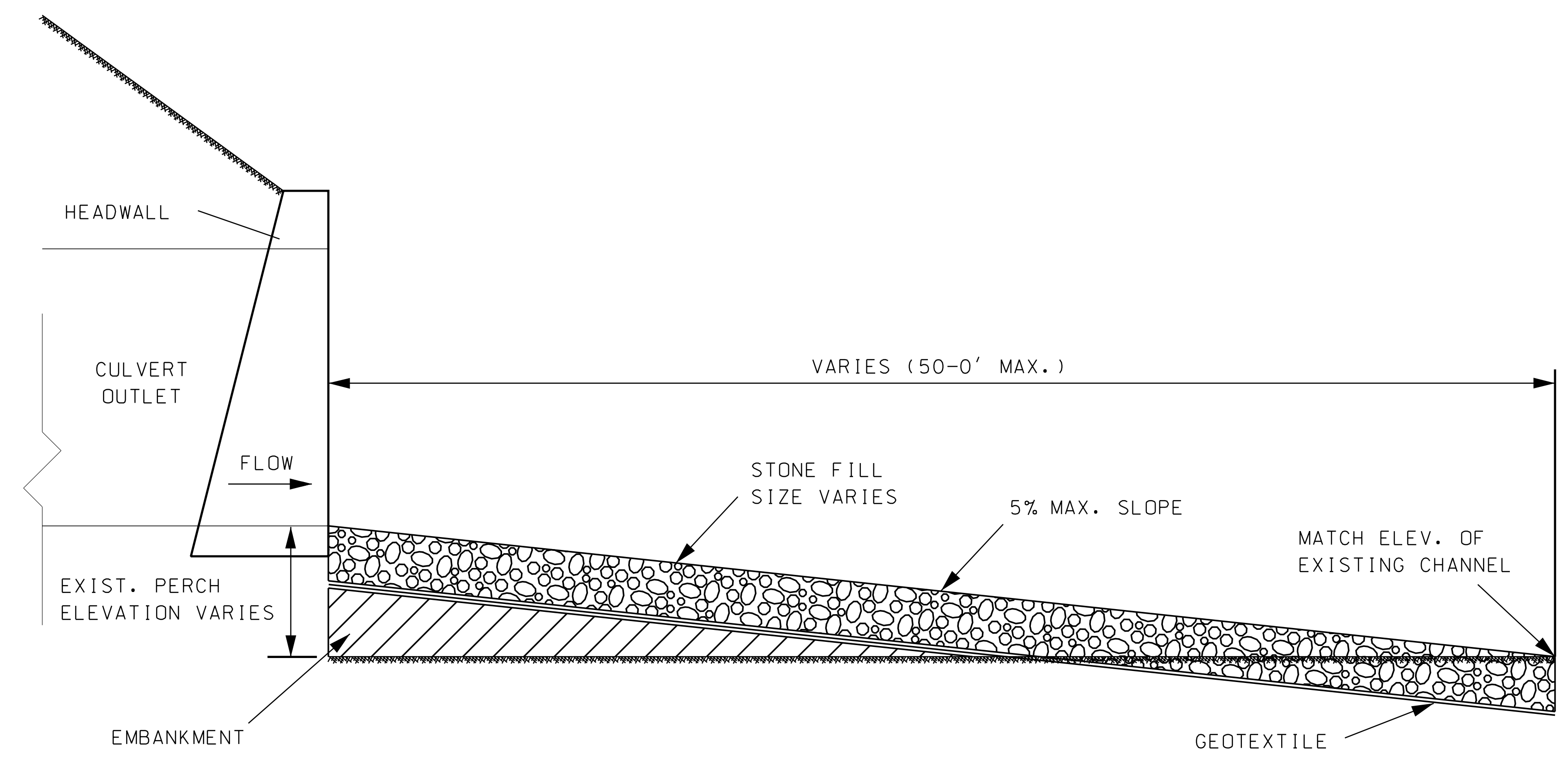


PLAN VIEW

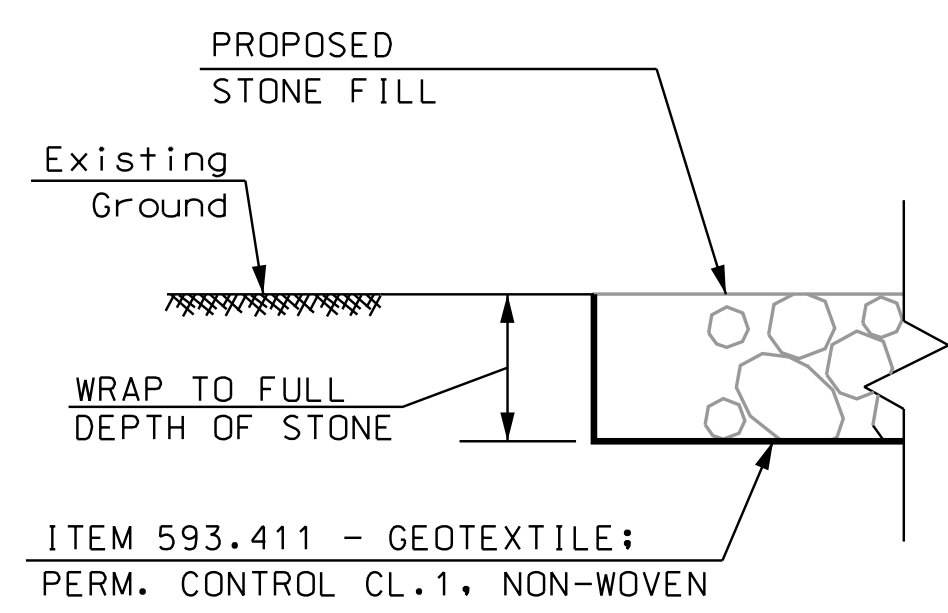


SECTION A-A

STANDARD OUTLET PROTECTION DETAIL
NOT TO SCALE



OUTLET PERCH REPAIR TYPICAL
FOR DN 5S & 16N
NOT TO SCALE



GEOTEXTILE DETAIL
NOT TO SCALE

STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
TYPICAL OUTLET PROTECTION DETAIL			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
42419_DTL_DRN	42419	1	1

Anticipated Project Start: November 2021
Anticipate Project Completion: July 2024 (*Advertising together with Sutton-New London 40511*)

2022 Season

Interstate I-89: NB MM 24.2 – 27.2, SB MM 24.2 – 25.9 & 26.9 - 27.9. Full Depth Pavement Reclaim

1. Install perimeter controls at the limits of work for grading and drainage work. Drainage work is to be done during low flow conditions, which at these drainage locations the conditions are anticipated to be dry, therefore water diversion is very unlikely to be needed. **see email coordination with Karl Benedict regarding CWB on Erosion Control Plans.*
2. Cold plane full width of barrel for one consecutive mile. (Only one mile per barrel will be worked on simultaneously.)
3. Reclaim right lane and shoulder. (Maintain traffic in left lane).
4. Replace underdrain and slope pipes, reconstruct/adjust catch basins, regrade ditches.
5. Fine grade right lane and shoulder.
6. Pave binder course in right lane and shoulder.
7. Place pavement markings on binder course to prepare for traffic.
8. Repeat steps 3-7 on left lane and shoulder.
9. Pave wearing course full width on all lanes.
10. Place pavement markings on wearing course for all lanes.
11. Stabilize all disturbed areas prior to winter season. In areas of temporary wetland impacts adjacent to this work, temporary matting and/or material will be used in order to avoid rutting and disturbing wetland vegetation or soils. Trees cleared (not grubbed) will re-establish naturally. Wetland seed mix will be used to stabilize temporary wetland impact areas.

Interstate I-89: SB MM 25.9 - 26.9. Pavement Overlay

1. Pave wearing course overlay.
2. Place pavement markings wearing course.

2023 Season

Interstate I-89: NB MM 27.2 – 28.7 & SB MM 27.9 – 28.7. Full Depth Pavement Reclaim

1. Repeat steps for 2022 Season Full Depth Pavement Reclaim

Concurrent Work (2022 & 2023 season)

Project Wide: Interstate I-89 and Exit 10 ramps

1. Initial Tree Clearing (no grubbing). In areas of temporary wetland impacts adjacent to this work, temporary matting and/or material will be used in order to avoid rutting and disturbing wetland vegetation or soils. Trees cleared (not grubbed) will re-establish naturally. Wetland seed mix will be used to stabilize temporary wetland impact areas.

Bridge Work (Sutton 130/117, Sutton 129/116):

Work on these two bridges is limited to cold planing and paving and will be included in the appropriate portion of roadway work.

Rock Slope:

1. Install traffic control and erosion control BMPs.
2. Clear trees and brush as necessary.
3. Remove loose rock and debris using mechanical methods.
4. Remove temporary erosion controls upon stabilization.

Exit 10 Ramps:

1. Redirect traffic via detour routes to implement 24/7 ramp closures (closure duration varies 1 week – 2 weeks depending on the ramp)
2. Install erosion control BMPs. Drainage work is to be done during low flow conditions, which at these drainage locations the conditions are anticipated to be dry, therefore water diversion is very unlikely to be needed. **see email coordination with Karl Benedict regarding CWB on Erosion Control Plans.*
3. Replace underdrain, slope drains, catch basins, culverts, adjust grates, and regrade ditches.
4. Excavate all pavement full width.
5. Pave binder course full width.
6. Adjust grates and install/adjust granite curb.
7. Remove and replace guardrail.
8. Pave wearing course full width.
9. Place pavement markings on wearing course.
10. Remove temporary erosion control upon stabilization and open ramps to traffic.

Rest Area:

1. Implement 24/7 ramp closures (closure duration approximately 3 weeks).
2. Install erosion control BMPs. Drainage work is to be done during low flow conditions, which at these drainage locations the conditions are anticipated to be dry, therefore water diversion is very unlikely to be needed. **see email coordination with Karl Benedict regarding CWB on Erosion Control Plans.*
3. Excavate all pavement and curbing. Retain and store curbing deemed in good shape.
4. Redefine limits of new paved area.
5. Replace slope pipes, regrade ditches. In areas of temporary wetland impacts adjacent to this work, temporary matting and/or material will be used in order to avoid rutting and disturbing wetland vegetation or soils. Wetland seed mix will be used to stabilize temporary wetland impact areas.
6. Fine grade new pavement limits.
7. Pave binder course.
8. Adjust grates and install/adjust granite curb.
9. Install sidewalks.
10. Pave wearing course.
11. Place pavement markings for wearing course.
12. Remove temporary erosion control upon stabilization and open ramps to traffic.

Stormwater BMPs:

1. Install perimeter/erosion control BMPs.
2. Install designated BMP (Bioretention at Rest Area and treatment swales at Exit 10 interchange)
3. Stabilize all disturbed area.
4. Remove temporary erosion control.

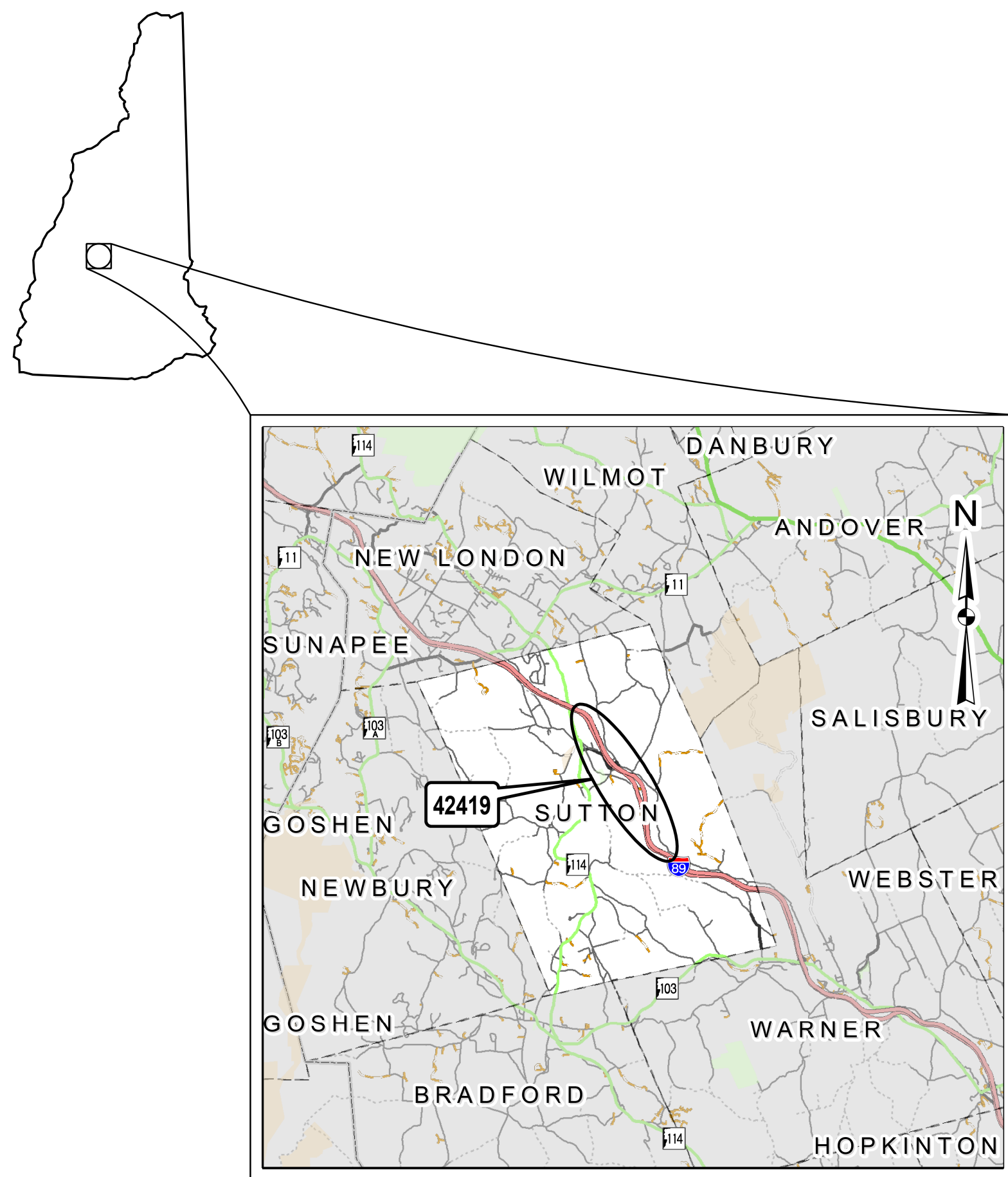
Slip Linings:

1. Install erosion control BMPs.
2. Redirect water as necessary. The drainage work at the three (3) stream crossings (DN 5S, DN 26N, & DN 55N) will occur in low flow/dry conditions. All three locations are intermittent streams. It is anticipated that water diversion is not likely to be needed, as these locations will likely be dry at the time of work. A pump to accommodate a 2-year storm event will be on site in the event it is needed. **see email coordination with Karl Benedict regarding CWB on Erosion Control Plans.*
3. Install slip linings and stone aprons per design.
4. Re-establish water flow as needed.
5. Remove temporary erosion controls upon stabilization. In areas of temporary wetland impacts adjacent to this work, temporary matting and/or material will be used in order to not rut or disturb wetland vegetation or soils. Trees cleared (not grubbed) will re-establish naturally. Wetland seed mix will be used to stabilize temporary wetland impact areas.

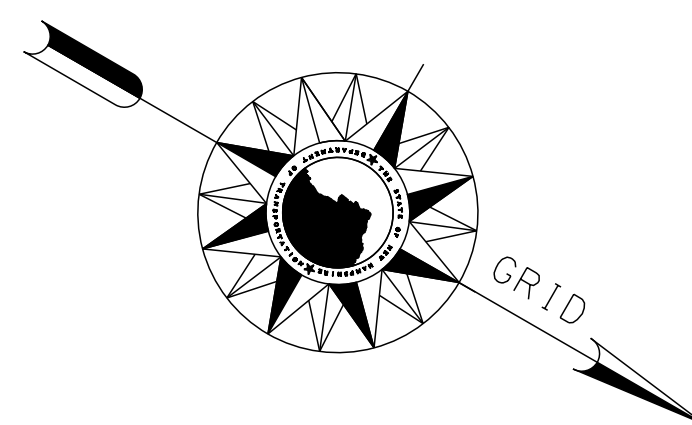
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
WETLANDS PLANS
FEDERAL AID PROJECT

X-A004 (839)
N.H. PROJECT NO. 42419
INTERSTATE-89

DESIGN DATA	
AVERAGE DAILY TRAFFIC 20_21	19,390
AVERAGE DAILY TRAFFIC 20_43	24,120
PERCENT OF TRUCKS	10%
DESIGN SPEED	70
LENGTH OF PROJECT	4.6 MI



LOCATION MAP



BEGIN CONSTRUCTION
STA 1309+00 SB

BEGIN APPROACH
STA 1308+50 NB

BEGIN APPROACH
STA 1307+00 NB

BEGIN CONSTRUCTION
STA 1307+50 NB

INDEX OF SHEETS

- 1 FRONT SHEET
- 2-3 STANDARD SYMBOLS SHEETS
- 4 WETLAND IMPACT TABLE
- 5 EROSION CONTROL STRATEGIES
- 6-26 WETLAND IMPACT PLANS
- 27-47 EROSION CONTROL PLANS

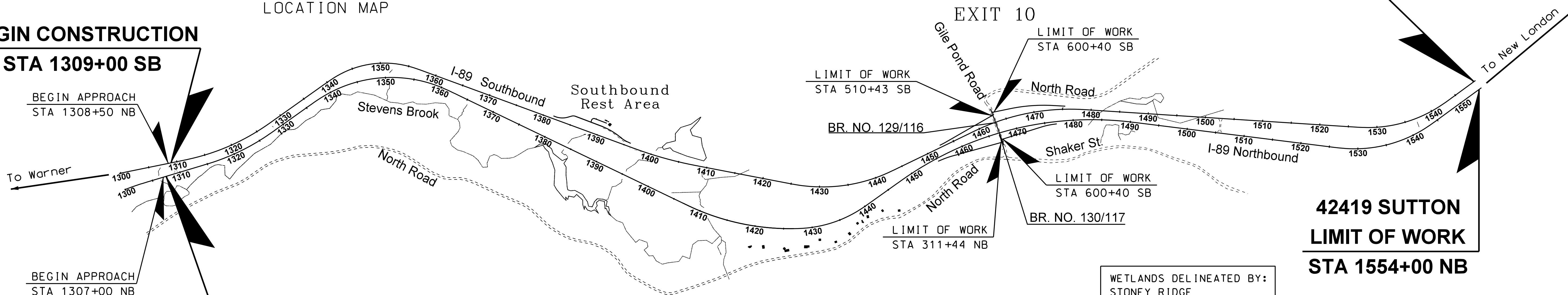
TOWN OF SUTTON
COUNTY OF MERRIMACK

SCALE: 1" = 900'

FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

42419 SUTTON
LIMIT OF WORK
STA 1549+00 SB

42419 SUTTON
LIMIT OF WORK
STA 1554+00 NB



WETLANDS DELINEATED BY:
STONE RIDGE
ENVIRONMENTAL LLC
NOVEMBER-DECEMBER 2020

DRAWN BY: CMW
CHECKED BY: CNS
DATE: 03/21
DATE: 03/21

NHDOT THE STATE OF
NEW HAMPSHIRE
DEPARTMENT OF
TRANSPORTATION

RECOMMENDED FOR APPROVAL:

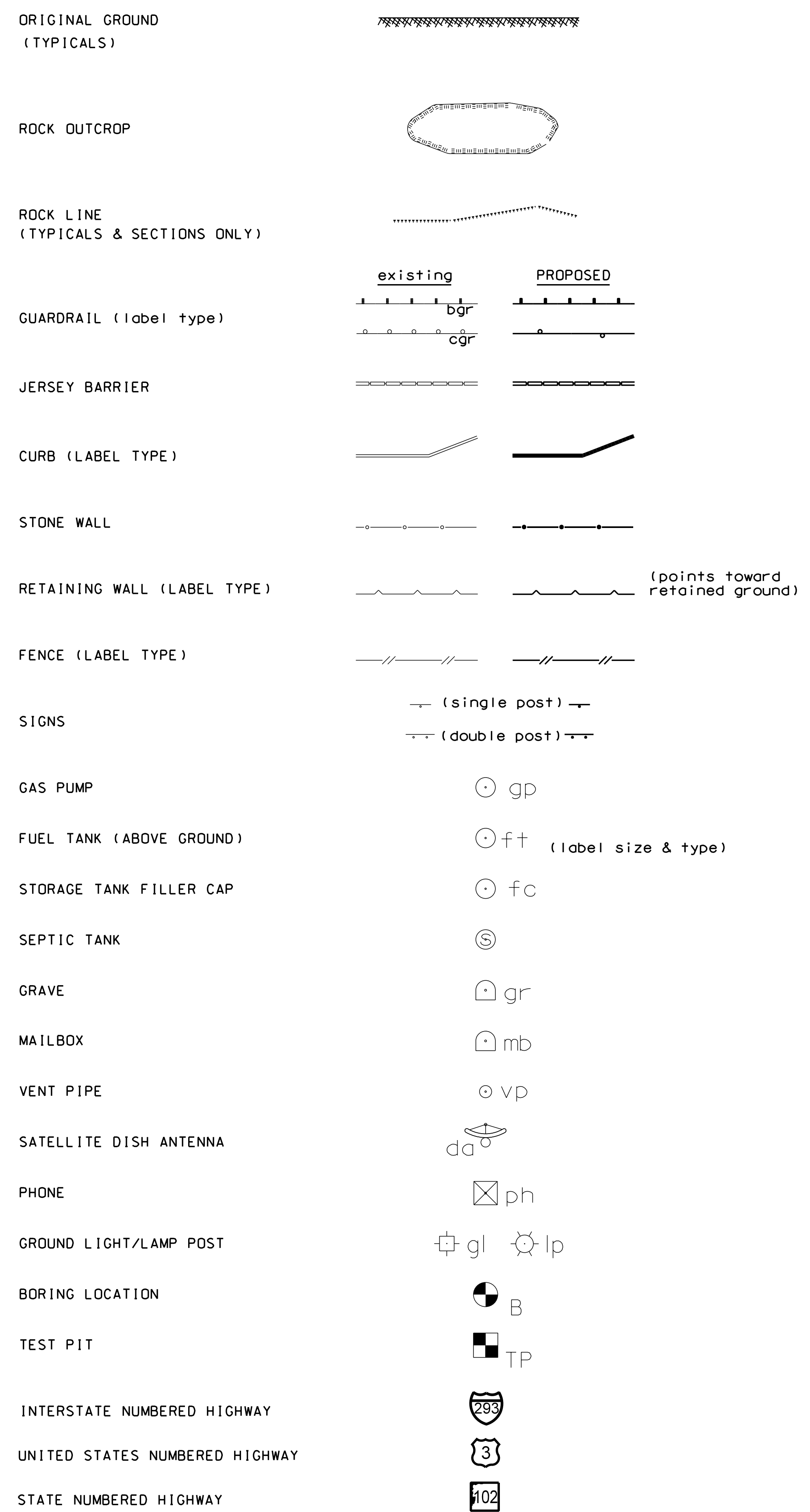
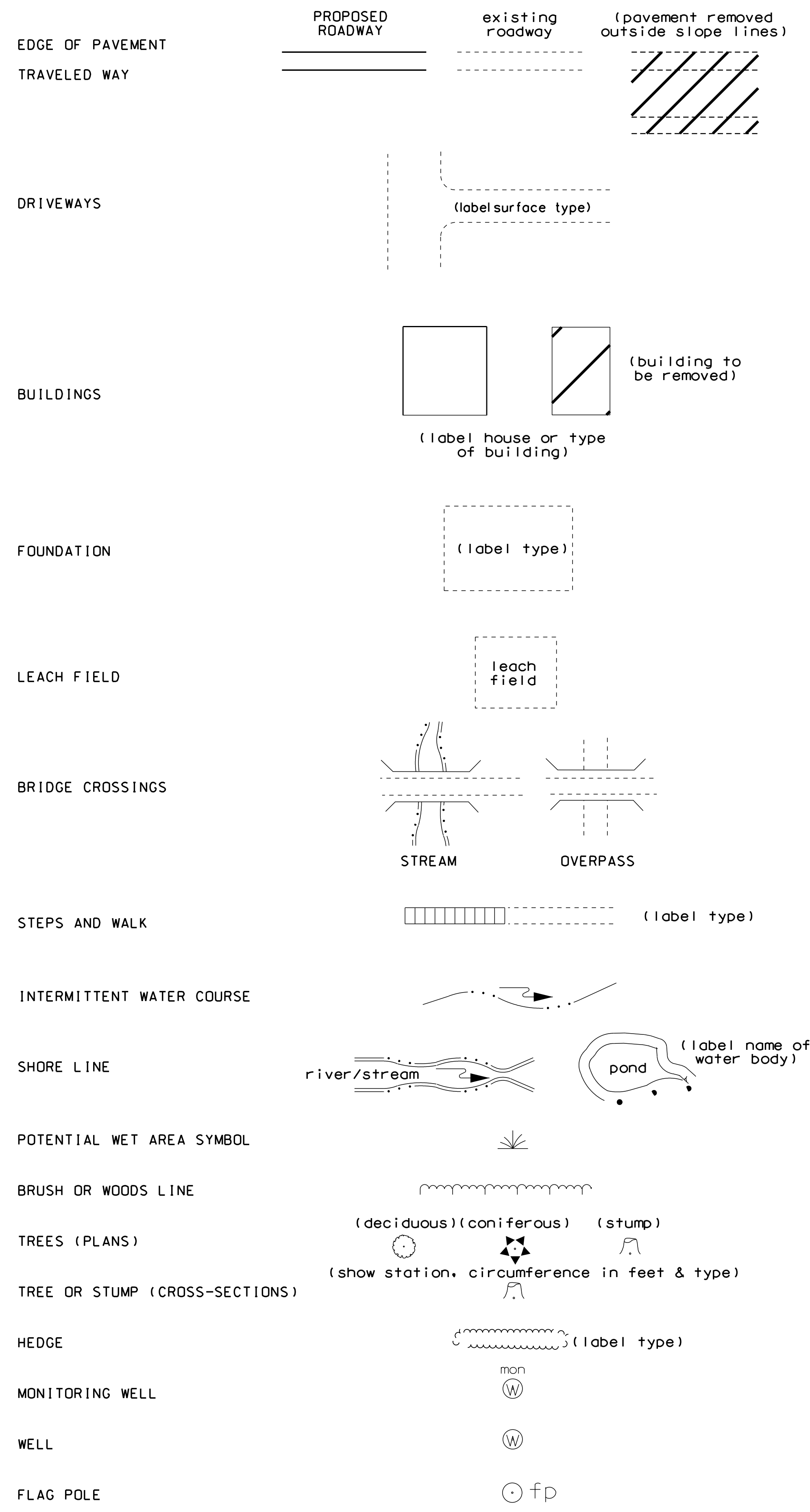
DIRECTOR OF PROJECT DEVELOPMENT DATE
APPROVED:

ASSISTANT COMMISSIONER AND CHIEF ENGINEER DATE

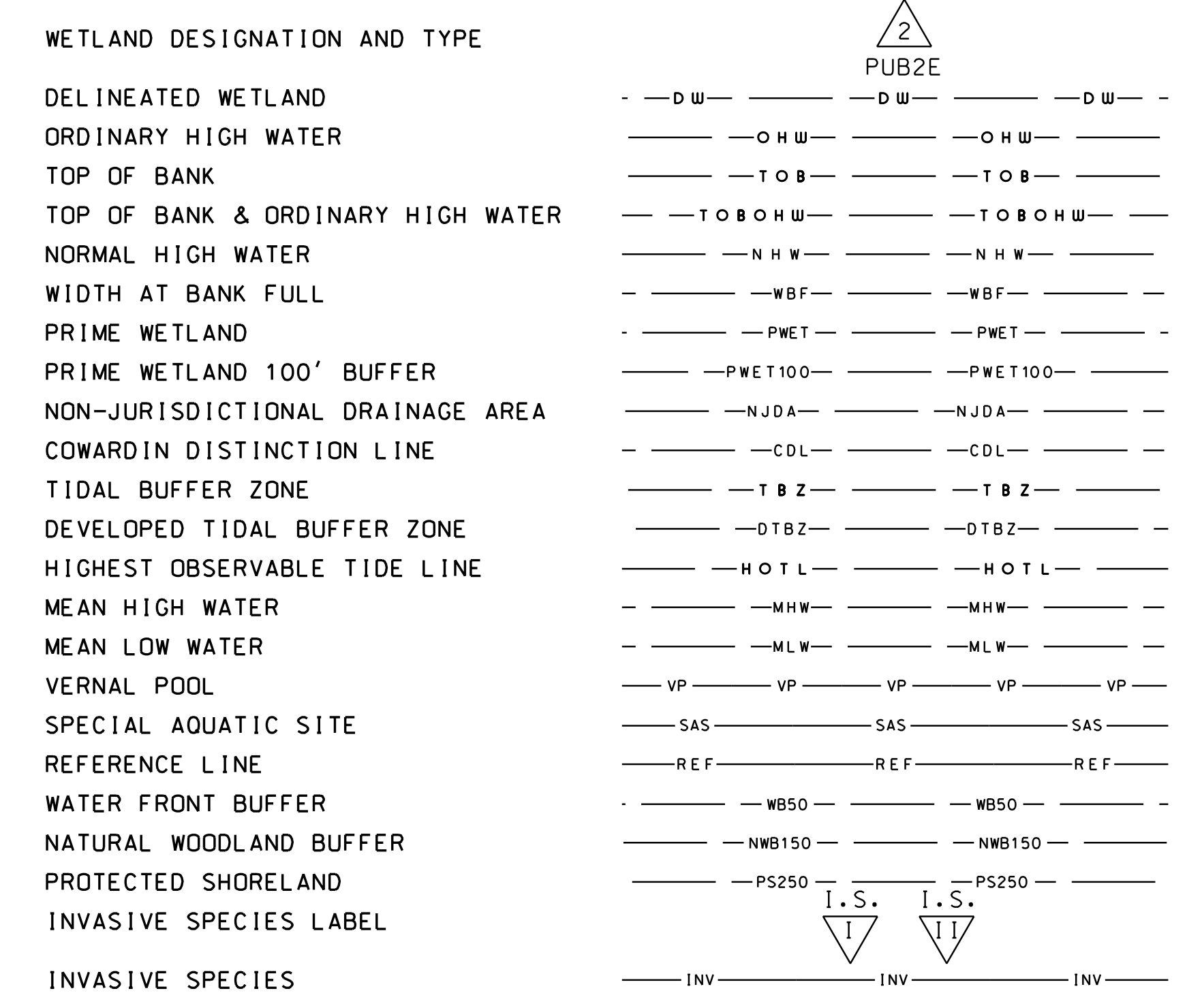
DRAWING NAME	FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
42419fsw	X-A004 (839)	42419	1	47

SDR PROCESSED	NAME1	DATE	DATE	DATE	DATE	AS BUILT DETAILS
	NAME2	DATE	DATE	DATE	DATE	
	NAME3	DATE	DATE	DATE	DATE	
	NAME4	DATE	DATE	DATE	DATE	
SHEET CHECKED	NUMBER	DATE	STATION	STATION	DESCRIPTION	
	NUMBER	DATE	STATION	STATION	DESCRIPTION	
	NUMBER	DATE	STATION	STATION	DESCRIPTION	
	NUMBER	DATE	STATION	STATION	DESCRIPTION	

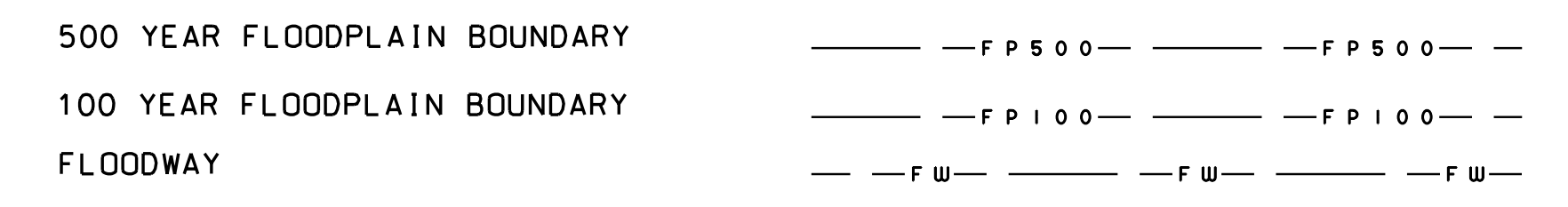
GENERAL



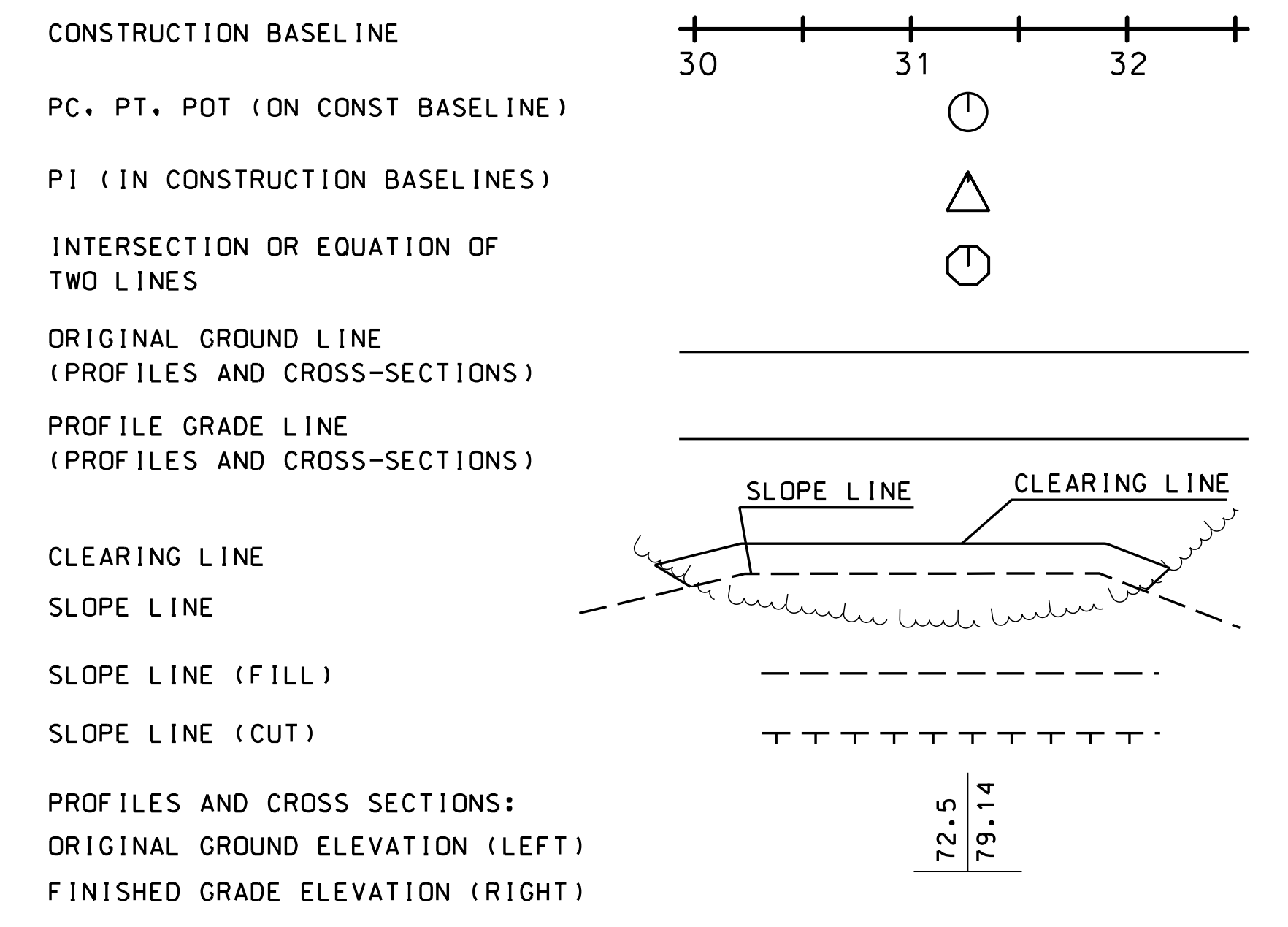
SHORELAND - WETLAND



FLOODPLAIN / FLOODWAY



ENGINEERING



SDR PROCESSED NAME1 DATE DATE DATE DATE DATE DATE DATE DATE
 NEW DESIGN CWW DATE 03/21 DATE 03/21 DATE 03/21 DATE 03/21
 SHEET CHECKED CNS DATE 03/21
 AS BUILT DETAILS DATE

REVISIONS AFTER PROPOSAL
 STATION
 STATION
 DATE

WETLAND NUMBER	WETLAND PLANS SHEET NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA IMPACTS						LINEAR STREAM IMPACTS FOR MITIGATION		
				PERMANENT				TEMPORARY		PERMANENT		
				N.H.W.B. (NON-WETLAND)		N.H.W.B. & A.C.O.E. (WETLAND)				BANK LEFT	CHANNEL	BANK RIGHT
				SF	LF	SF	LF	SF	LF	LF	LF	LF
13	7	PSS1Ex	A	--	--	25	--	--	--	--	--	--
14	7	R4SB3	B	--	--	--	--	162	13	--	--	--
15	7	PFO1E	C	--	--	--	--	42	--	--	--	--
27	8	PFO1/4E	D	--	--	14	--	--	--	--	--	--
26	8	R4SB3	E	--	--	86	14	--	--	--	14	--
28	8	PFO1/4E	F	--	--	24	--	--	--	--	--	--
20	8	PEM1Ex/PSS1Ex	G	--	--	82	--	--	--	--	--	--
26	8	R4SB3	H	--	--	63	9	--	--	--	9	--
72	7	PEM1Ex	HA	--	--	562	--	--	--	--	--	--
90	13	PEM1E	I	--	--	79	--	--	--	--	--	--
117	18	R4SB3/4	J	--	--	25	11	89	6	--	11	--
119	18	PEM1Ex/PSS1Ex	K	--	--	--	--	58	--	--	--	--
122	18,19	PEM1Ex/PSS1Ex	L	--	--	4,974	--	--	--	--	--	--
128	19	PFO1/4E	M	--	--	167	--	--	--	--	--	--
123	19	PFO1/4E	N	--	--	121	--	--	--	--	--	--
124	19	PFO1/4E	O	--	--	37	--	--	--	--	--	--
125	19	R4SB3/4	P	--	--	82	--	--	--	--	15	--
126	19	PFO1/4E	Q	--	--	23	--	--	--	--	--	--
137	20	PSS1Ex	R	--	--	--	--	49	--	--	--	--
138	20	R4SB3/4	S	--	--	--	--	167	19	--	--	--
135	20	PFO1/4E	T	--	--	--	--	102	--	--	--	--
138	20	R4SB3/4	U	--	--	186	13	--	--	--	13	--
140	20	PFO1/4E	V	--	--	--	--	98	--	--	--	--
153	20	PSS1Ex	VA	--	--	130	--	--	--	--	--	--
149	20	PSS1Ex	W	--	--	--	--	21	--	--	--	--
155	20	PFO1E	X	--	--	236	--	--	--	--	--	--
156	20	PSS1Ex	Y	--	--	154	--	--	--	--	--	--
157	20,21	PSS1E/PFO1E	Z	--	--	8,124	--	--	--	--	--	--
157	21	PSS1E/PFO1E	AA	--	--	6,468	--	--	--	--	--	--
159	21	PSS1Ex/PFO1Ex	AB	--	--	207	--	59	--	--	--	--
178	24	PEM1Ex	AC	--	--	1,072	--	--	--	--	--	--
179	24	PEM1Ex	AD	--	--	458	--	--	--	--	--	--
180	24	PEM1Ex	AE	--	--	2,681	--	--	--	--	--	--
179	24	PEM1Ex	AF	--	--	321	--	--	--	--	--	--
187	25	PSS1Ex	AG	--	--	--	--	413	--	--	--	--
187	25	PSS1Ex	AH	--	--	--	--	7,090	--	--	--	--
194	25	R4SB3	AI	--	--	--	--	46	--	--	--	--
194	25	R4SB3	AJ	--	--	--	--	33	--	--	--	--
195	25	PFO1/4E	AK	--	--	--	--	112	--	--	--	--
203	26	R4SB3	AL	--	--	58	13	--	--	--	13	--
203	26	R4SB3	AM	--	--	41	15	--	--	--	15	--
205	26	PFO1E	AN	--	--	110	--	--	--	--	--	--
200	26	PFO1/4E	AO	--	--	--	--	580	--	--	--	--
TOTALS:				0	0	26,610	75	9,121	38	0	90	0

LEGEND

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

TOTAL PROJECT IMPACTS:		
PERMANENT IMPACTS:	26,610	SF
TEMPORARY IMPACTS:	9,121	SF
TOTAL IMPACTS:	35,731	SF

WETLANDS CLASSIFICATION CODES	
PEM1E	PALUSTRINE EMERGENT PERSISTENT SEASONALLY FLOODED/SATURATED
PEM1Ex	PALUSTRINE EMERGENT PERSISTENT SEASONALLY FLOODED/SATURATED EXCAVATED
PFO1E	PALUSTRINE FORESTED BROAD-LEAVED DECIDUOUS SEASONALLY FLOODED/SATURATED
PFO1/4E	PALUSTRINE FORESTED BROAD-LEAVED DECIDUOUS/NEEDLE-LEAVED EVERGREEN SEASONALLY FLOODED/SATURATED
PSS1E	PALUSTRINE, SCRUB-SHRUB, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
PSS1Ex	PALUSTRINE, SCRUB-SHRUB, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED EXCAVATED
R3SB3	RIVERINE UPPER PERENNIAL STREAMBED COBBLE-GRAVEL
R3UB1/2	RIVERINE UPPER PERENNIAL UNCONSOLIDATED BOTTOM COBBLE-GRAVEL/SAND
R4SB2/3	RIVERINE INTERMITTENT STREAMBED RUBBLE/COBBLE-GRAVEL
R4SB3	RIVERINE INTERMITTENT STREAMBED COBBLE-GRAVEL
R4SB3/4	RIVERINE INTERMITTENT STREAMBED COBBLE-GRAVEL/SAND

STATE OF NEW HAMPSHIRE			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
WETLAND IMPACT TABLE			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
42419wetsymb	42419	4	47

EROSION CONTROL STRATEGIES

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

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

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

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

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

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

**TABLE 1
GUIDANCE ON SELECTING TEMPORARY SOIL STABILIZATION MEASURES**

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

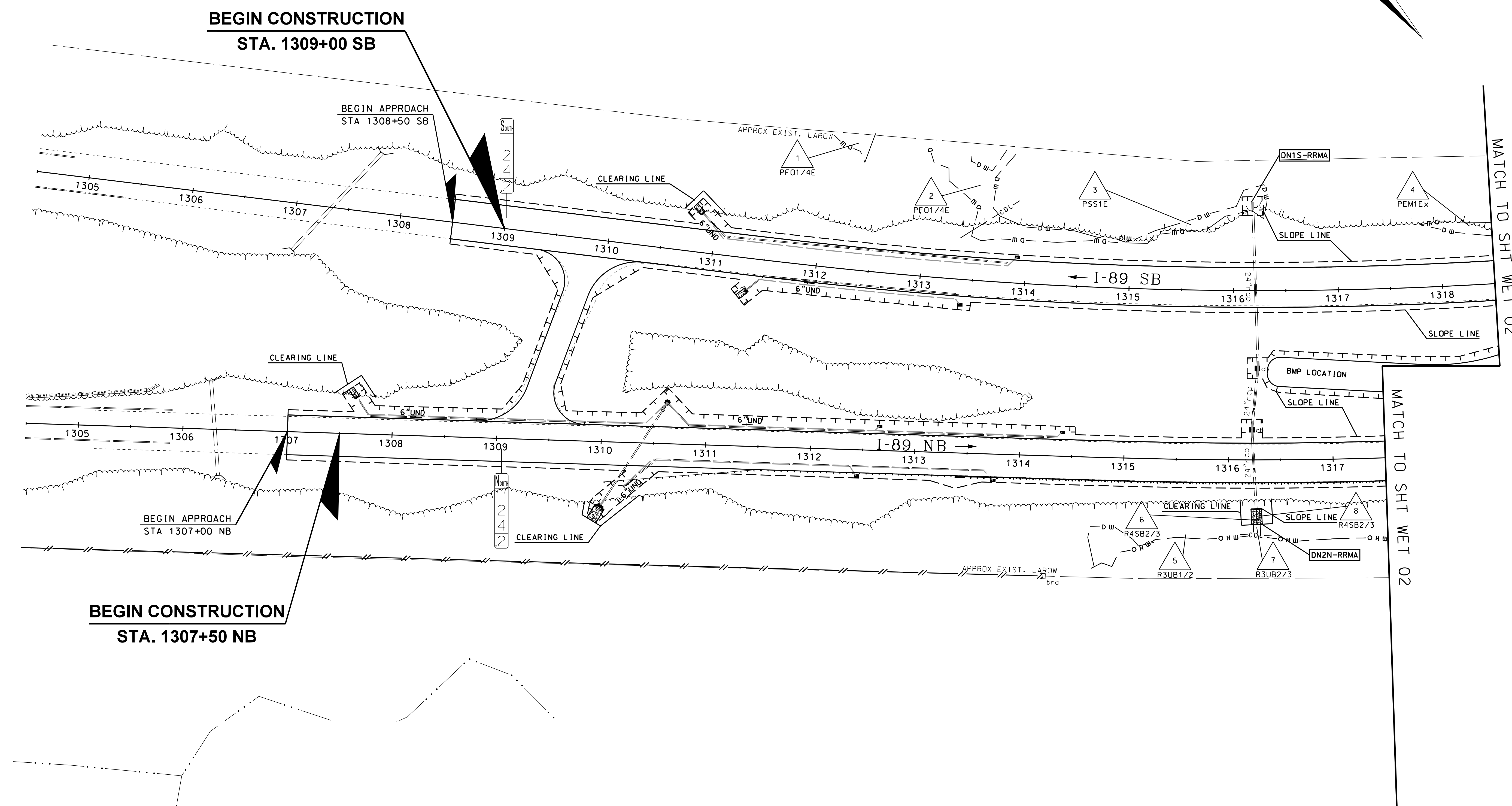
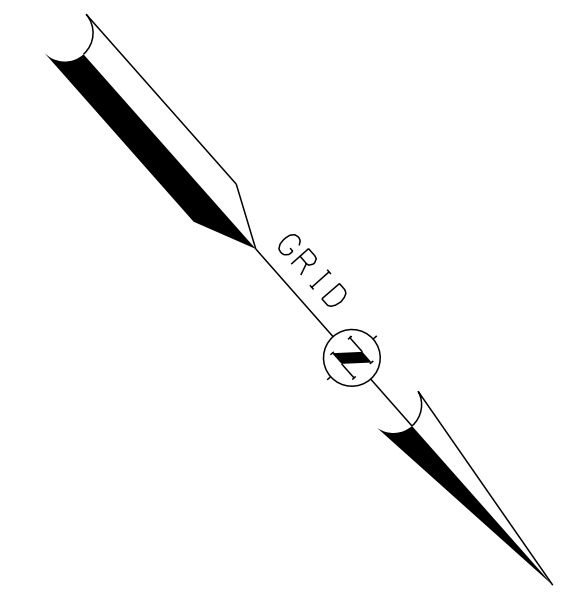
ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNSCB	2 NET STRAW-COCONUT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

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

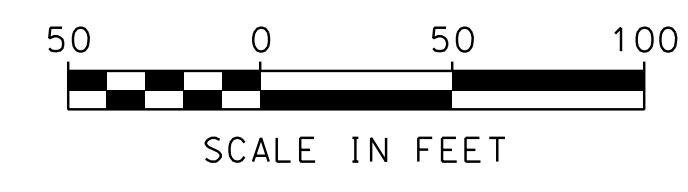
STATE OF NEW HAMPSHIRE				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	erosstrat	42419	5	47

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION



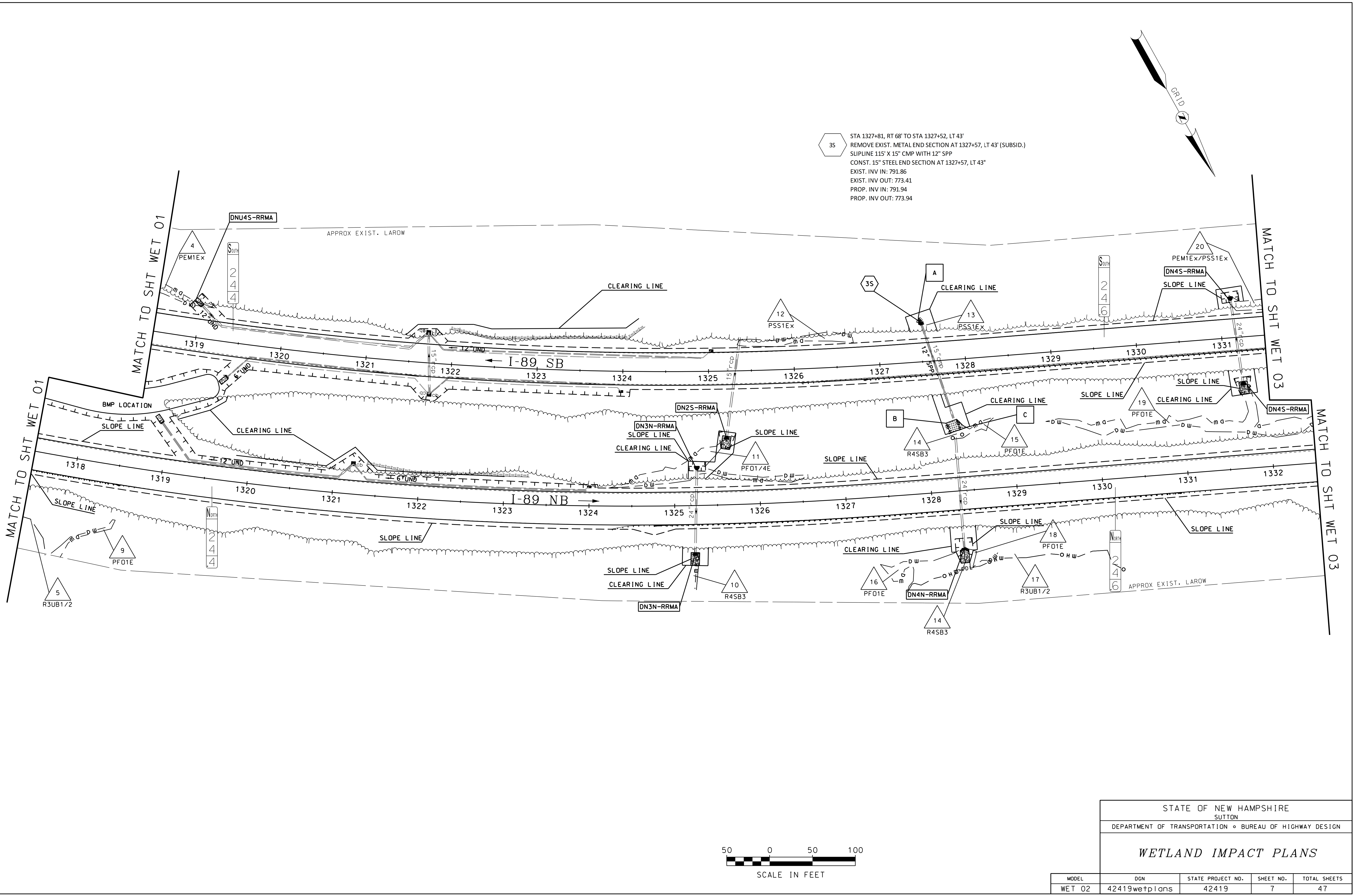
NO IMPACTS ON THIS SHEET



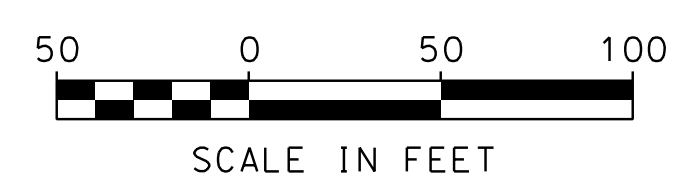
GENERAL NOTE: IMPACTS ASSOCIATED WITH ROUTINE ROADWAY MAINTENANCE ACTIVITIES (RRMA) LABELS ARE SPECIFIC TO RRMA ACTIVITIES. THESE IMPACTS ARE NOT INCLUDED IN STANDARD DREDGE AND FILL (SDF) PERMITTING QUANTITIES AND ARE SHOWN FOR INFORMATIONAL PURPOSES. RRMA NOTIFICATIONS WILL BE SUBMITTED SEPARATELY AFTER THE SDF PERMIT PACKAGE HAS BEEN SUBMITTED TO DES.

STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
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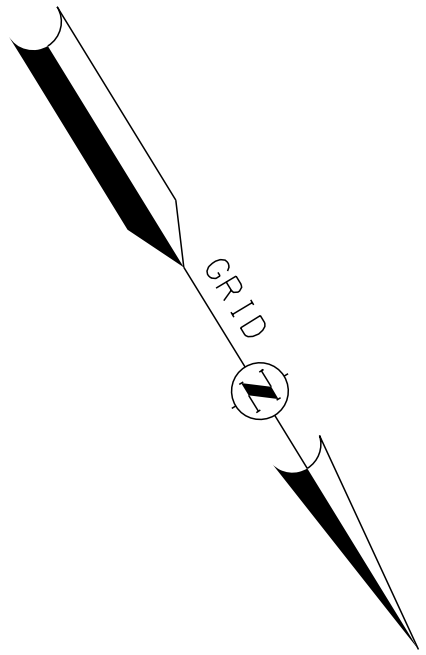
SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	



35 STA 1327+81, RT 68' TO STA 1327+52, LT 43'
 REMOVE EXIST. METAL END SECTION AT 1327+57, LT 43' (SUBSID.)
 SLOPE LINE 115' X 15" CMP WITH 12" SPP
 CONST. 15" STEEL END SECTION AT 1327+57, LT 43'
 EXIST. INV IN: 791.86
 EXIST. INV OUT: 773.41
 PROP. INV IN: 791.94
 PROP. INV OUT: 773.68

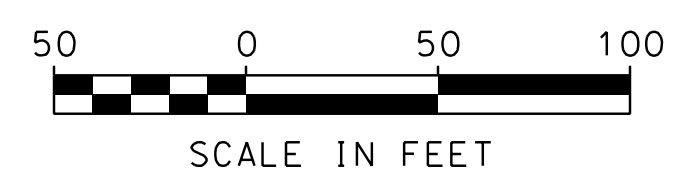
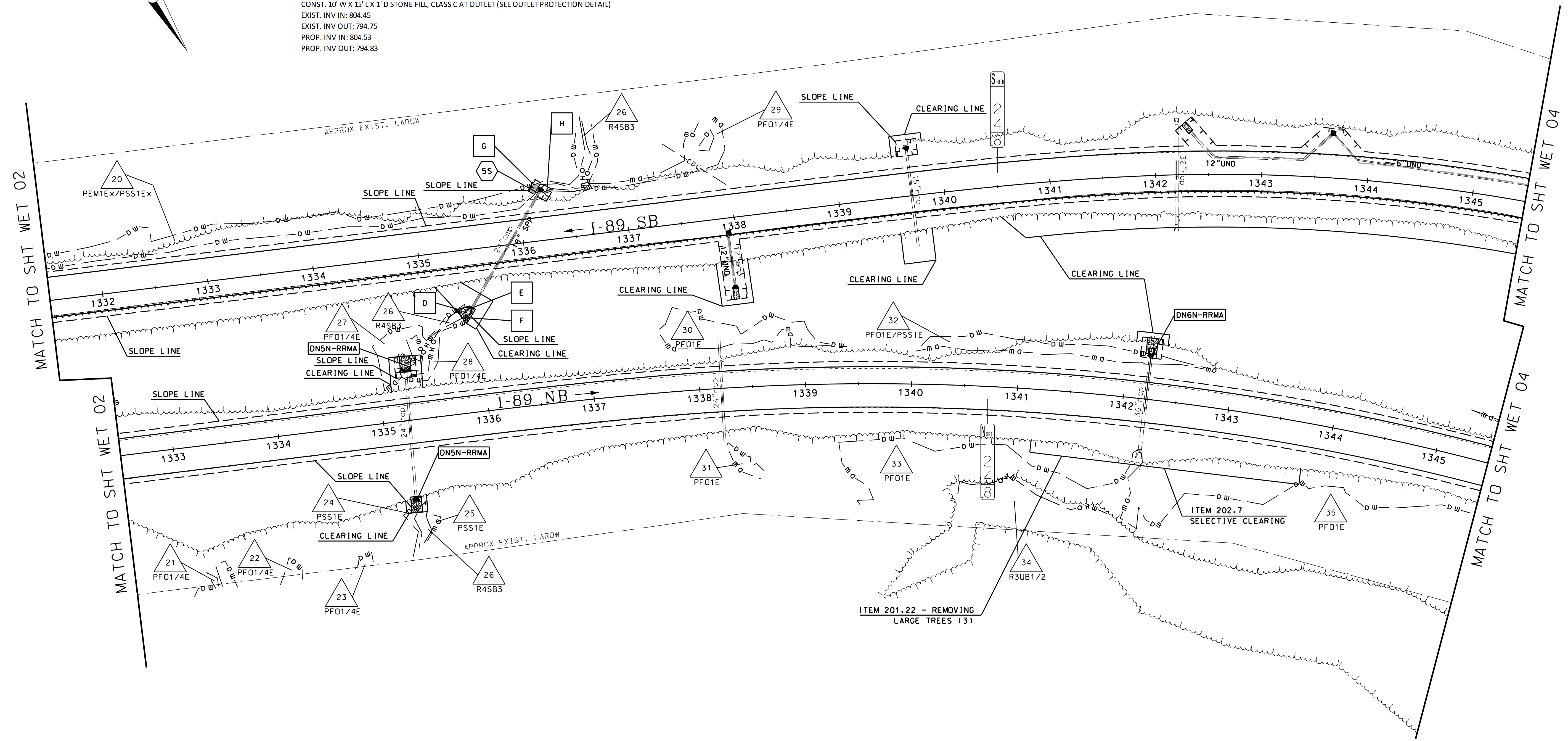


STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 02	42419wetplans	42419	7	47



55 STA 1335+45, RT 55' TO STA 1336+21, LT 46'
 REMOVE EXIST. METAL END SECTION AT 1336+21, LT 46'(SUBSID.)
 SUIPLINE 127' X 24" CMP WITH 18" SPP
 CONST. 24" STEEL END SECTION AT 1336+21, LT 46'
 CONST. 10' W X 15' L X 1' D STONE FILL, CLASS C AT OUTLET (SEE OUTLET PROTECTION DETAIL)
 EXIST. INV IN: 804.45
 EXIST. INV OUT: 794.75
 PROP. INV IN: 804.53
 PROP. INV OUT: 794.83

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

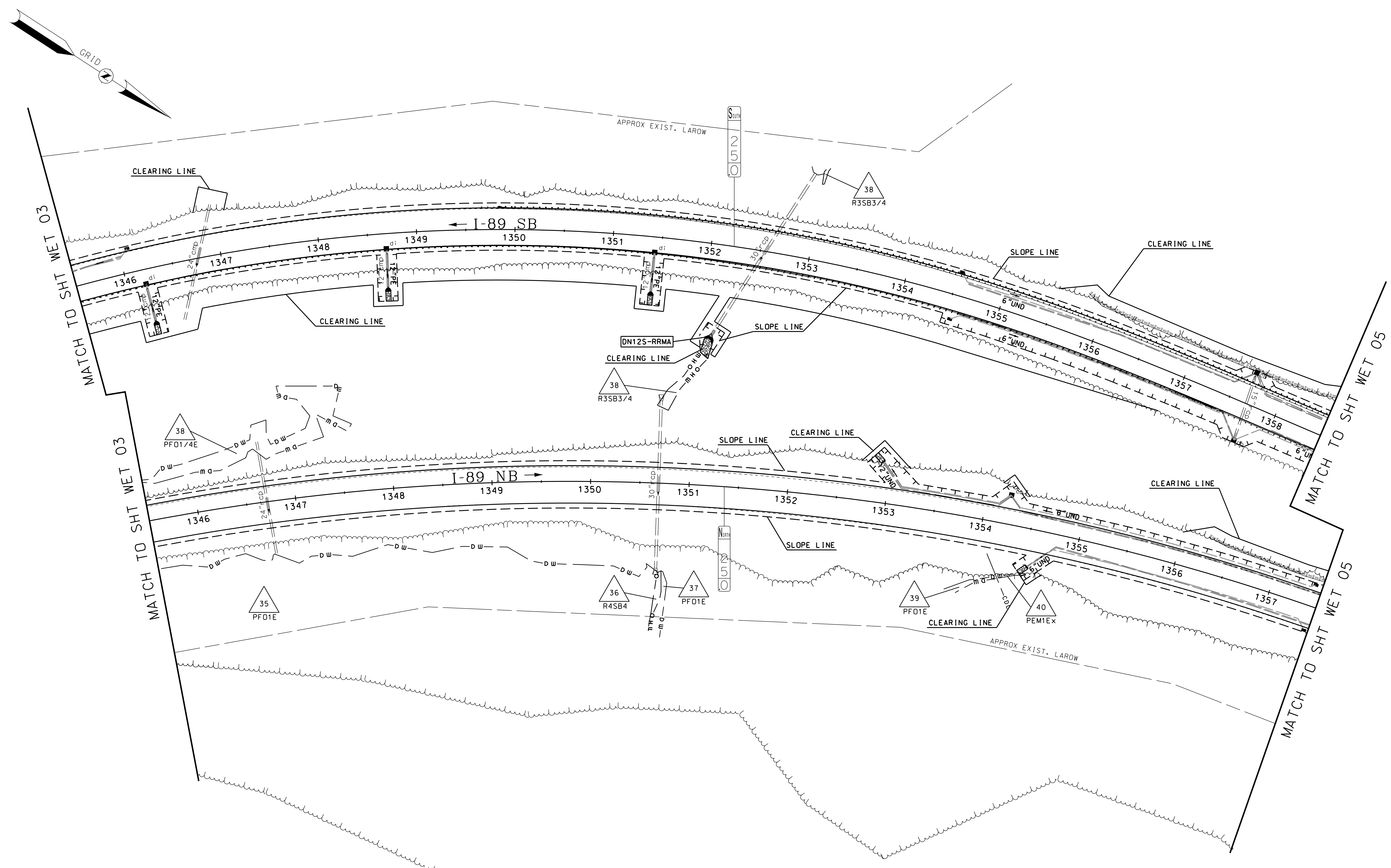


STATE OF NEW HAMPSHIRE				
SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 03	42419wetplans	42419	8	47

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION

NO IMPACTS ON THIS SHEET



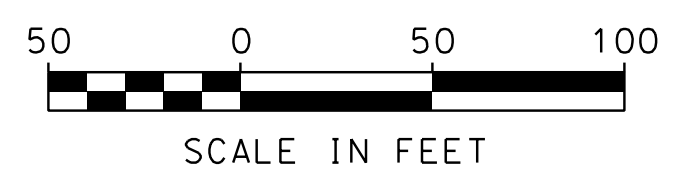
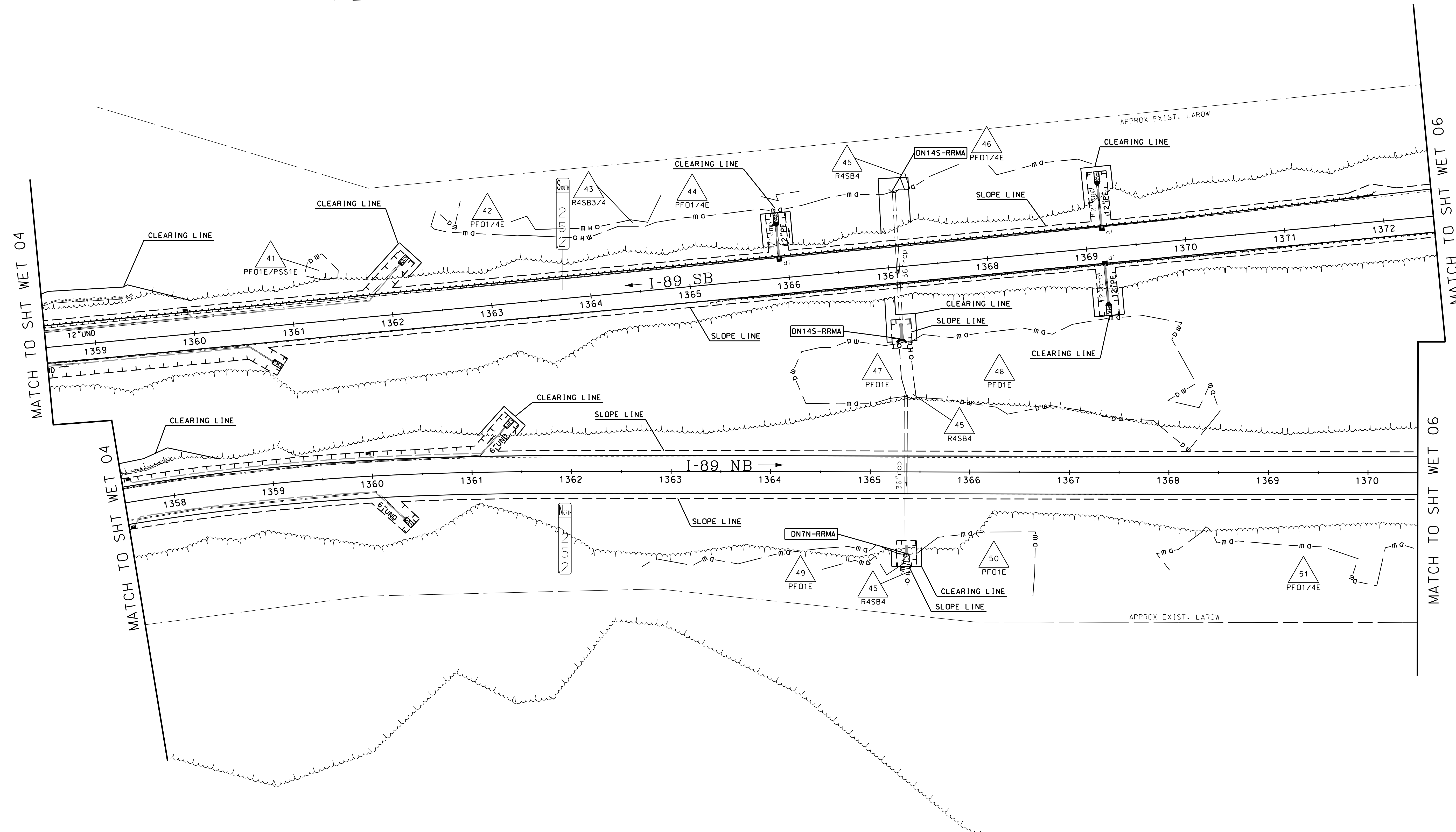
STATE OF NEW HAMPSHIRE
SUTTON
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 04	42419wetplans	42419	9	47

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

NO IMPACTS ON THIS SHEET

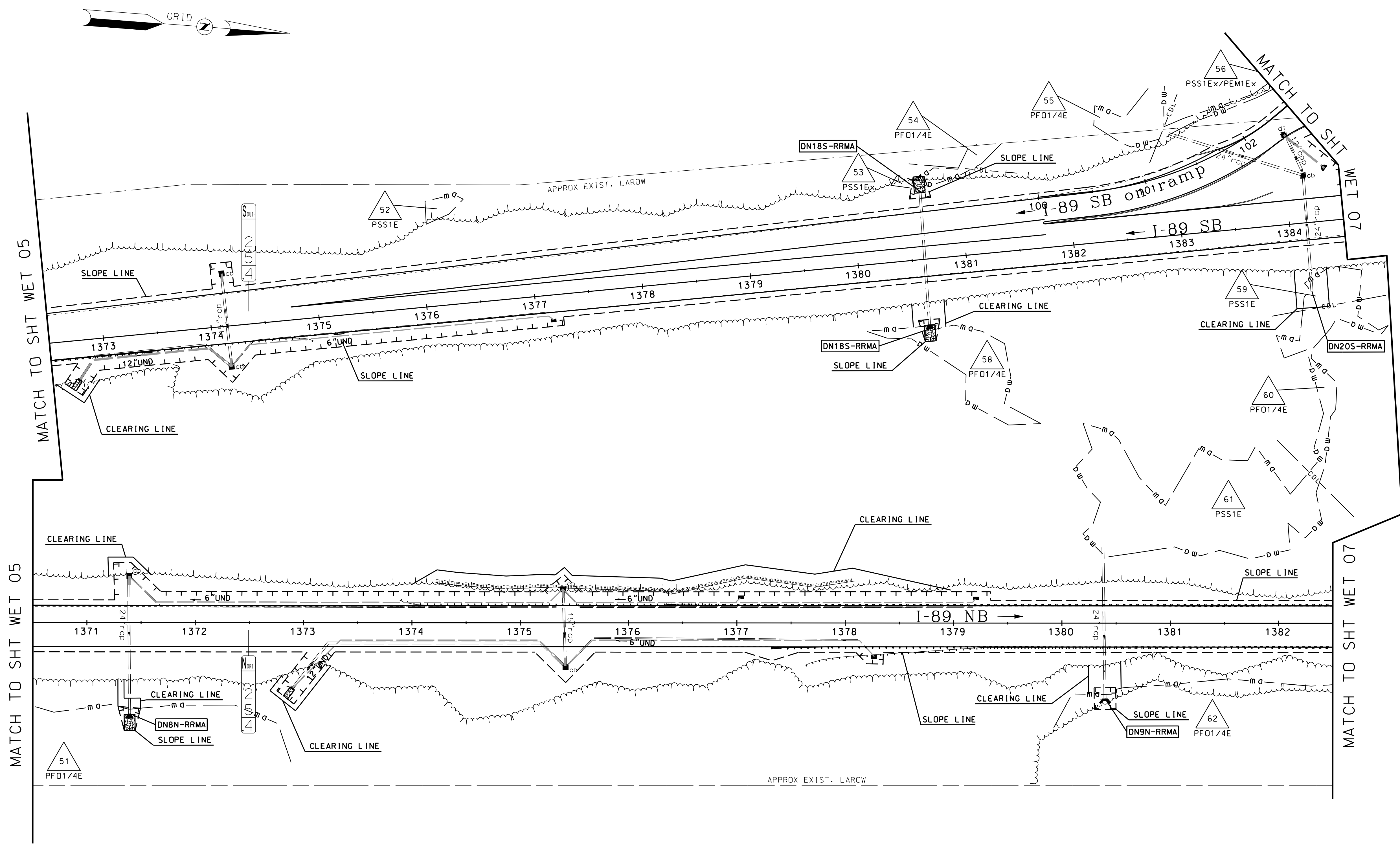


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SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 05	42419wetplans	42419	10	47

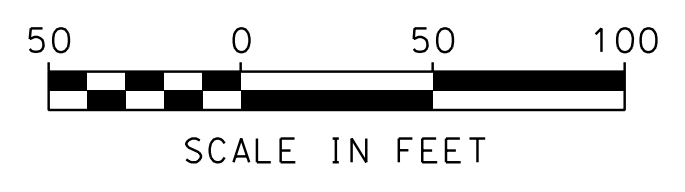
SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION

NUMBER	DATE	STATION	DESCRIPTION

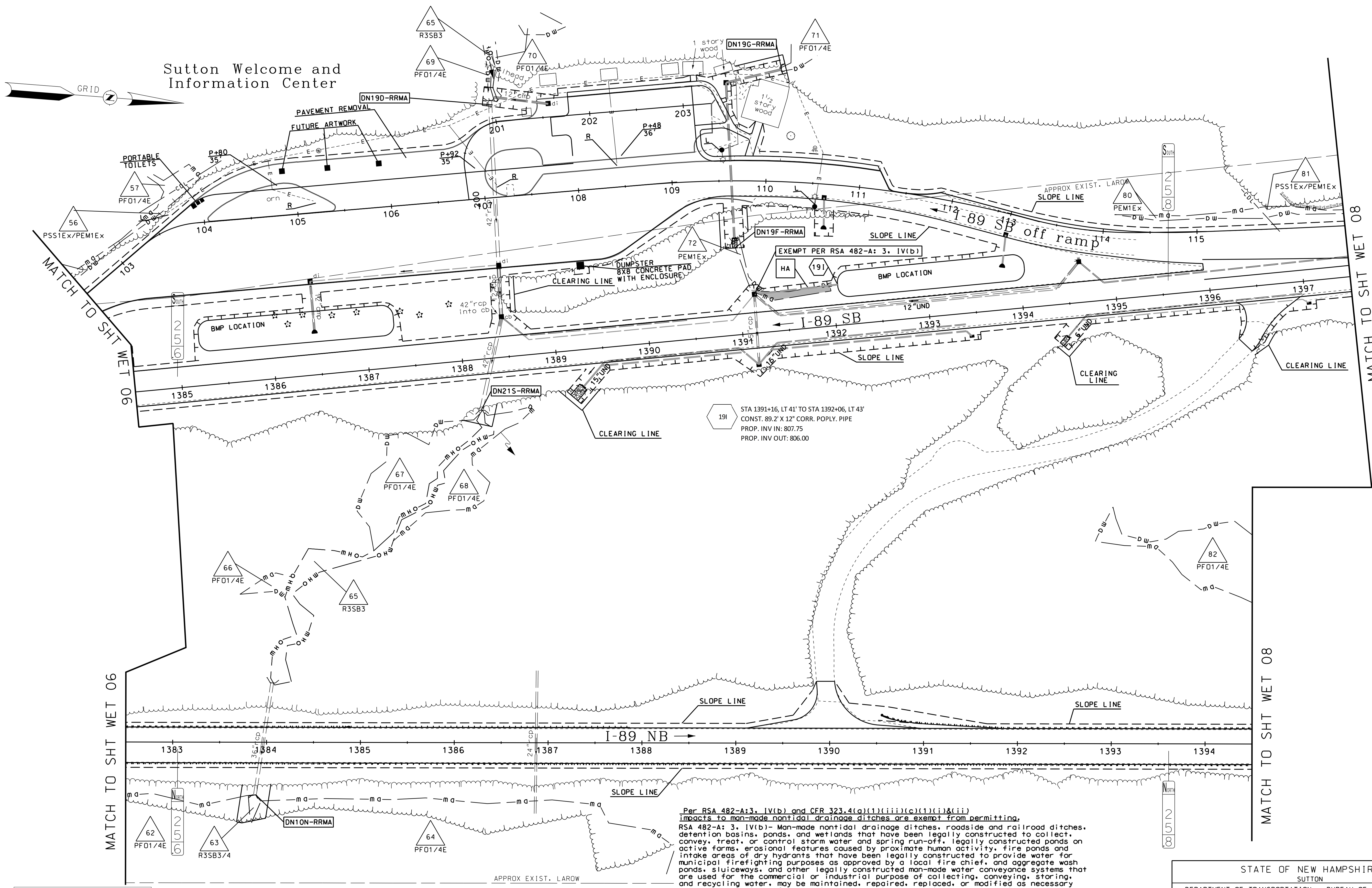


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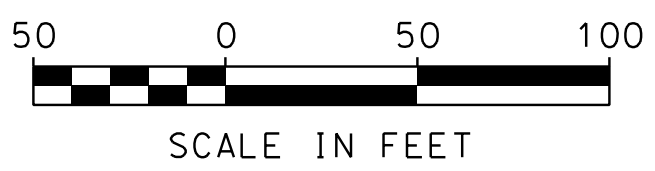


STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 06	42419wetplans	42419	11	47

SDR PROCESSED NAME1	DATE DATE1	STATION	REVISIONS AFTER PROPOSAL
NEW DESIGN CW	DATE 03/21		
SHEET CHECKED CNS	DATE 03/21		
AS BUILT DETAILS	DATE		



NO IMPACTS ON THIS SHEET

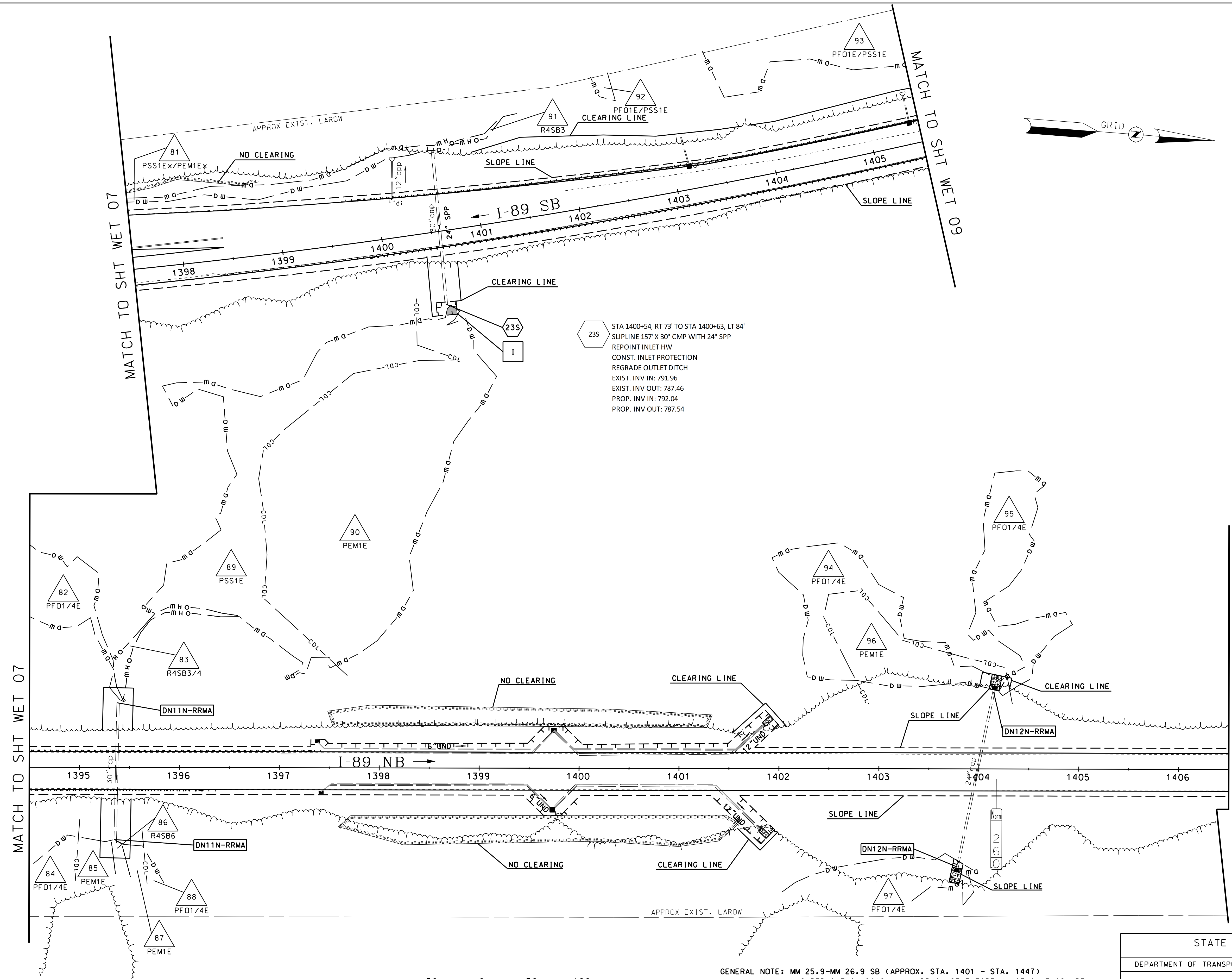


Per RSA 482-A:3, IV(b) and CFR 323.4(a)(1)(iii)(c)(1)(i)&(ii) impacts to man-made nontidal drainage ditches are exempt from permitting. RSA 482-A: 3, IV(b)- Man-made nontidal drainage ditches, roadside and railroad ditches, detention basins, ponds, and wetlands that have been legally constructed to collect, convey, treat, or control storm water and spring run-off. Legally constructed ponds on active farms, erosional features caused by proximate human activity, fire ponds and intake areas of dry hydrants that have been legally constructed to provide water for municipal firefighting purposes as approved by a local fire chief, and aggregate wash ponds, sluiceways, and other legally constructed man-made water conveyance systems that are used for the commercial or industrial purpose of collecting, conveying, storing, and recycling water, may be maintained, repaired, replaced, or modified as necessary to preserve their usefulness without a permit under this chapter provided, that the exempted facility, area, or feature is not extended into any area of wetlands jurisdiction of the department of environmental services, dredged spoils are deposited in areas outside wetlands jurisdiction of the department of environmental services, wetlands or surface waters outside the limits of the exempted facility, area, or feature are neither disturbed nor degraded, the exempted facility, area, or feature was not constructed as mitigation under a wetlands permit or as part of a settlement agreement, best management practices are followed, and the work does not infringe on the property rights or unreasonably affect the value or enjoyment of property of abutting owners.

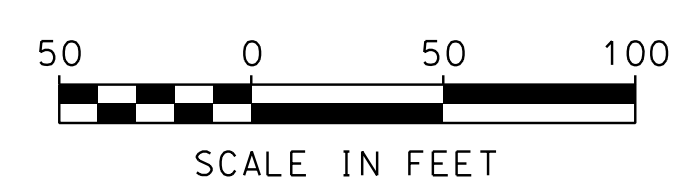
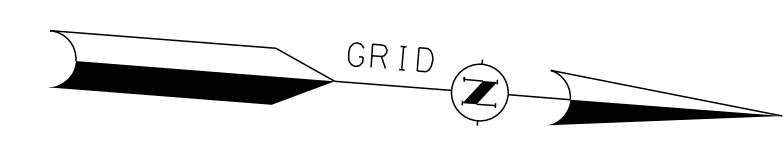
STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 07	42419wetplans	42419	12	47

SDR PROCESSED NAME1		DATE	DATE1
NEW DESIGN CWW		DATE	03/21
SHEET CHECKED CNS		DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION



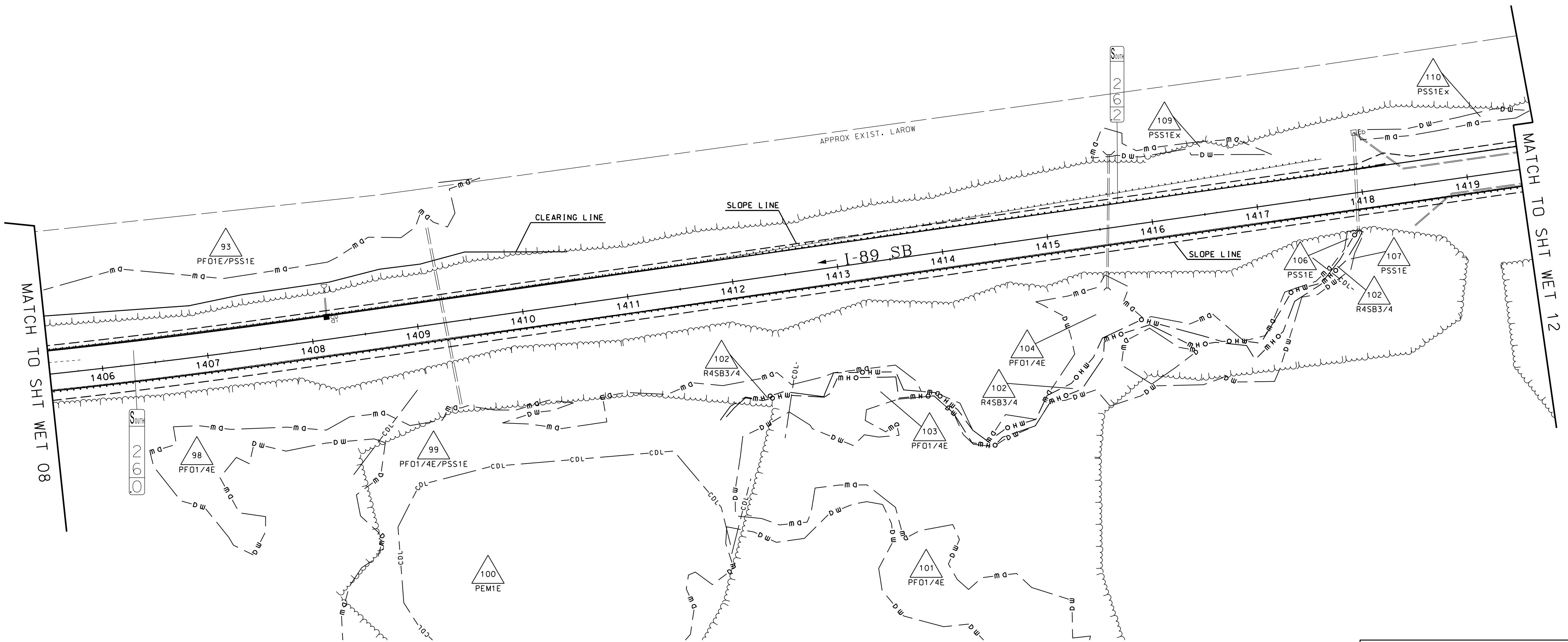
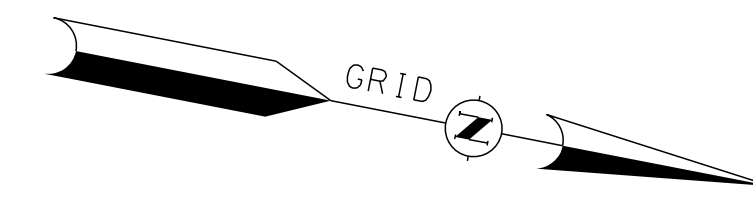
235 STA 1400+54, RT 73' TO STA 1400+63, LT 84'
 SLOPELINE 157 X 30' CMP WITH 24" SPP
 REPOINT INLET HW
 CONST. INLET PROTECTION
 REGRADE OUTLET DITCH
 EXIST. INV IN: 791.96
 EXIST. INV OUT: 787.46
 PROP. INV IN: 792.04
 PROP. INV OUT: 787.54



GENERAL NOTE: MM 25.9-MM 26.9 SB (APPROX. STA. 1401 - STA. 1447) WAS REBUILT IN 2019. ALL DRAINAGE ENTIRELY WITHIN THIS AREA WAS UPGRADED AT THAT TIME AND NO ADDITIONAL WORK IS REQUIRED.

STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 08	42419wetplans	42419	13	47

SDR PROCESSED	NAME1	DATE	DATE1
	NEW DESIGN	CWW	DATE 03/21
SHEET CHECKED	CNS	DATE	DATE 03/21
	AS BUILT DETAILS	DATE	
REVISIONS AFTER PROPOSAL		STATION	DESCRIPTION



MATCH TO SHT WET 08

MATCH TO SHT WET 12

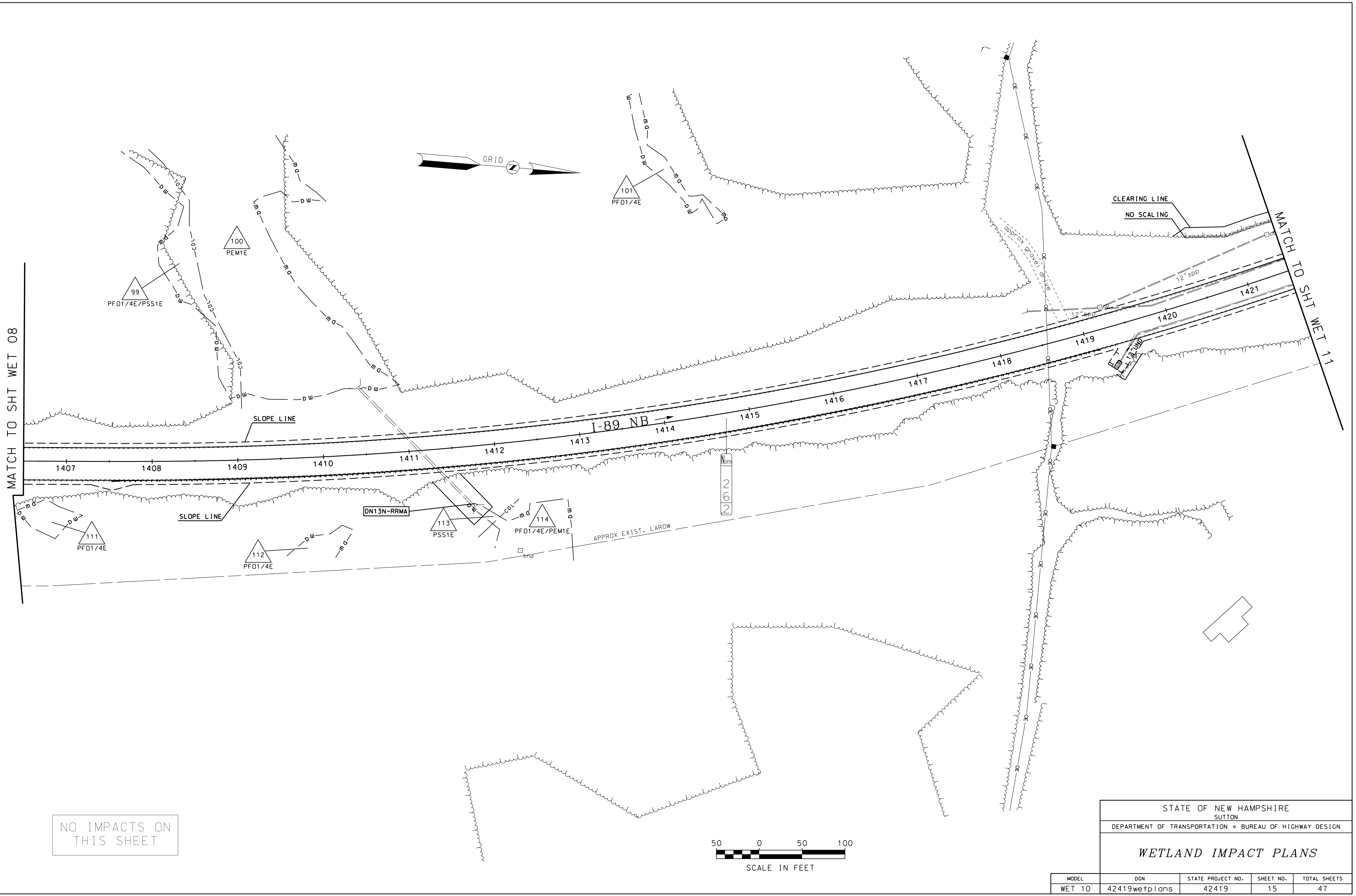
NO IMPACTS ON THIS SHEET



GENERAL NOTE: MM 25.9-MM 26.9 SB (APPROX. STA. 1401 - STA. 1447) WAS REBUILT IN 2019. ALL DRAINAGE ENTIRELY WITHIN THIS AREA WAS UPGRADED AT THAT TIME AND NO ADDITIONAL WORK IS REQUIRED.

STATE OF NEW HAMPSHIRE				
SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 09	42419wetplans	42419	14	47

SDR PROCESSED	NAME1	DATE	DATE1	STATION	REVISIONS AFTER PROPOSAL
NEW DESIGN	CW	DATE	03/21		
SHEET CHECKED	CNS	DATE	03/21		
AS BUILT DETAILS		DATE			

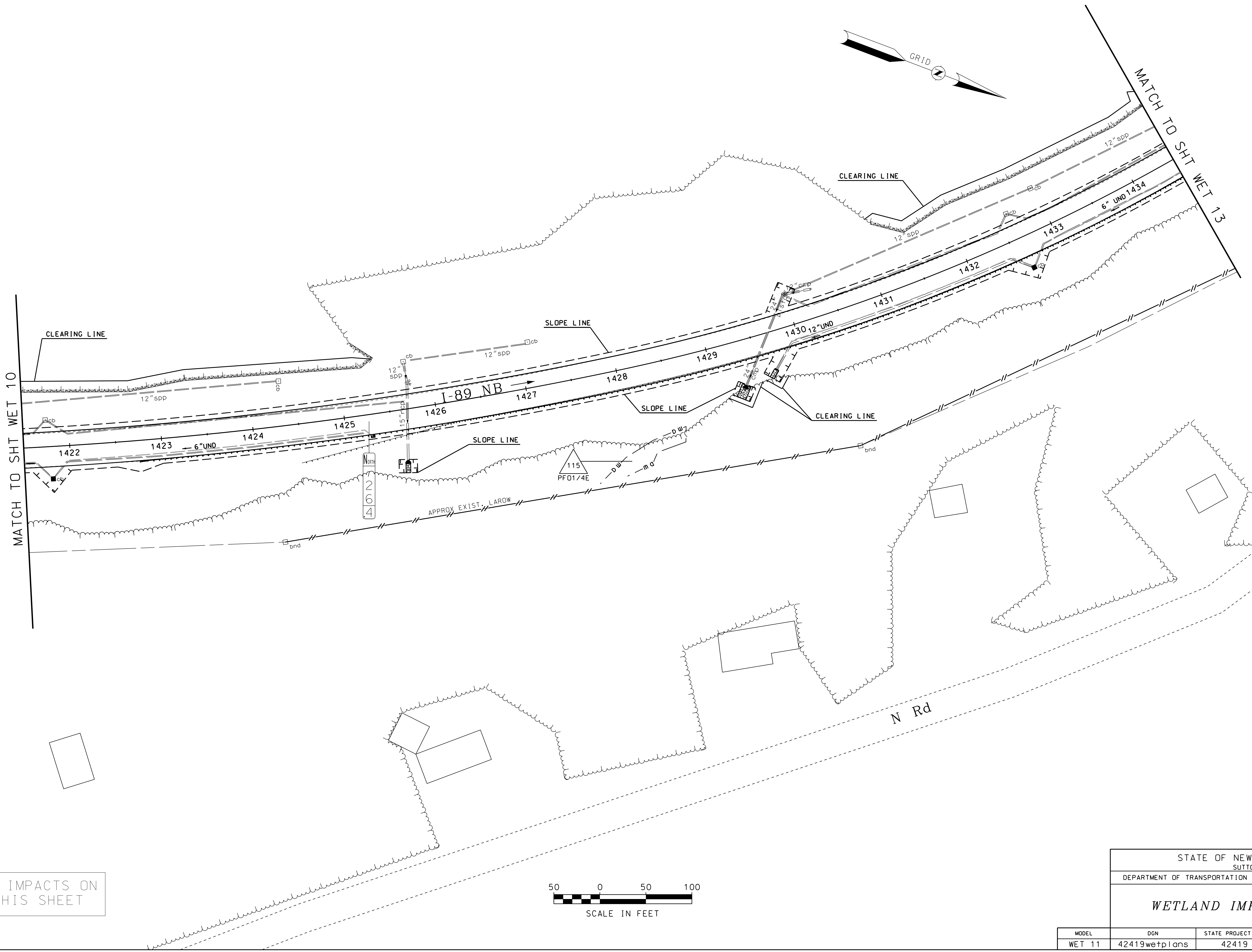


NO IMPACTS ON THIS SHEET

STATE OF NEW HAMPSHIRE				
SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 10	42419wetplans	42419	15	47

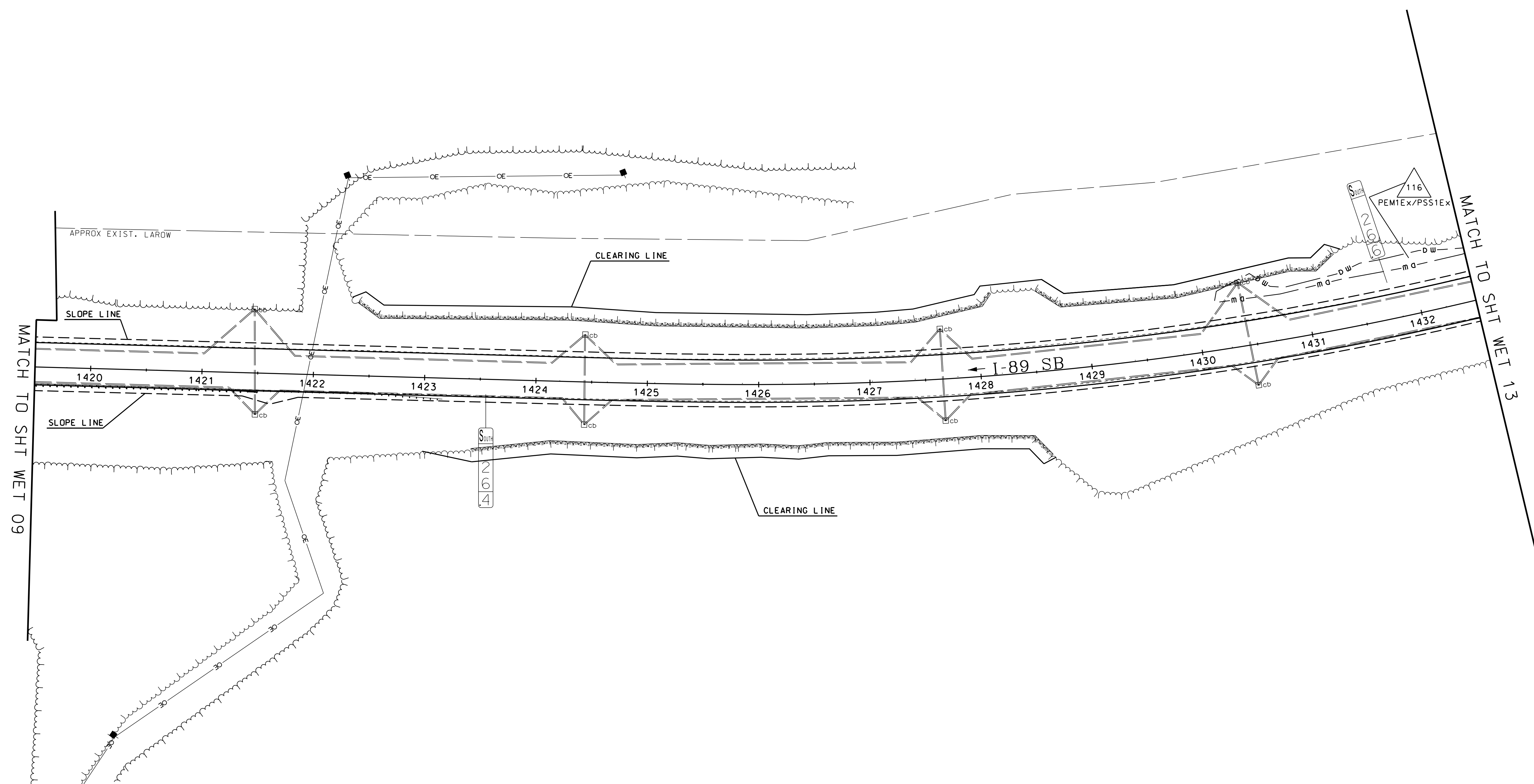
SDR PROCESSED	NAME1	DATE	DATE1	REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION
NEW DESIGN	CWW	DATE	03/21			
SHEET CHECKED	CNS	DATE	03/21			
AS BUILT DETAILS		DATE				

NO IMPACTS ON THIS SHEET



STATE OF NEW HAMPSHIRE				
SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 11	42419wetplans	42419	16	47

SDR PROCESSED		NAME 1	DATE	DATE 1	REVISIONS AFTER PROPOSAL	
NEW DESIGN		CWW	DATE	03/21	STATION	DESCRIPTION
SHEET CHECKED		CNS	DATE	03/21	NUMBER	DATE
AS BUILT DETAILS			DATE			



NO IMPACTS ON THIS SHEET

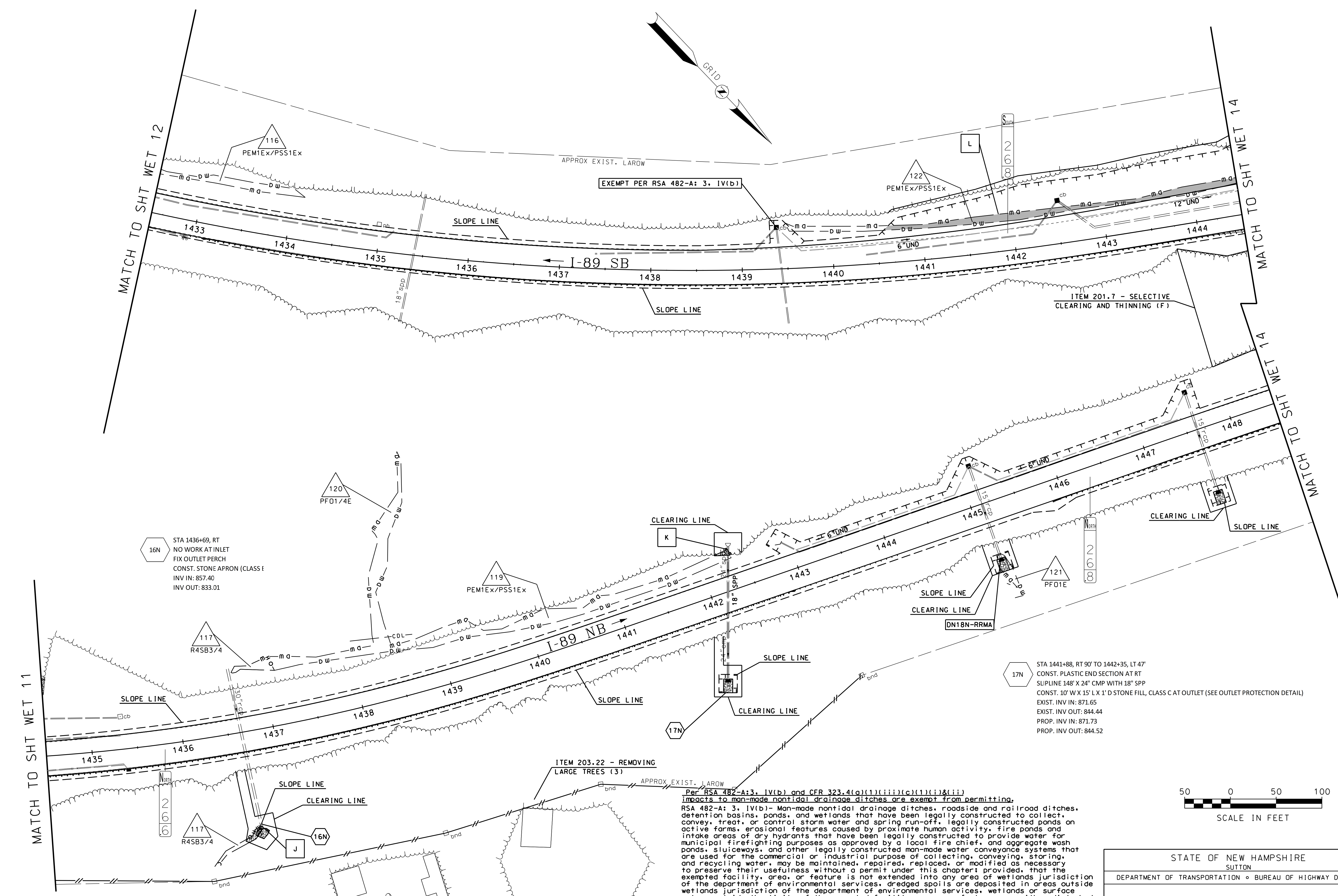


GENERAL NOTE: MM 25.9-MM 26.9 SB (APPROX. STA. 1401 - STA. 1447) WAS REBUILT IN 2019. ALL DRAINAGE ENTIRELY WITHIN THIS AREA WAS UPGRADED AT THAT TIME AND NO ADDITIONAL WORK IS REQUIRED.

STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
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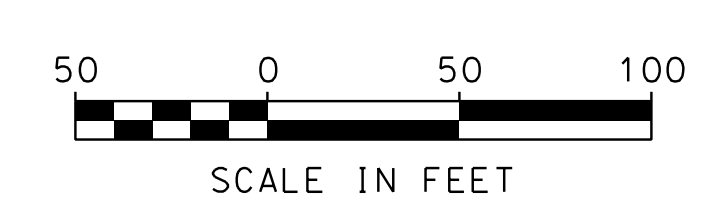
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SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	DESCRIPTION
STATION	
DATE	
NUMBER	



16N STA 1436+69, RT
NO WORK AT INLET
FIX OUTLET PERCH
CONST. STONE APRON (CLASS E)
INV IN: 857.40
INV OUT: 833.01

17N STA 1441+88, RT 90' TO 1442+35, LT 47'
CONST. PLASTIC END SECTION AT RT
SLOPELINE 148' X 24" CMP WITH 18" SPP
CONST. 10' W X 15' L X 1' D STONE FILL, CLASS C AT OUTLET (SEE OUTLET PROTECTION DETAIL)
EXIST. INV IN: 871.65
EXIST. INV OUT: 844.44
PROP. INV IN: 871.73
PROP. INV OUT: 844.52



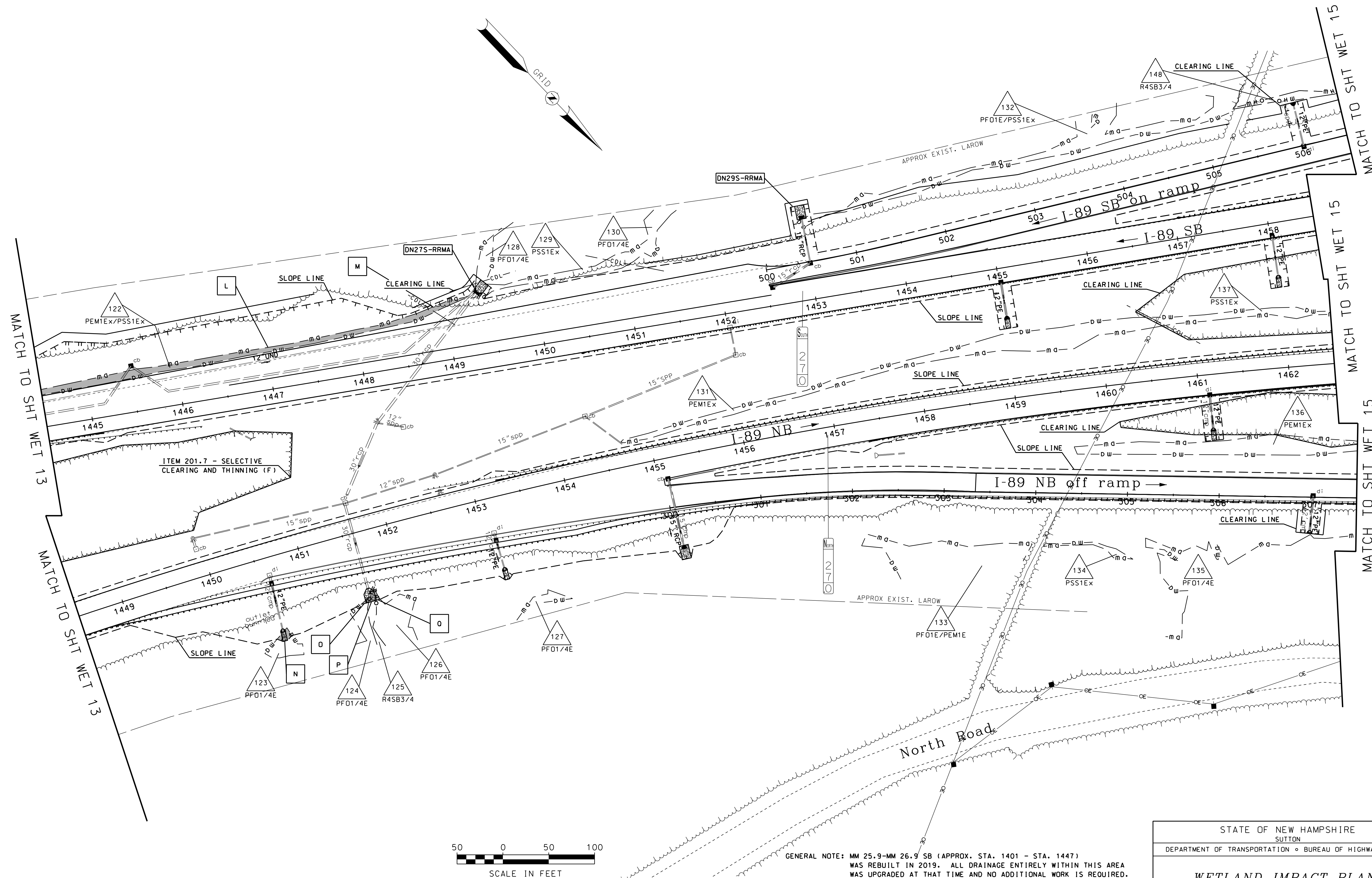
GENERAL NOTE: MM 25.9-MM 26.9 SB (APPROX. STA. 1401 - STA. 1447) WAS REBUILT IN 2019. ALL DRAINAGE ENTIRELY WITHIN IN THIS AREA WAS UPGRADED AT THAT TIME AND NO ADDITIONAL WORK IS REQUIRED.

Per RSA 482-A:3, IV(b) and CFR 323.4(a)(1)(iii)(c)(1)(i)&(ii) impacts to man-made nontidal drainage ditches are exempt from permitting.
RSA 482-A: 3, IV(b)- Man-made nontidal drainage ditches, roadside and railroad ditches, detention basins, ponds, and wetlands that have been legally constructed to collect, convey, treat, or control storm water and spring run-off, legally constructed ponds on active farms, erosional features caused by proximate human activity, fire ponds and intake areas of dry hydrants that have been legally constructed to provide water for municipal firefighting purposes as approved by a local fire chief, and aggregate wash ponds, sluiceways, and other legally constructed man-made water conveyance systems that are used for the commercial or industrial purpose of collecting, conveying, storing, and recycling water, may be maintained, repaired, replaced, or modified as necessary to preserve their usefulness without a permit under this chapter; provided, that the exempted facility, area, or feature is not extended into any area of wetlands jurisdiction of the department of environmental services, dredged spoils are deposited in areas outside wetlands jurisdiction of the department of environmental services, wetlands or surface waters outside the limits of the exempted facility, area, or feature are neither disturbed nor degraded, the exempted facility, area, or feature was not constructed as mitigation under a wetlands permit or as part of a settlement agreement, best management practices are followed, and the work does not infringe on the property rights or unreasonably affect the value or enjoyment of property of abutting owners.

STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 13	42419wetplans	42419	18	47

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION

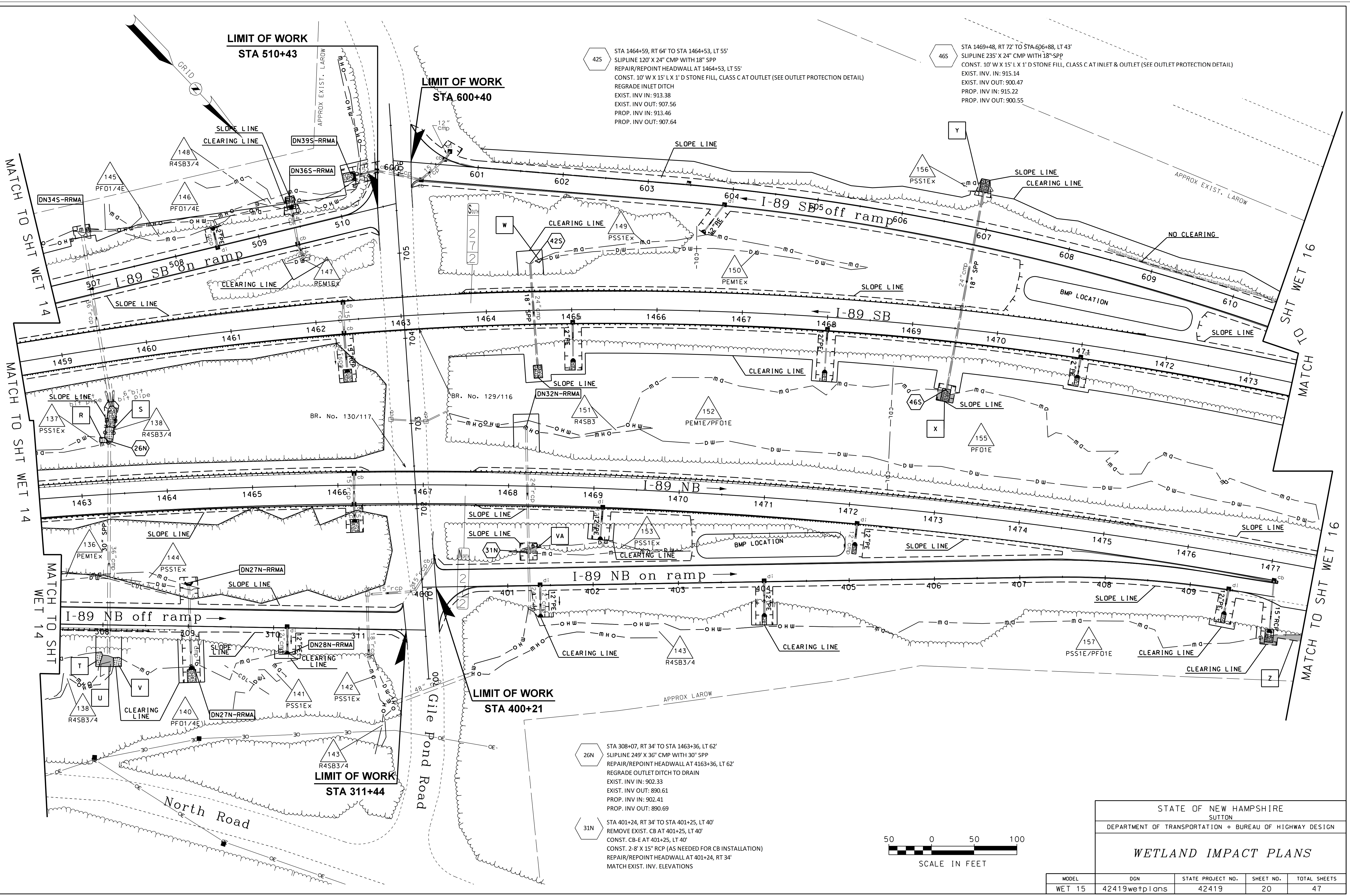


STATE OF NEW HAMPSHIRE
SUTTON
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 14	42419wetplans	42419	19	47

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	



425 STA 1464+59, RT 64' TO STA 1464+53, LT 55'
 SLOPE LINE 120' X 24" CMP WITH 18" SPP
 REPAIR/REPOINT HEADWALL AT 1464+53, LT 55'
 CONST. 10' W X 15' L X 1' D STONE FILL, CLASS C AT OUTLET (SEE OUTLET PROTECTION DETAIL)
 REGRADE INLET DITCH
 EXIST. INV IN: 913.38
 EXIST. INV OUT: 907.56
 PROP. INV IN: 913.46
 PROP. INV OUT: 907.64

465 STA 1469+48, RT 72' TO STA 606+88, LT 43'
 SLOPE LINE 235' X 24" CMP WITH 18" SPP
 CONST. 10' W X 15' L X 1' D STONE FILL, CLASS C AT INLET & OUTLET (SEE OUTLET PROTECTION DETAIL)
 EXIST. INV. IN: 915.14
 EXIST. INV OUT: 900.47
 PROP. INV IN: 915.22
 PROP. INV OUT: 900.55

26N STA 308+07, RT 34' TO STA 1463+36, LT 62'
 SLOPE LINE 249' X 36" CMP WITH 30" SPP
 REPAIR/REPOINT HEADWALL AT 4163+36, LT 62'
 REGRADE OUTLET DITCH TO DRAIN
 EXIST. INV IN: 902.33
 EXIST. INV OUT: 890.61
 PROP. INV IN: 902.41
 PROP. INV OUT: 890.69

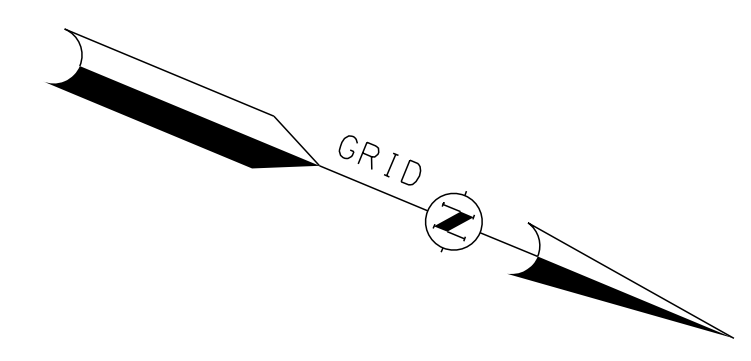
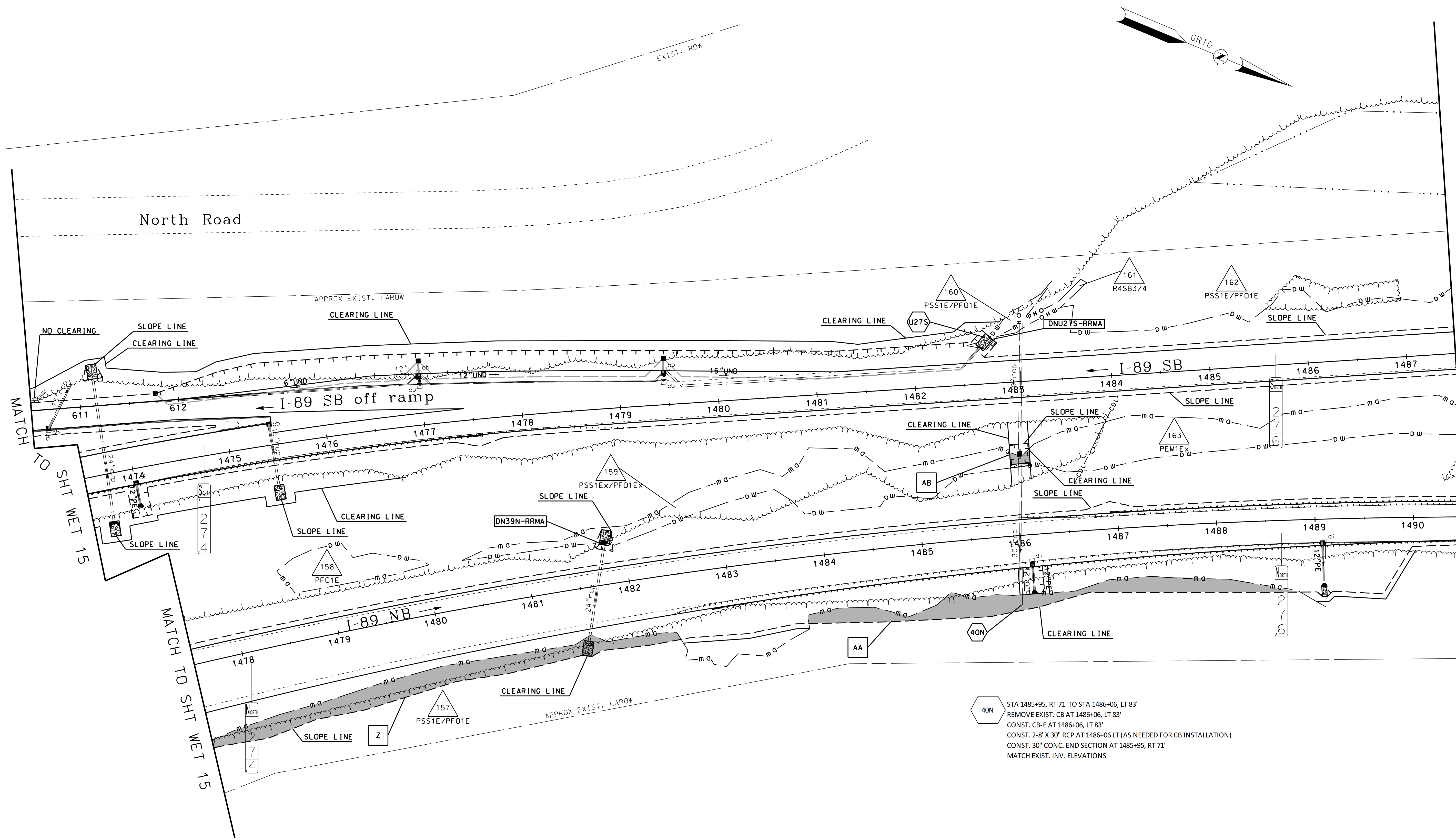
31N STA 401+24, RT 34' TO STA 401+25, LT 40'
 REMOVE EXIST. CB AT 401+25, LT 40'
 CONST. CB-E AT 401+25, LT 40'
 CONST. 2-8' X 15" RCP (AS NEEDED FOR CB INSTALLATION)
 REPAIR/REPOINT HEADWALL AT 401+24, RT 34'
 MATCH EXIST. INV. ELEVATIONS



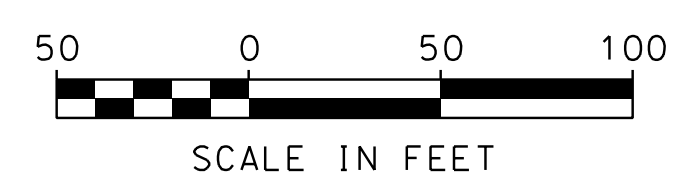
STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 15	42419wetplans	42419	20	47

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CWW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	DESCRIPTION
STATION	
DATE	
NUMBER	



40N STA 1485+95, RT 71' TO STA 1486+06, LT 83'
 REMOVE EXIST. CB AT 1486+06, LT 83'
 CONST. CB-E AT 1486+06, LT 83'
 CONST. 2'-8" X 30" RCP AT 1486+06 LT (AS NEEDED FOR CB INSTALLATION)
 CONST. 30" CONC. END SECTION AT 1485+95, RT 71'
 MATCH EXIST. INV. ELEVATIONS



STATE OF NEW HAMPSHIRE				
SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 16	42419wetplans	42419	21	47

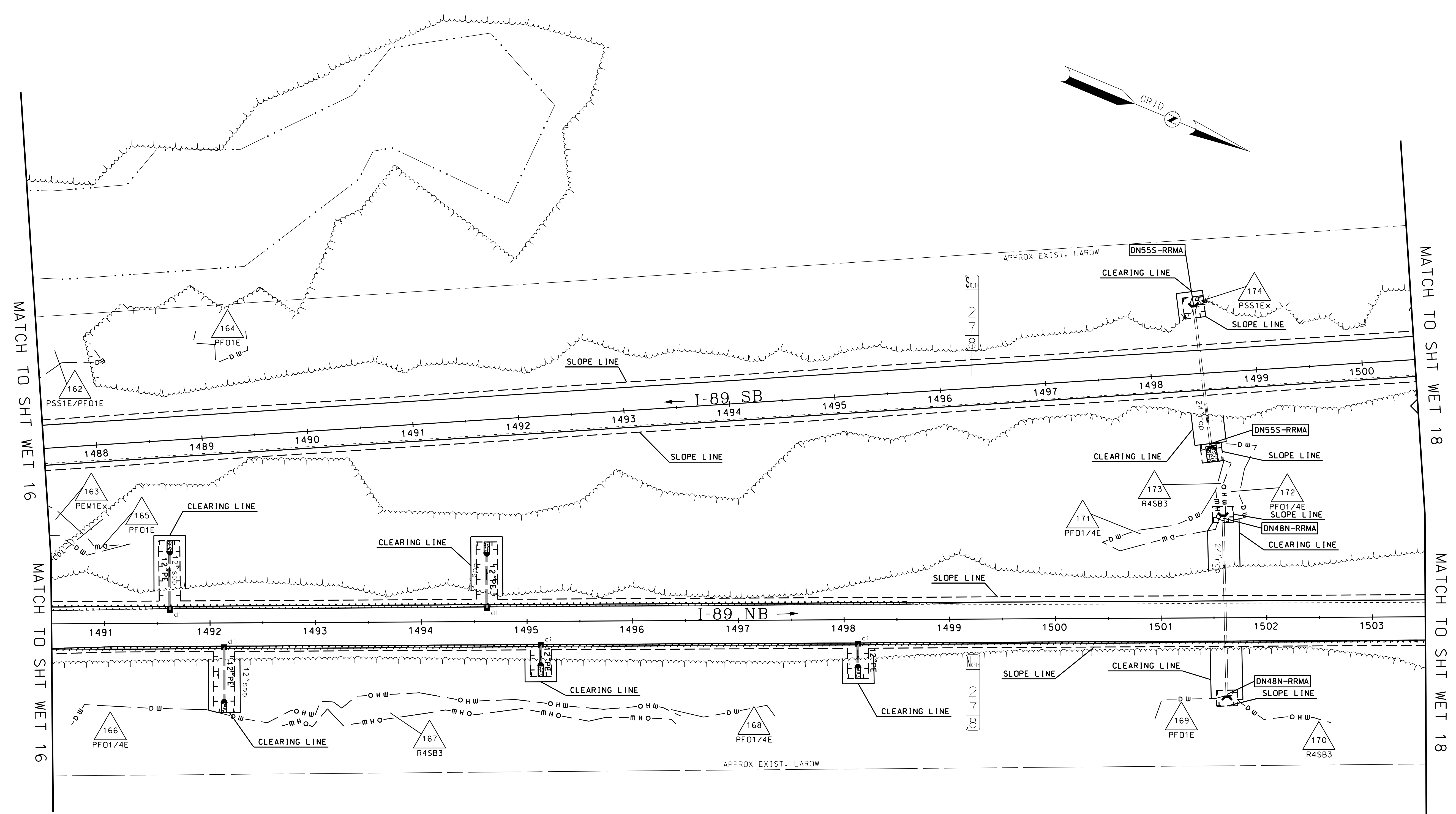
MATCH TO SHT WET 15

MATCH TO SHT WET 15

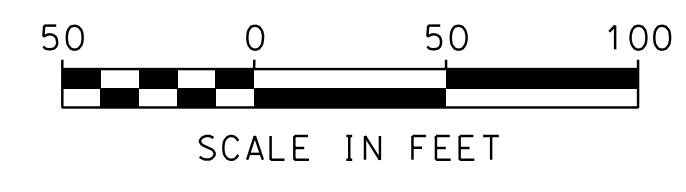
MATCH TO SHT WET 17

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CWW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION



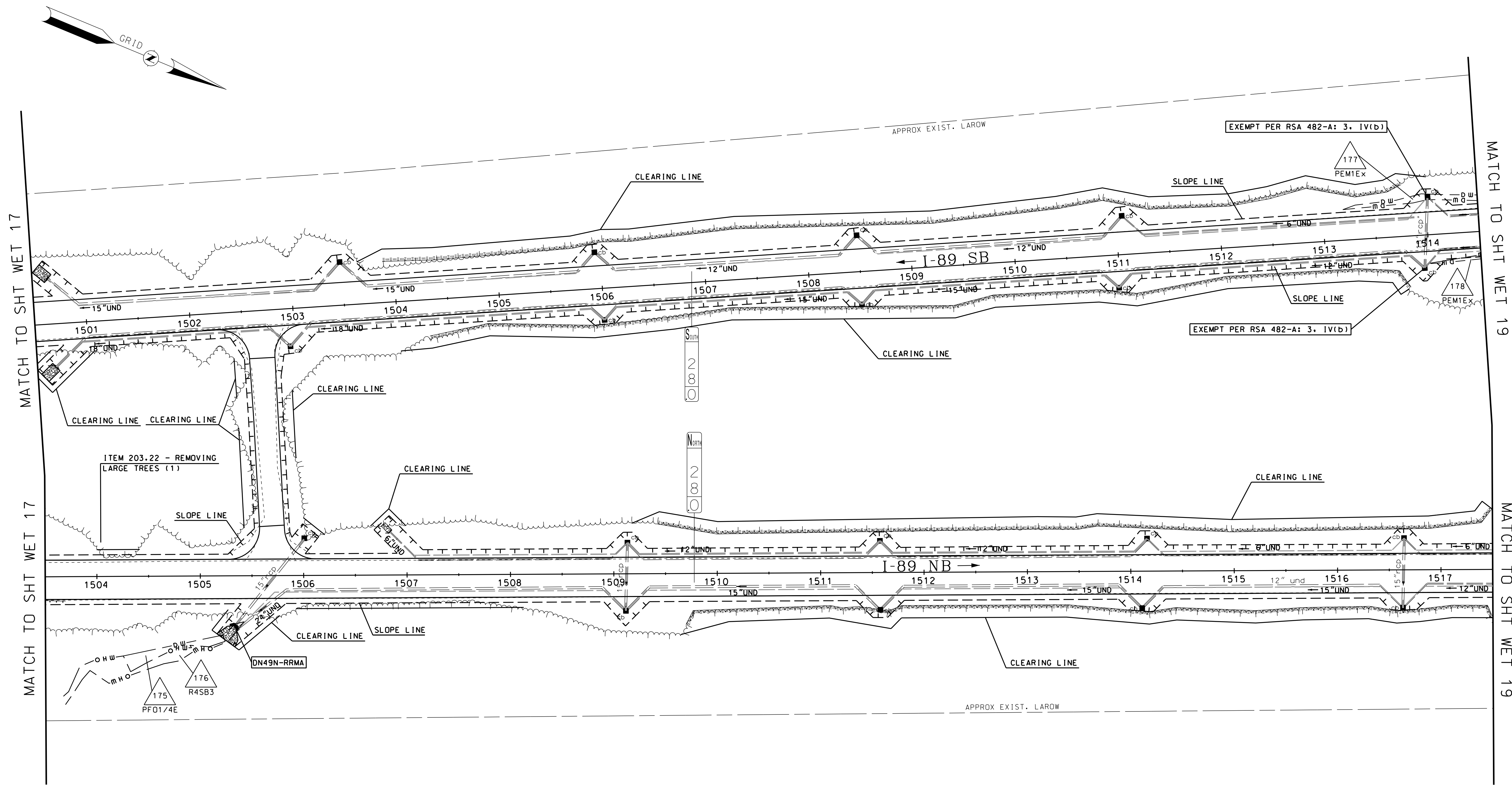
NO IMPACTS ON THIS SHEET



STATE OF NEW HAMPSHIRE				
SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 17	42419wetplans	42419	22	47

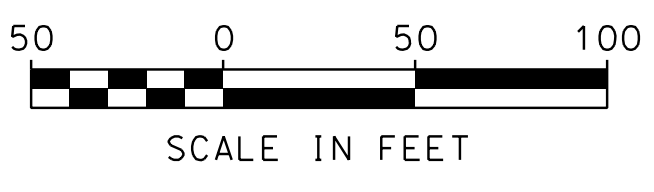
SDR PROCESSED NAME1	DATE	DATE1	DATE	DATE2	DATE3	DATE
NEW DESIGN CWW	DATE	03/21	DATE	03/21	DATE	03/21
SHEET CHECKED CNS	DATE	03/21	DATE	03/21	DATE	03/21
AS BUILT DETAILS	DATE		DATE		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION



Per RSA 482-A:3, IV(b) and CFR 323.4(a)(1)(iii)(c)(1)(i)&(ii) impacts to man-made nontidal drainage ditches are exempt from permitting. RSA 482-A: 3, IV(b)- Man-made nontidal drainage ditches, roadside and railroad ditches, detention basins, ponds, and wetlands that have been legally constructed to collect, convey, treat, or control storm water and spring run-off, legally constructed ponds on active farms, erosional features caused by proximate human activity, fire ponds and intake areas of dry hydrants that have been legally constructed to provide water for municipal firefighting purposes as approved by a local fire chief, and aggregate wash ponds, sluiceways, and other legally constructed man-made water conveyance systems that are used for the commercial or industrial purpose of collecting, conveying, storing, and recycling water, may be maintained, repaired, replaced, or modified as necessary to preserve their usefulness without a permit under this chapter; provided, that the exempted facility, area, or feature is not extended into any area of wetlands jurisdiction of the department of environmental services, dredged spoils are deposited in areas outside wetlands jurisdiction of the department of environmental services, wetlands or surface waters outside the limits of the exempted facility, area, or feature are neither disturbed nor degraded, the exempted facility, area, or feature was not constructed as mitigation under a wetlands permit or as part of a settlement agreement, best management practices are followed, and the work does not infringe on the property rights or unreasonably affect the value or enjoyment of property of abutting owners.

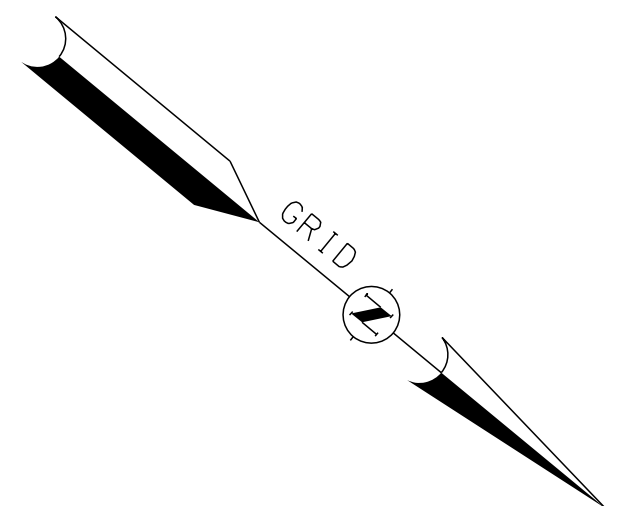
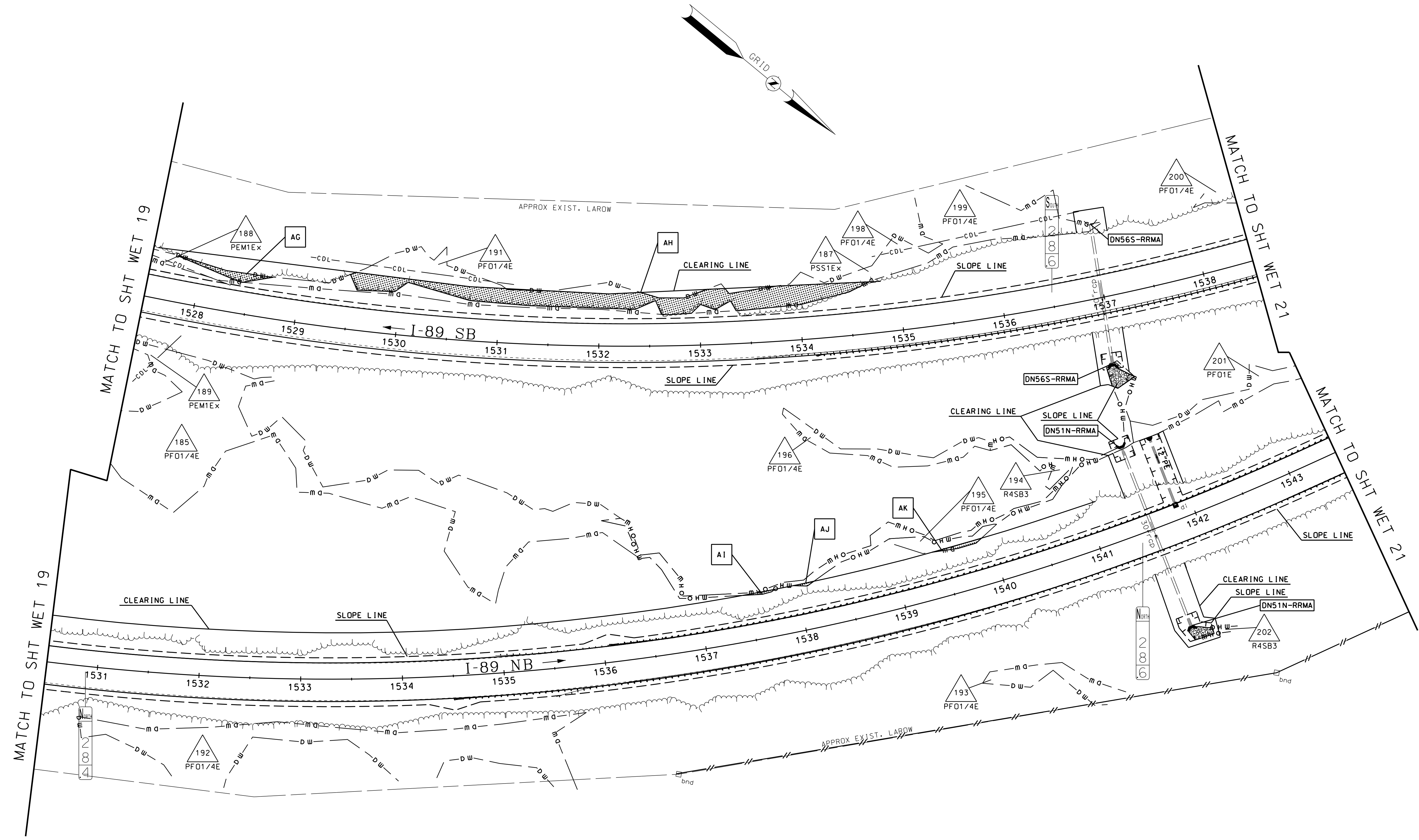
NO IMPACTS ON THIS SHEET



STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 18	42419wetplans	42419	23	47

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

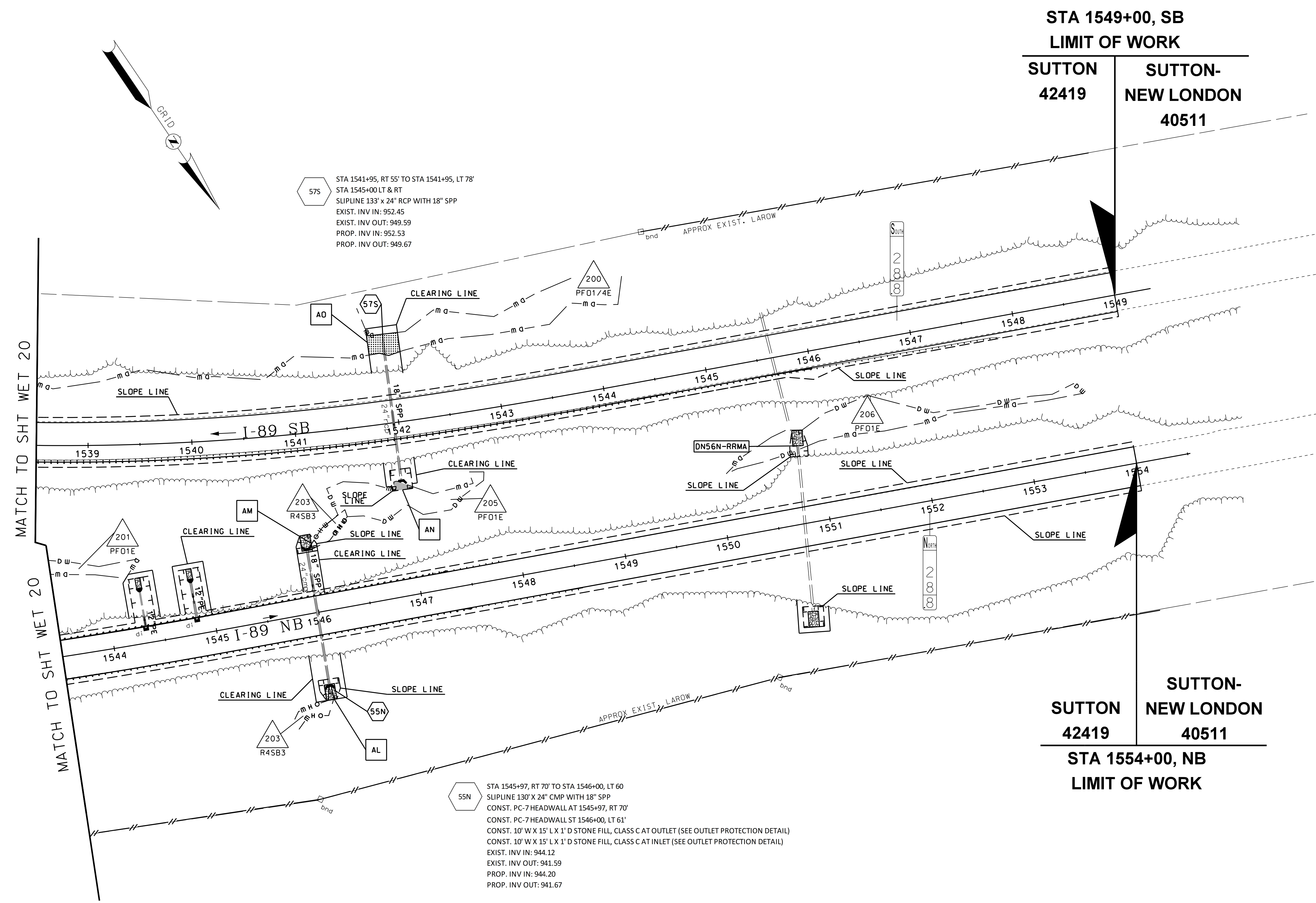
REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION



STATE OF NEW HAMPSHIRE				
SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 20	42419wetplans	42419	25	47

SDR PROCESSED	NAME 1	DATE	DATE 1
NEW DESIGN	CWW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION



57S STA 1541+95, RT 55' TO STA 1541+95, LT 78'
 STA 1545+00 LT & RT
 SLOPELINE 133' x 24" RCP WITH 18" SPP
 EXIST. INV IN: 952.45
 EXIST. INV OUT: 949.59
 PROP. INV IN: 952.53
 PROP. INV OUT: 949.67

55N STA 1545+97, RT 70' TO STA 1546+00, LT 60
 SLOPELINE 130' x 24" CMP WITH 18" SPP
 CONST. PC-7 HEADWALL AT 1545+97, RT 70'
 CONST. PC-7 HEADWALL ST 1546+00, LT 61'
 CONST. 10' W X 15' L X 1' D STONE FILL, CLASS C AT OUTLET (SEE OUTLET PROTECTION DETAIL)
 CONST. 10' W X 15' L X 1' D STONE FILL, CLASS C AT INLET (SEE OUTLET PROTECTION DETAIL)
 EXIST. INV IN: 944.12
 EXIST. INV OUT: 941.59
 PROP. INV IN: 944.20
 PROP. INV OUT: 941.67

STA 1549+00, SB
 LIMIT OF WORK

SUTTON
 42419

SUTTON-
 NEW LONDON
 40511

SUTTON-
 SUTTON
 42419

NEW LONDON
 40511

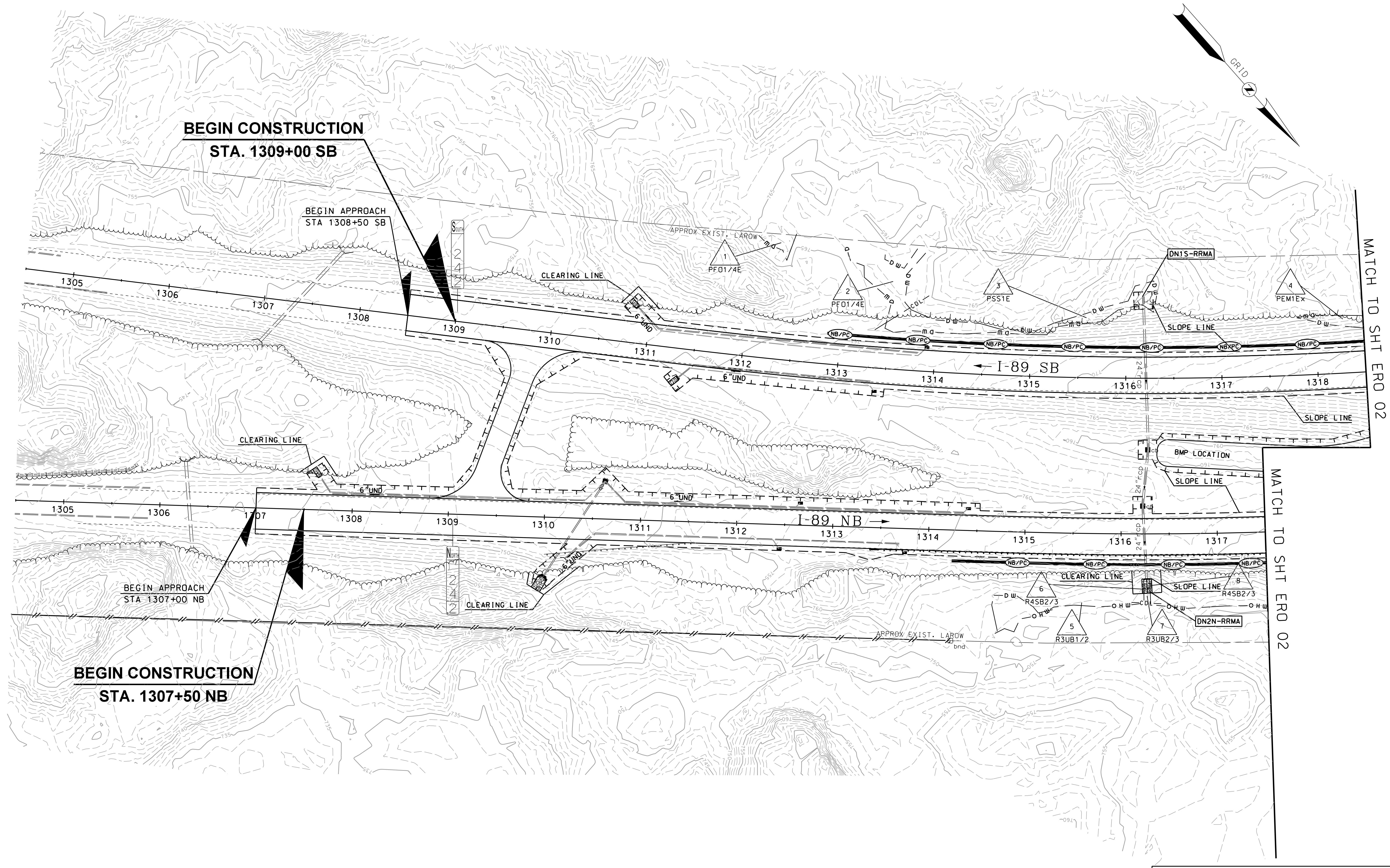
STA 1554+00, NB
 LIMIT OF WORK



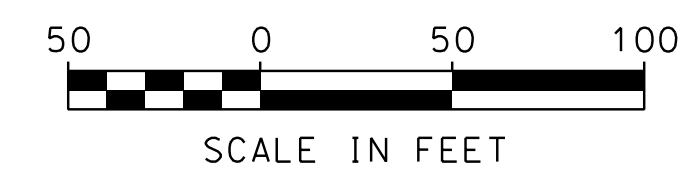
STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
WET 21	42419wetplans	42419	26	47

SDR PROCESSED	NAME 1	DATE	DATE 1
NEW DESIGN	CWW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	DESCRIPTION
STATION	
DATE	
NUMBER	



NO IMPACTS ON THIS SHEET



GENERAL NOTE: ROUTINE ROADWAY MAINTENANCE ACTIVITIES (RRMA) WILL BE SUBMITTED SEPARATELY AND BMP'S FOR EROSION CONTROL ASSOCIATED WITH THOSE ACTIVITIES WILL BE IMPLEMENTED WHEN THE WORK IS PERFORMED.

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

EROSION CONTROL PLANS

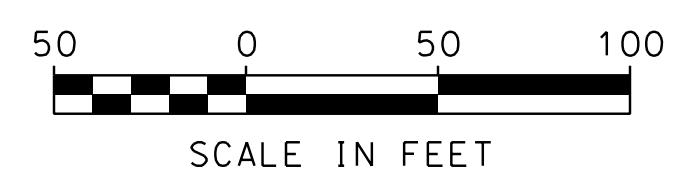
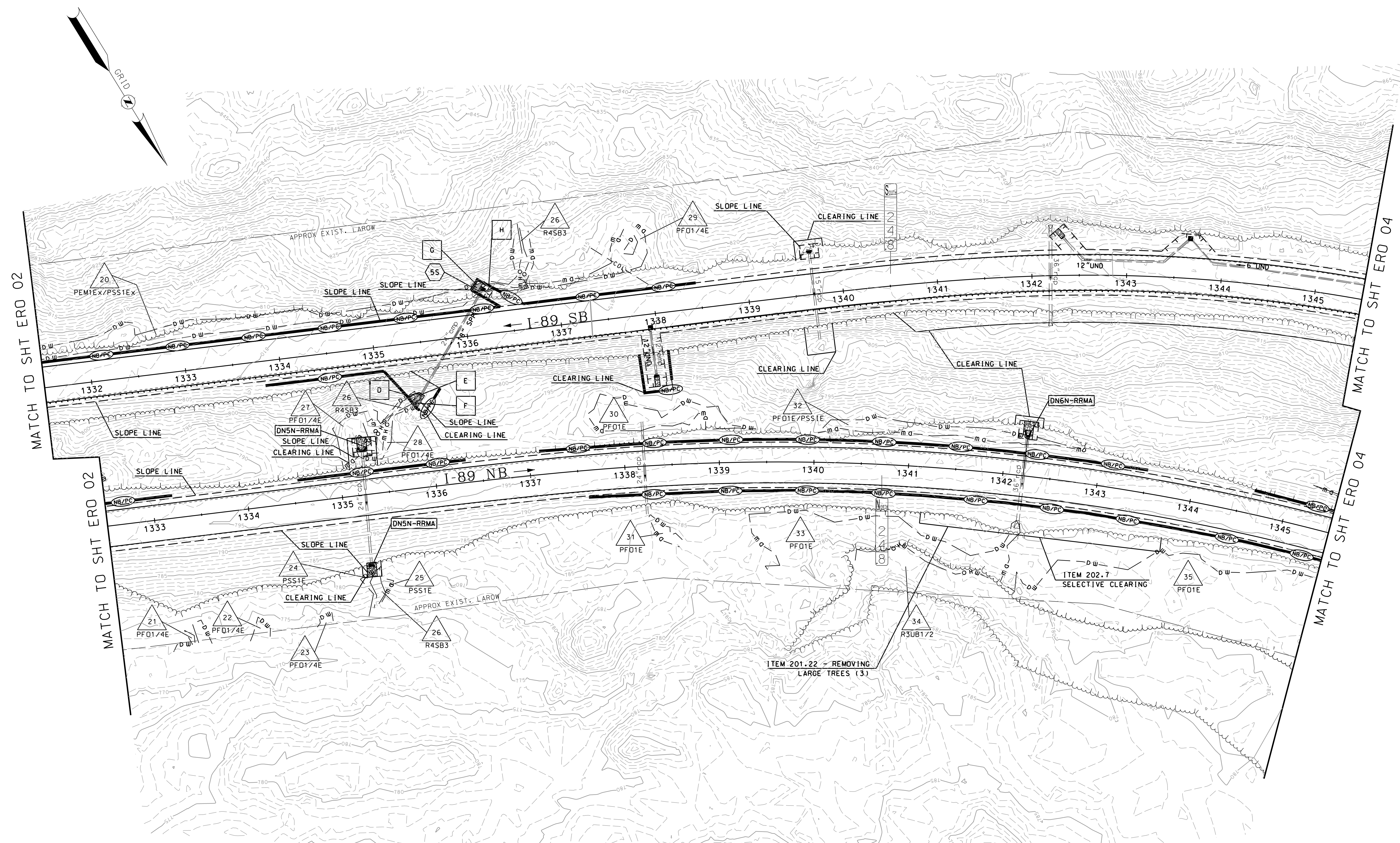
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 01	42419eroplans	42419	27	47

MATCH TO SHT ERO 02

MATCH TO SHT ERO 02

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

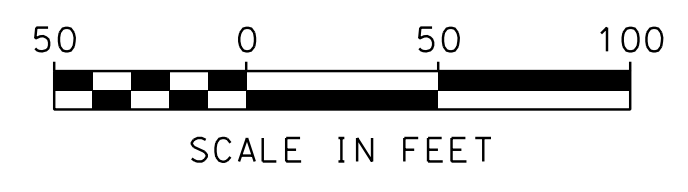
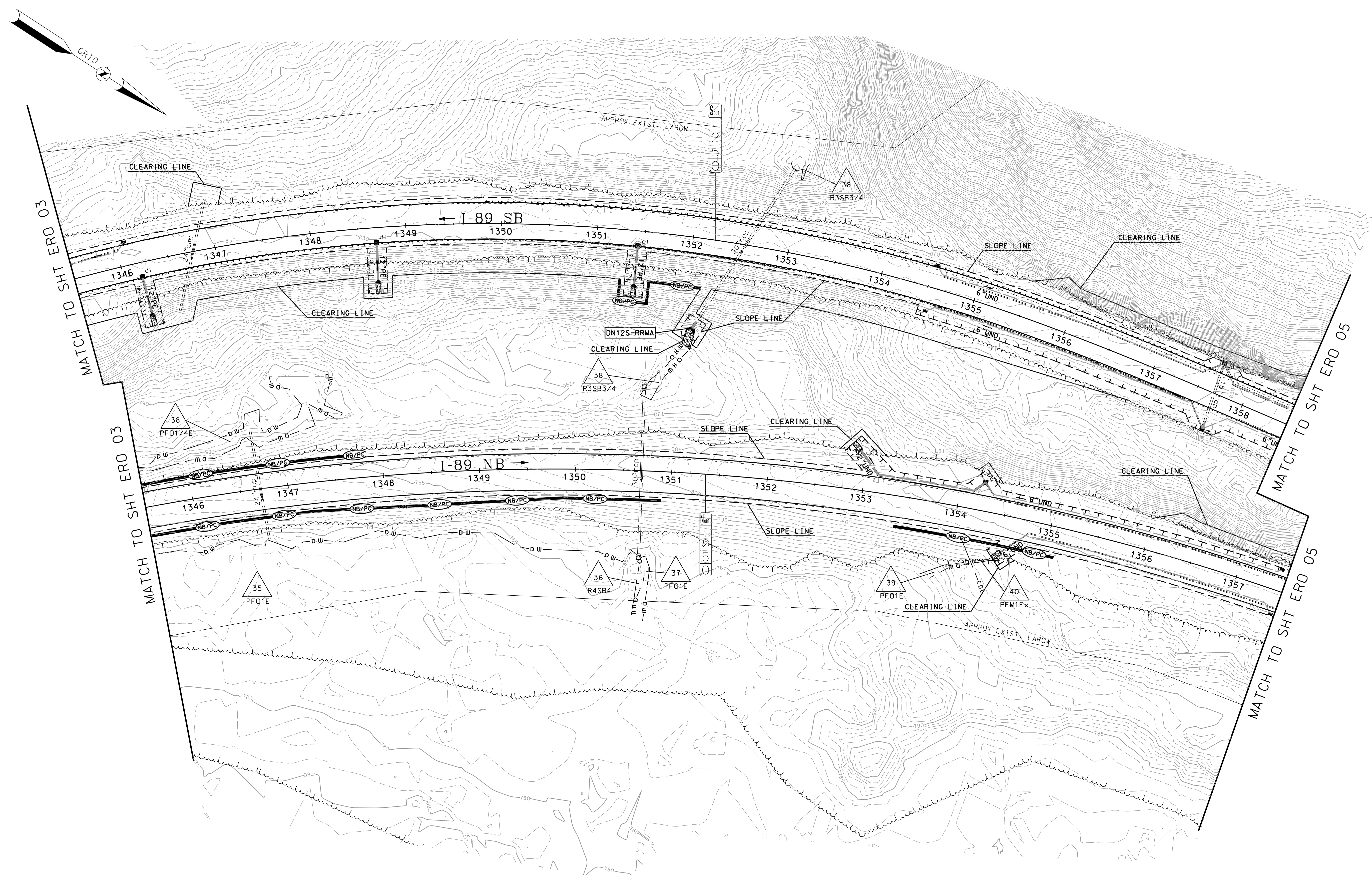
REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION



STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
EROSION CONTROL PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 03	42419eroplans	42419	29	47

SDR PROCESSED NAME1	DATE DATE1	STATION	DESCRIPTION
NEW DESIGN CWW	DATE 03/21		
SHEET CHECKED CNS	DATE 03/21		
AS BUILT DETAILS	DATE		

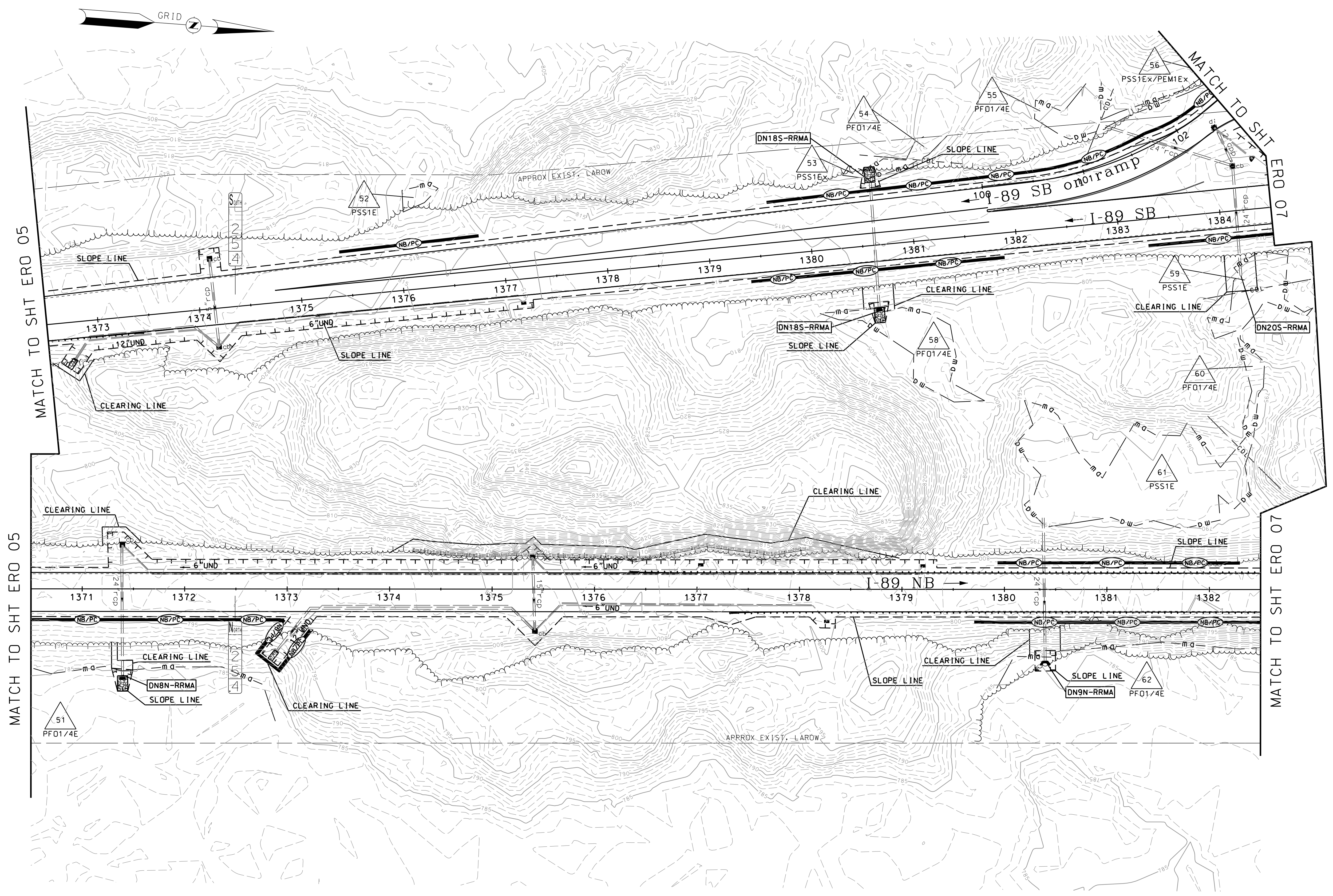
NO IMPACTS ON THIS SHEET



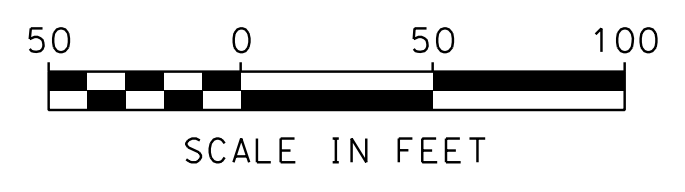
STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
EROSION CONTROL PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 04	42419eroplans	42419	30	47

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION

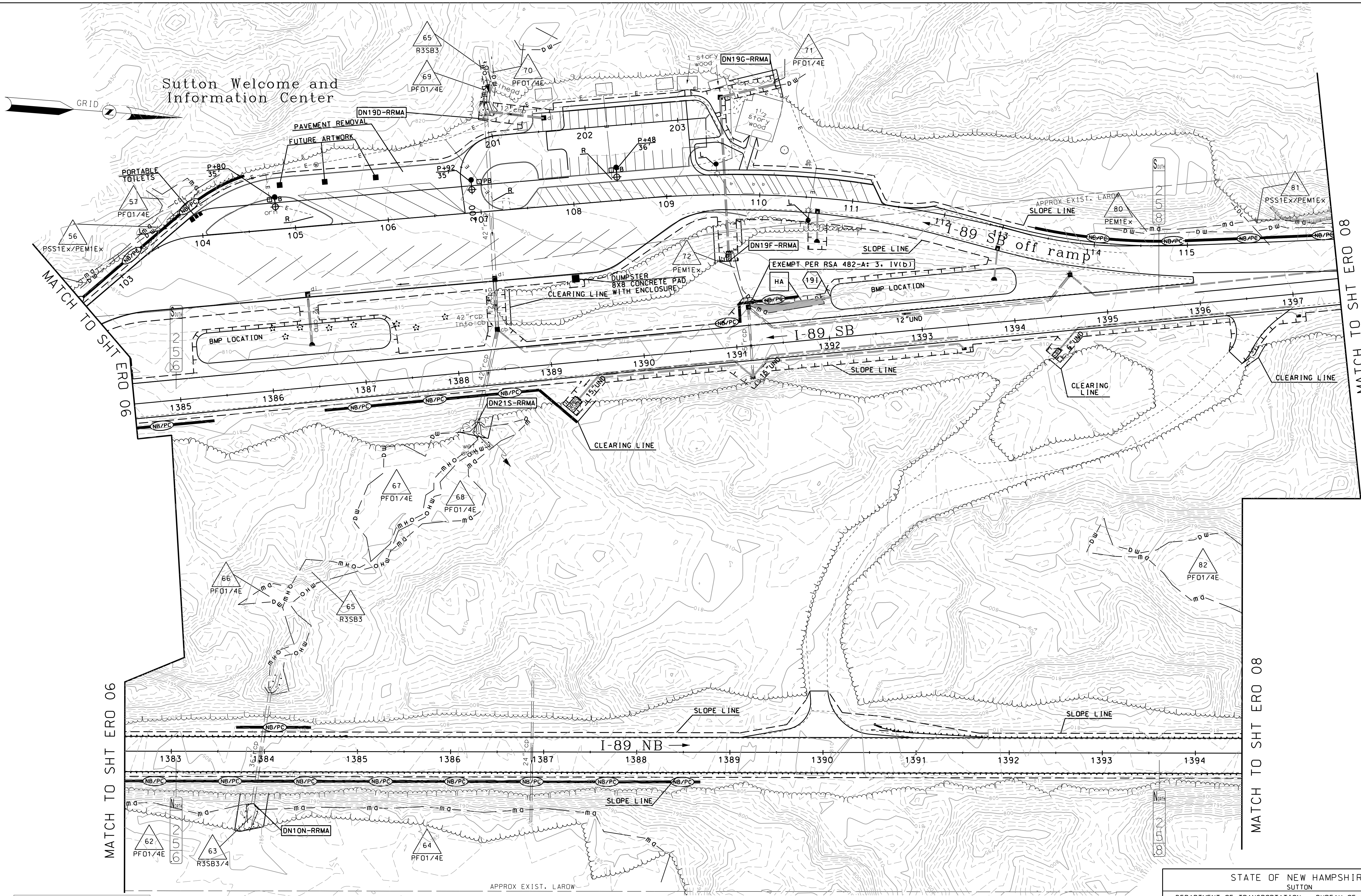


NO IMPACTS ON THIS SHEET



STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
EROSION CONTROL PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 06	42419eroplans	42419	32	47

SDR PROCESSED	NAME1	DATE	DATE1	STATION	DESCRIPTION
	NEW DESIGN	CW	03/21		
SHEET CHECKED	CNS	DATE	03/21		
	AS BUILT DETAILS				

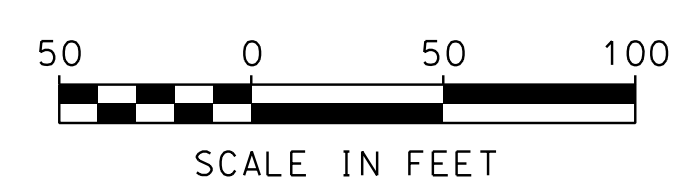
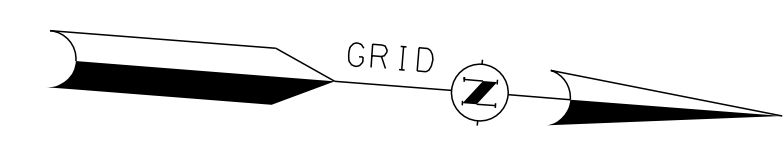
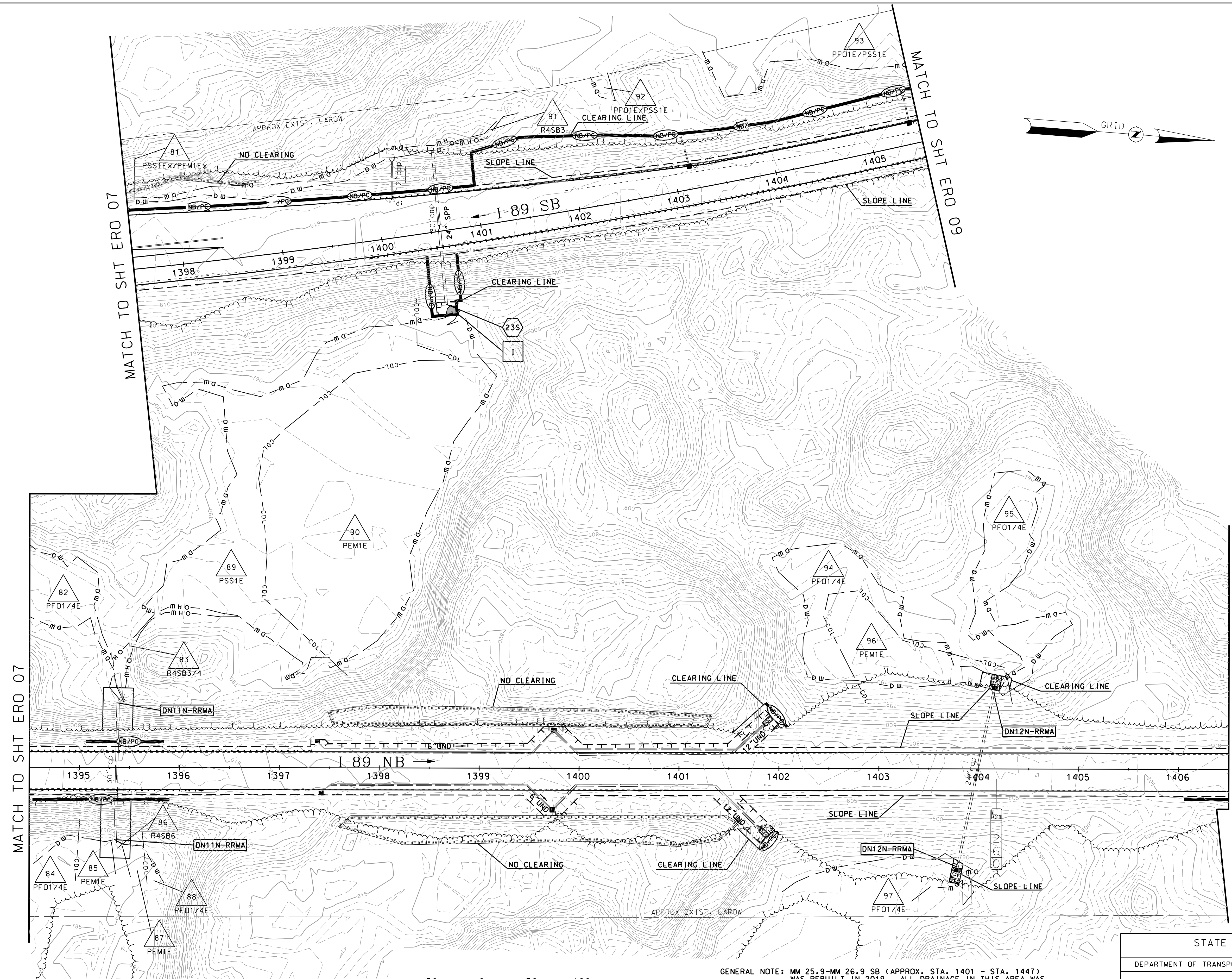


NO IMPACTS ON THIS SHEET



STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
EROSION CONTROL PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 07	42419eroplans	42419	33	47

SDR PROCESSED NAME1		DATE	DATE1	REVISIONS AFTER PROPOSAL	
NEW DESIGN CWW		DATE	03/21	STATION	DESCRIPTION
SHEET CHECKED CNS		DATE	03/21	DATE	
AS BUILT DETAILS		DATE		NUMBER	



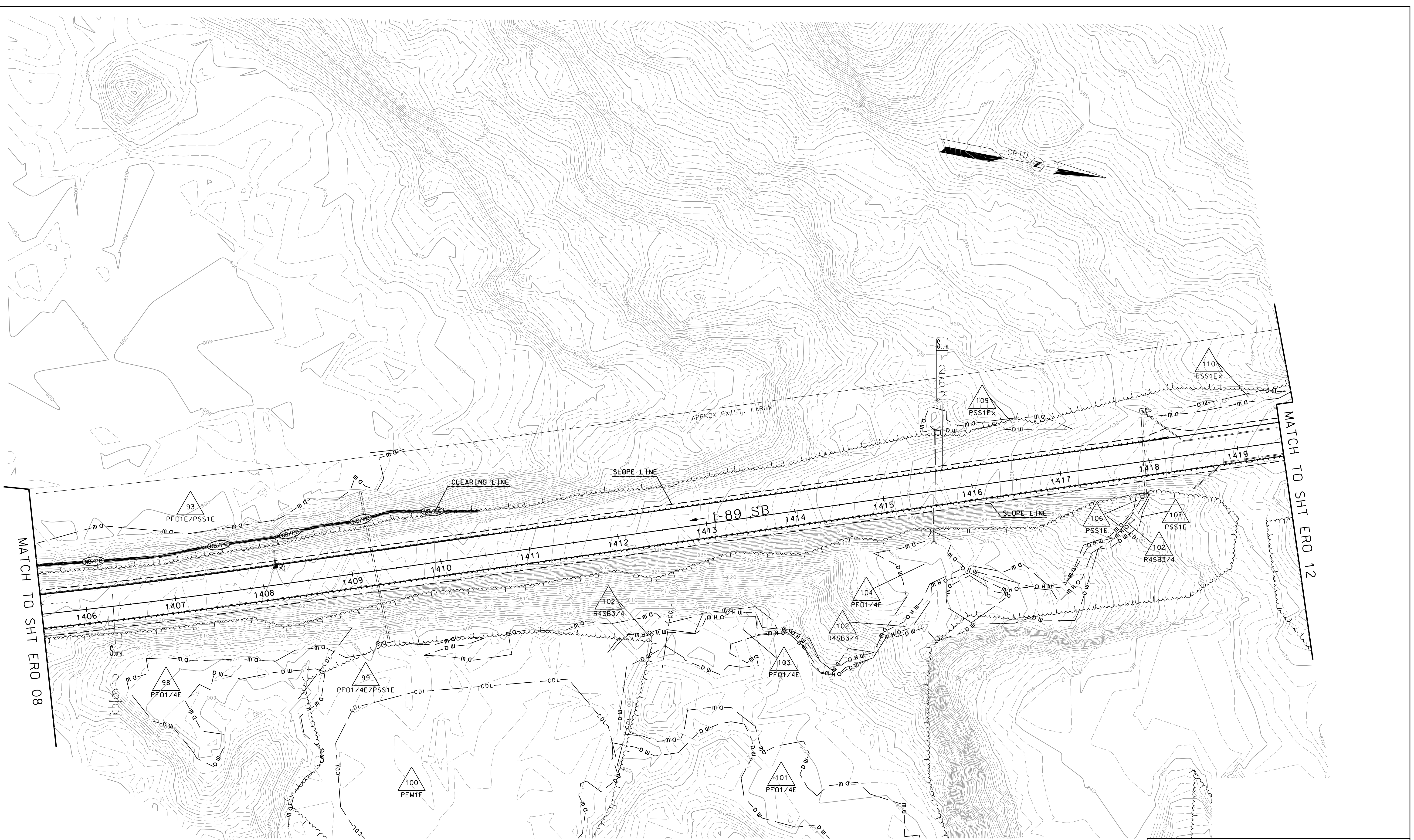
GENERAL NOTE: MM 25.9-MM 26.9 SB (APPROX. STA. 1401 - STA. 1447) WAS REBUILT IN 2019. ALL DRAINAGE IN THIS AREA WAS UPGRADED AT THAT TIME AND NO ADDITIONAL WORK IS REQUIRED.

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

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 08	42419eroplans	42419	34	47

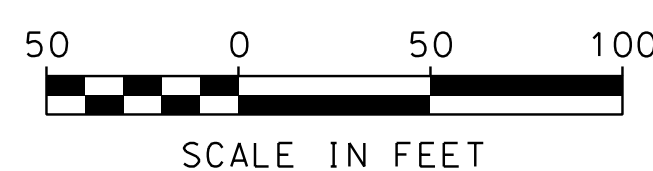
SDR PROCESSED NAME1		DATE	DATE1
NEW DESIGN CWW		DATE	03/21
SHEET CHECKED CNS		DATE	03/21
AS BUILT DETAILS		DATE	
NUMBER	DATE	STATION	STATION
REVISIONS AFTER PROPOSAL			
			DESCRIPTION



MATCH TO SHT ERO 08

MATCH TO SHT ERO 12

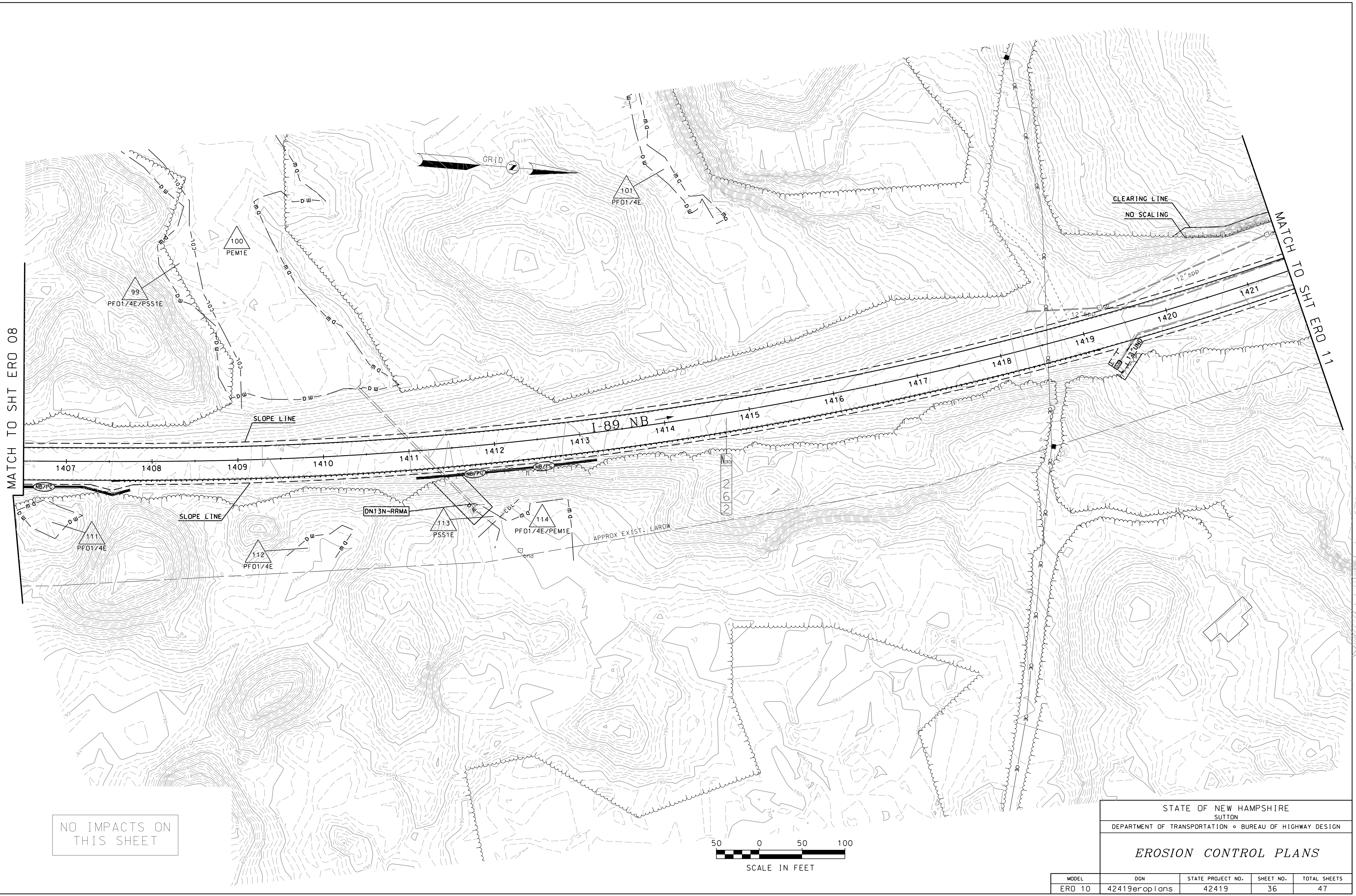
NO IMPACTS ON THIS SHEET



GENERAL NOTE: MM 25.9-MM 26.9 SB (APPROX. STA. 1401 - STA. 1447) WAS REBUILT IN 2019. ALL DRAINAGE IN THIS AREA WAS UPGRADED AT THAT TIME AND NO ADDITIONAL WORK IS REQUIRED.

STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
EROSION CONTROL PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 09	42419eroplans	42419	35	47

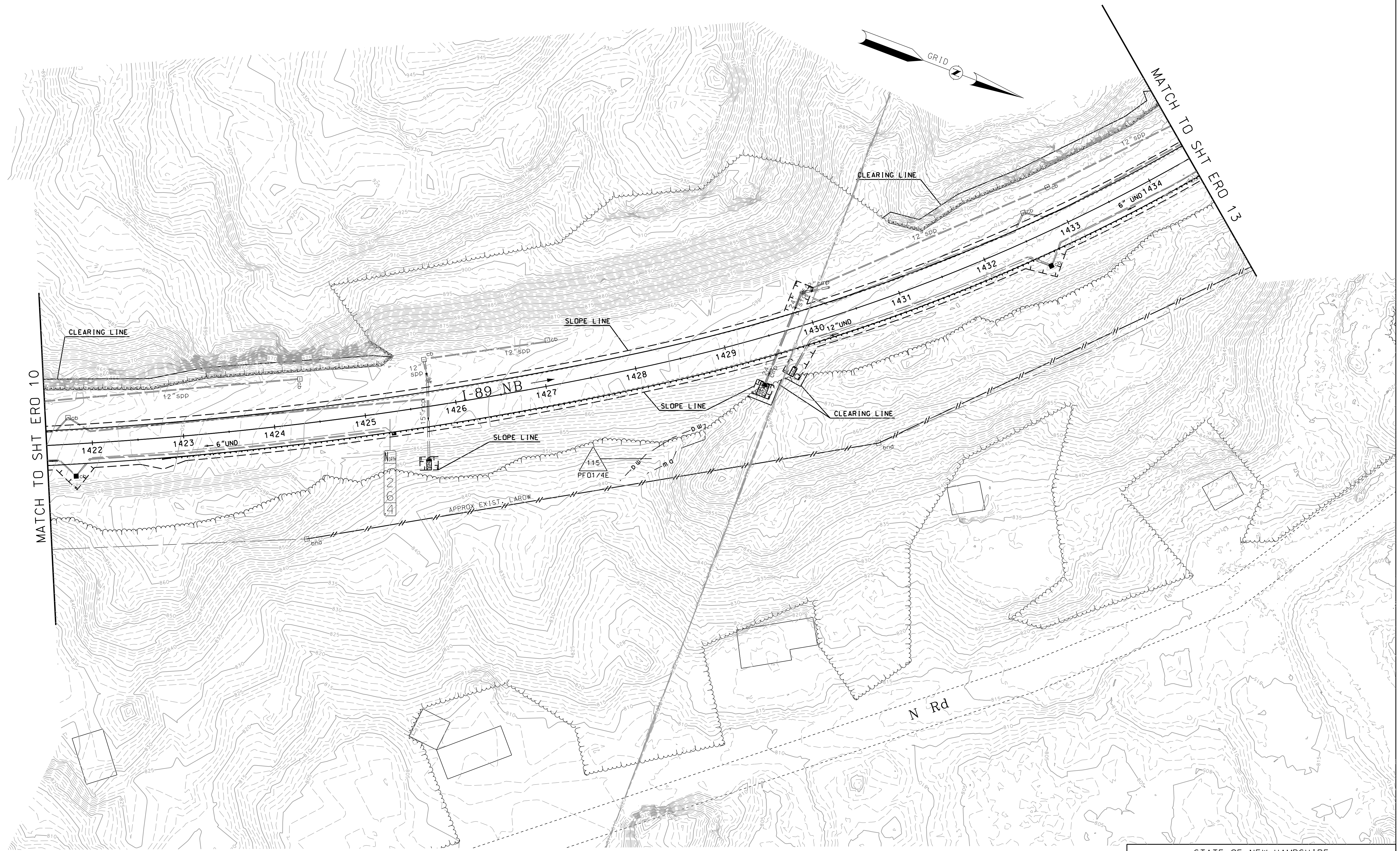
SDR PROCESSED NAME1	DATE DATE1	REVISIONS AFTER PROPOSAL	STATION
NEW DESIGN CWW	DATE 03/21		
SHEET CHECKED CNS	DATE 03/21		
AS BUILT DETAILS	DATE		



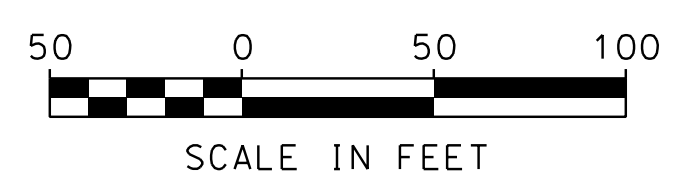
NO IMPACTS ON THIS SHEET

STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
EROSION CONTROL PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 10	42419eroplans	42419	36	47

SDR PROCESSED		NAME1	DATE	DATE1
NEW DESIGN		CWW	DATE	03/21
SHEET CHECKED		CNS	DATE	03/21
AS BUILT DETAILS			DATE	
REVISIONS AFTER PROPOSAL		STATION	DATE	DESCRIPTION

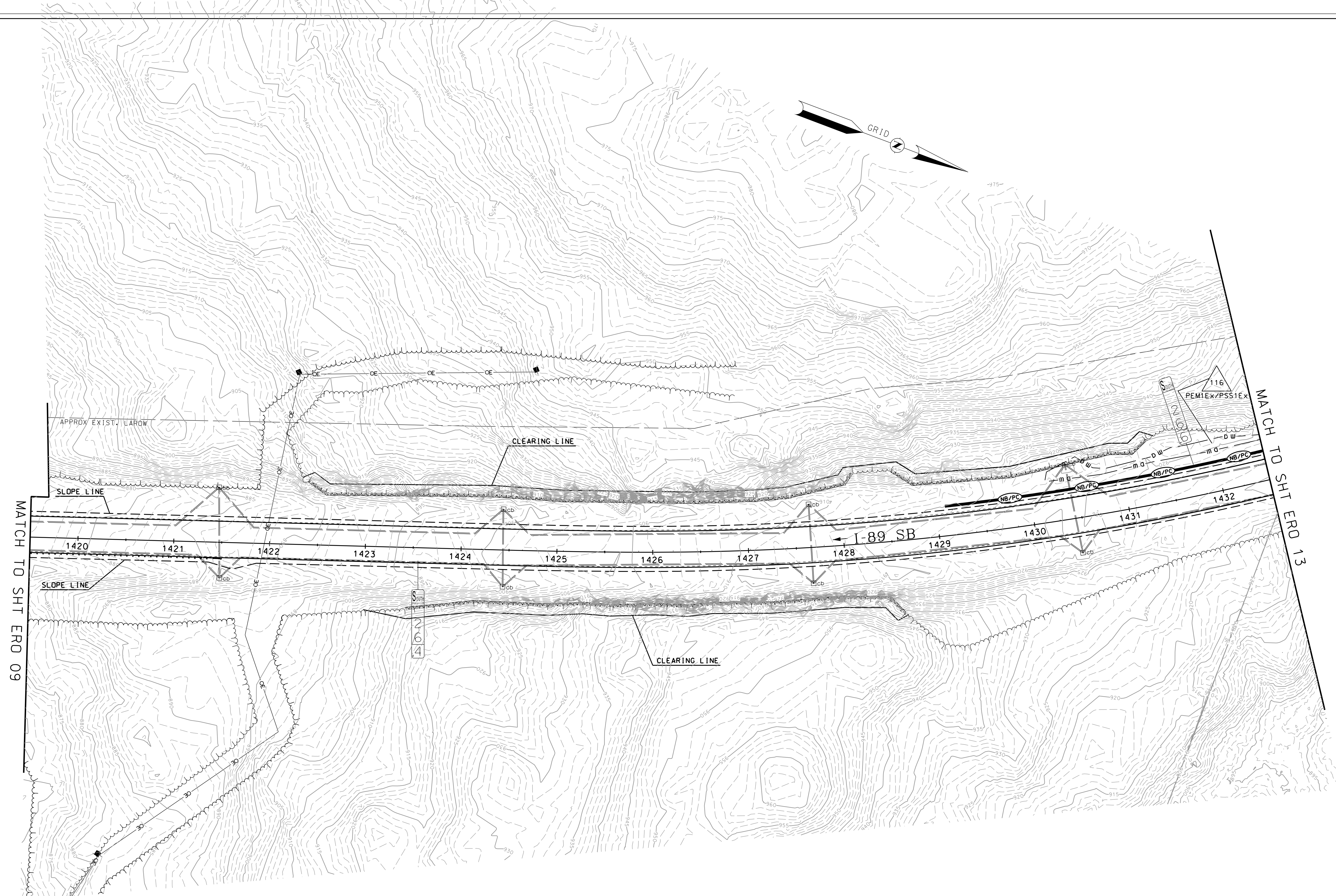


NO IMPACTS ON THIS SHEET



STATE OF NEW HAMPSHIRE				
SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
EROSION CONTROL PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 11	42419eroplans	42419	37	47

SDR PROCESSED NAME1		DATE	DATE1	REVISIONS AFTER PROPOSAL	
NEW DESIGN CWW		DATE	03/21	STATION	DESCRIPTION
SHEET CHECKED CNS		DATE	03/21	DATE	
AS BUILT DETAILS		DATE		NUMBER	



NO IMPACTS ON THIS SHEET

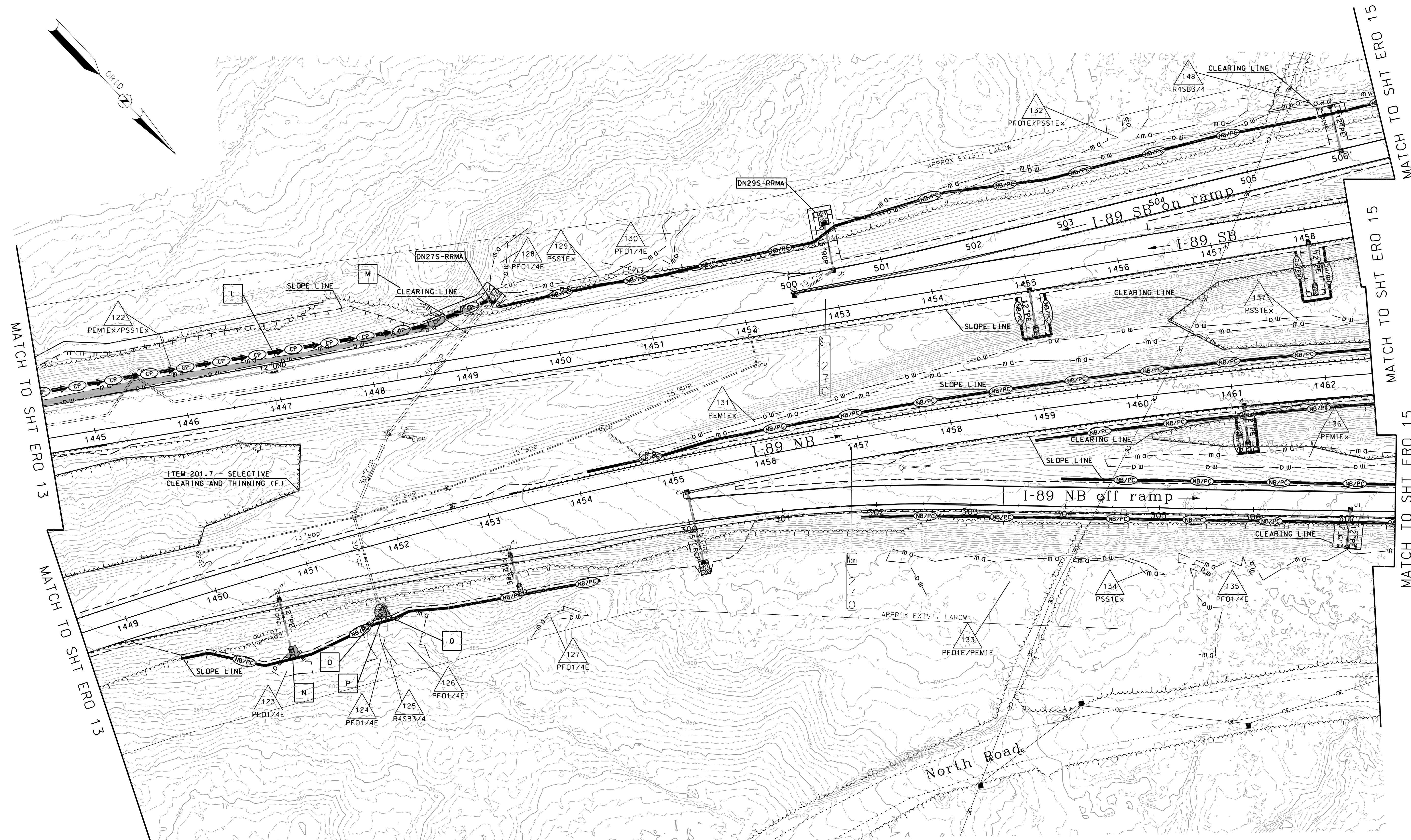


GENERAL NOTE: MM 25.9-MM 26.9 SB (APPROX. STA. 1401 - STA. 1447) WAS REBUILT IN 2019. ALL DRAINAGE IN THIS AREA WAS UPGRADED AT THAT TIME AND NO ADDITIONAL WORK IS REQUIRED.

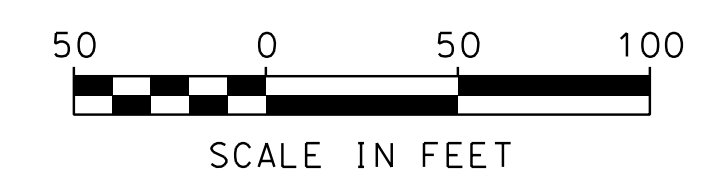
STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
EROSION CONTROL PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 12	42419eroplans	42419	38	47

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION



GENERAL NOTE: ROUTINE ROADWAY MAINTENANCE ACTIVITIES (RRMA) WILL BE SUBMITTED SEPARATELY AND BMP'S FOR EROSION CONTROL ASSOCIATED WITH THOSE ACTIVITIES WILL BE IMPLEMENTED WHEN THE WORK IS PERFORMED.



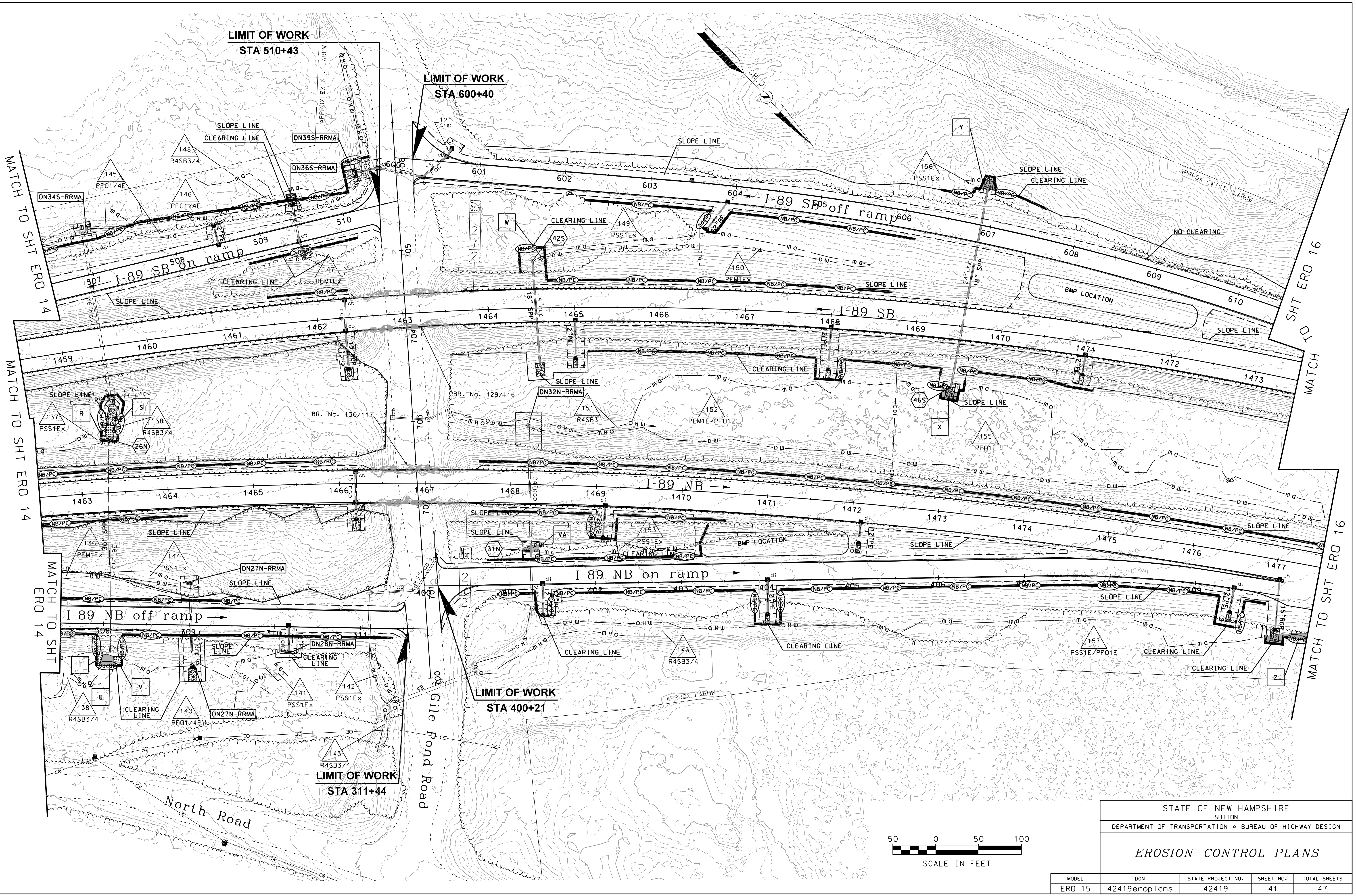
GENERAL NOTE: MM 25.9-MM 26.9 SB (APPROX. STA. 1401 - STA. 1447) WAS REBUILT IN 2019. ALL DRAINAGE IN THIS AREA WAS UPGRADED AT THAT TIME AND NO ADDITIONAL WORK IS REQUIRED.

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

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 14	42419eroplans	42419	40	47

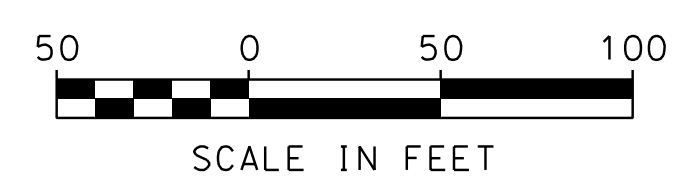
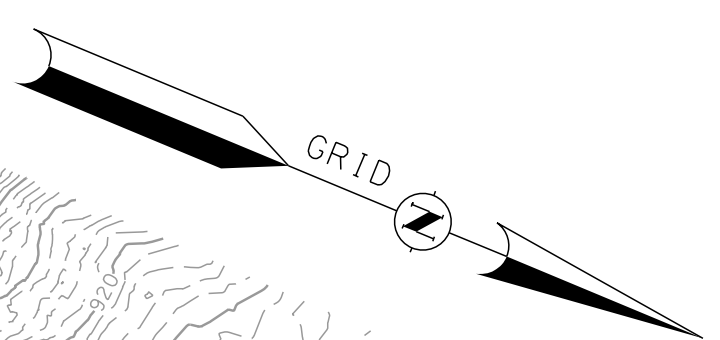
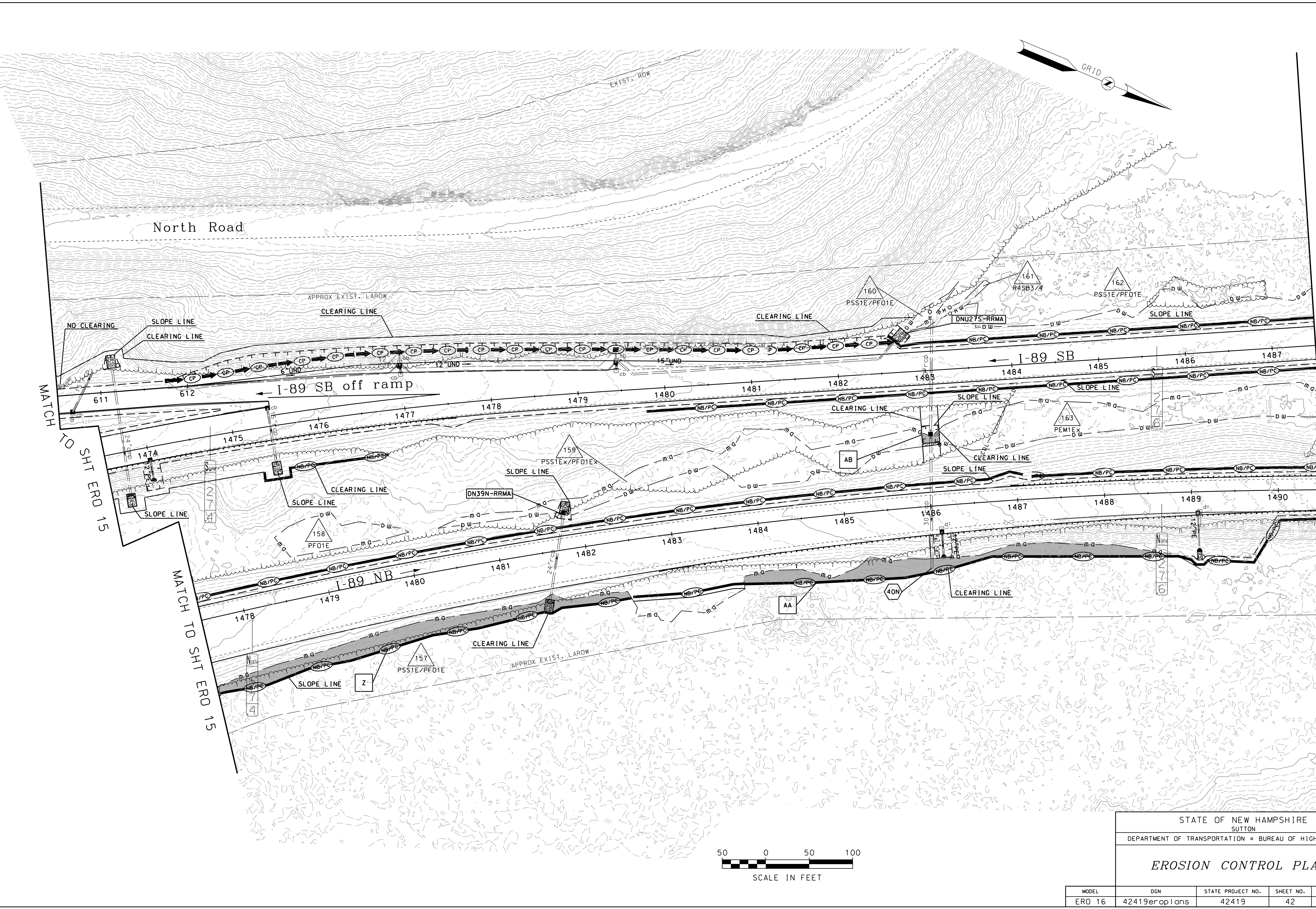
SDR PROCESSED NAME1	DATE	DATE1	DATE	DATE1
NEW DESIGN CWM	DATE	03/21	DATE	03/21
SHEET CHECKED CNS	DATE	03/21	DATE	03/21
AS BUILT DETAILS	DATE		DATE	



STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
EROSION CONTROL PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 15	42419eroplans	42419	41	47

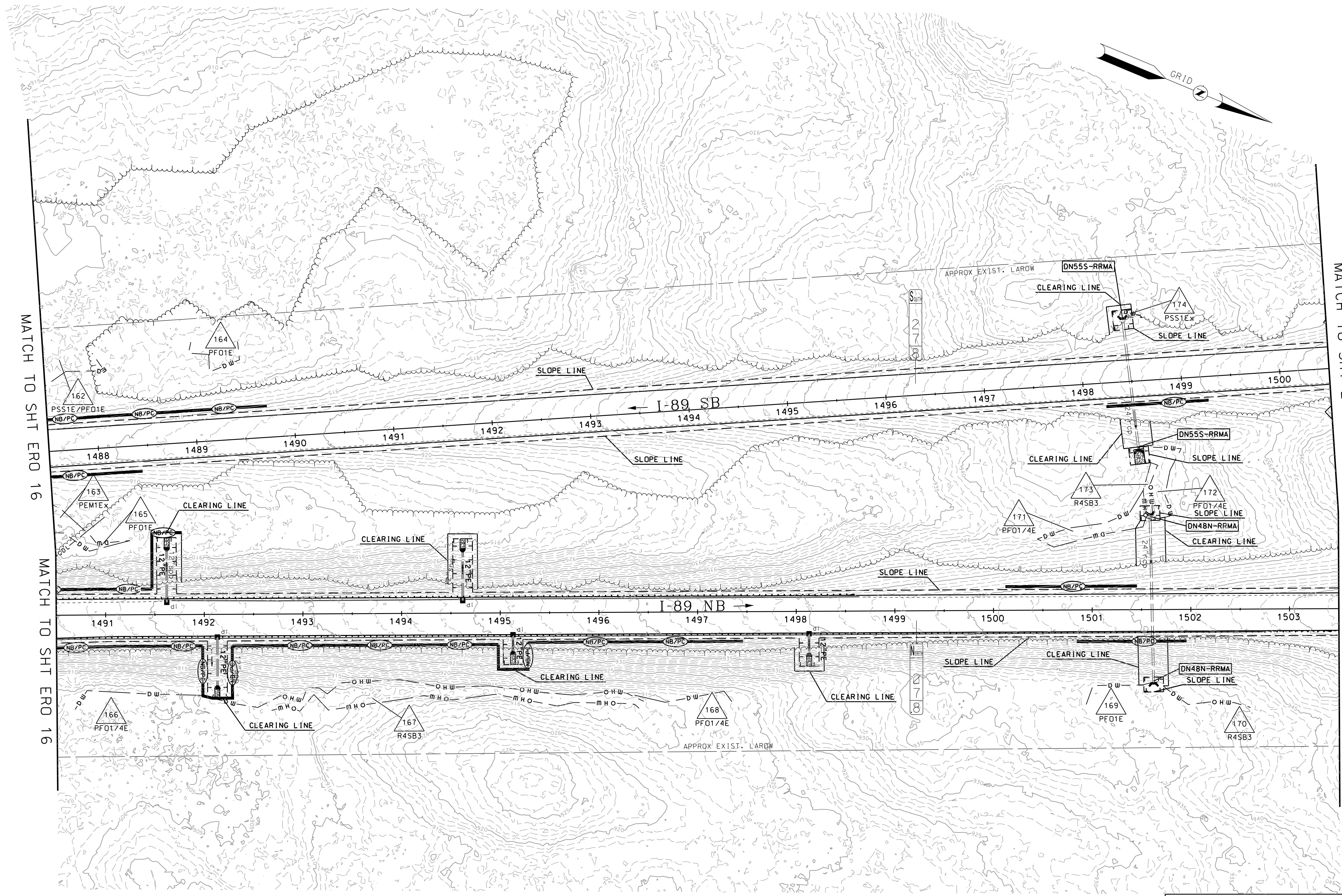
SDR PROCESSED NAME1	DATE DATE1
NEW DESIGN CWW	DATE 03/21
SHEET CHECKED CNS	DATE 03/21
AS BUILT DETAILS	DATE

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION



STATE OF NEW HAMPSHIRE				
SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
EROSION CONTROL PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 16	42419eroplans	42419	42	47

SDR PROCESSED NAME1		DATE	DATE1
NEW DESIGN CWW		DATE	03/21
SHEET CHECKED CNS		DATE	03/21
AS BUILT DETAILS		DATE	
NUMBER	DATE	STATION	DESCRIPTION



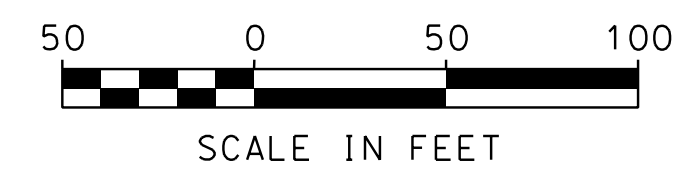
MATCH TO SHT ERO 16

MATCH TO SHT ERO 16

MATCH TO SHT ERO 18

MATCH TO SHT ERO 18

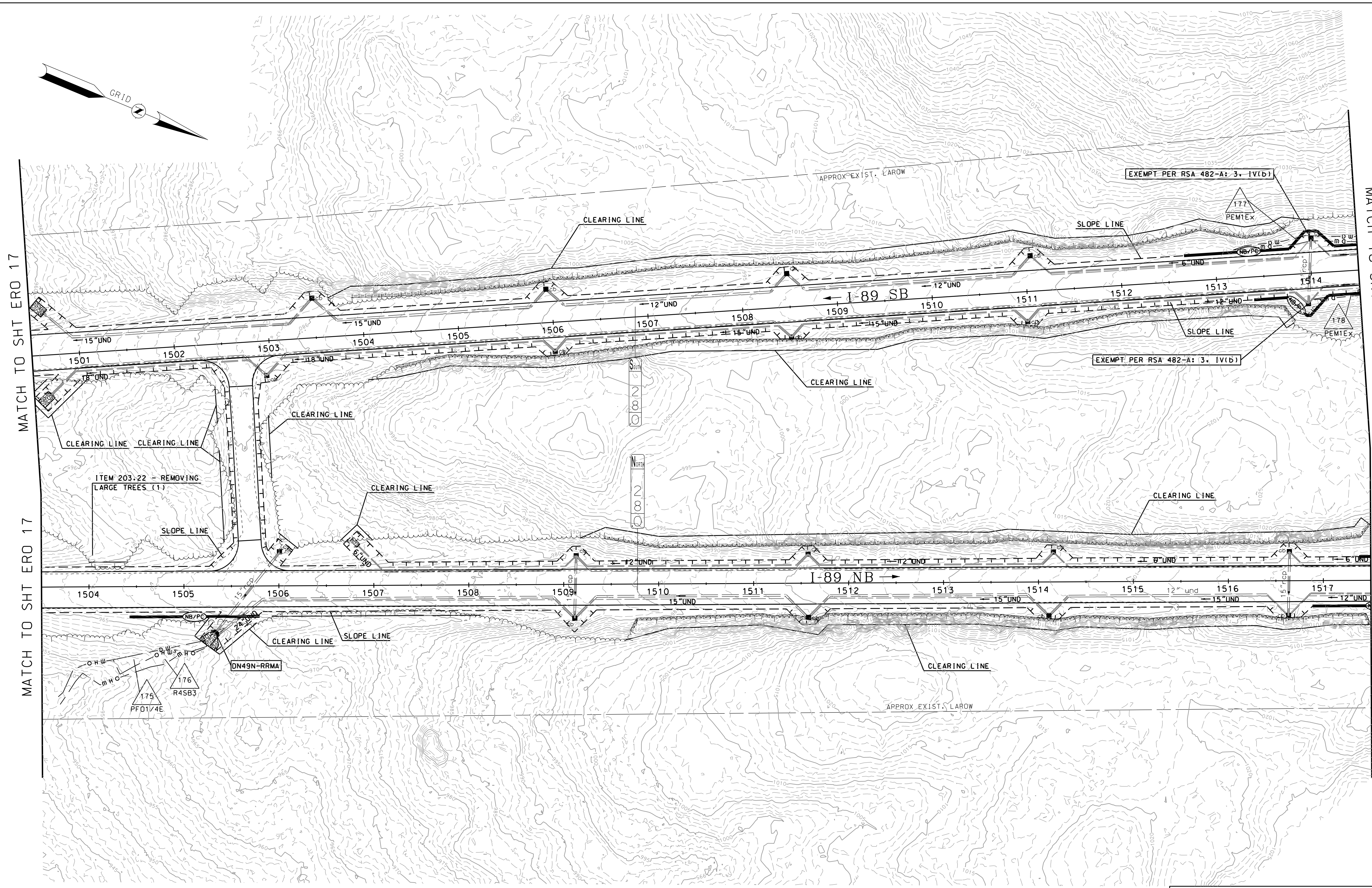
NO IMPACTS ON THIS SHEET



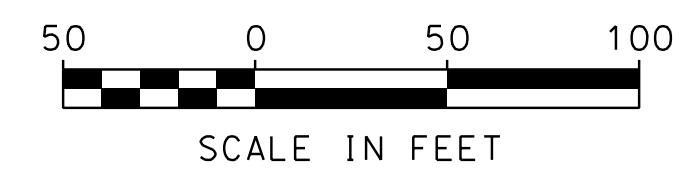
STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
EROSION CONTROL PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 17	42419eroplans	42419	43	47

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION



NO IMPACTS ON THIS SHEET



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

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 18	42419eroplans	42419	44	47

MATCH TO SHT ERO 17

MATCH TO SHT ERO 17

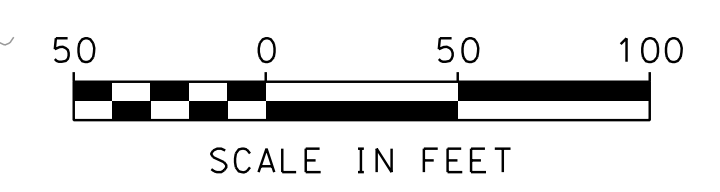
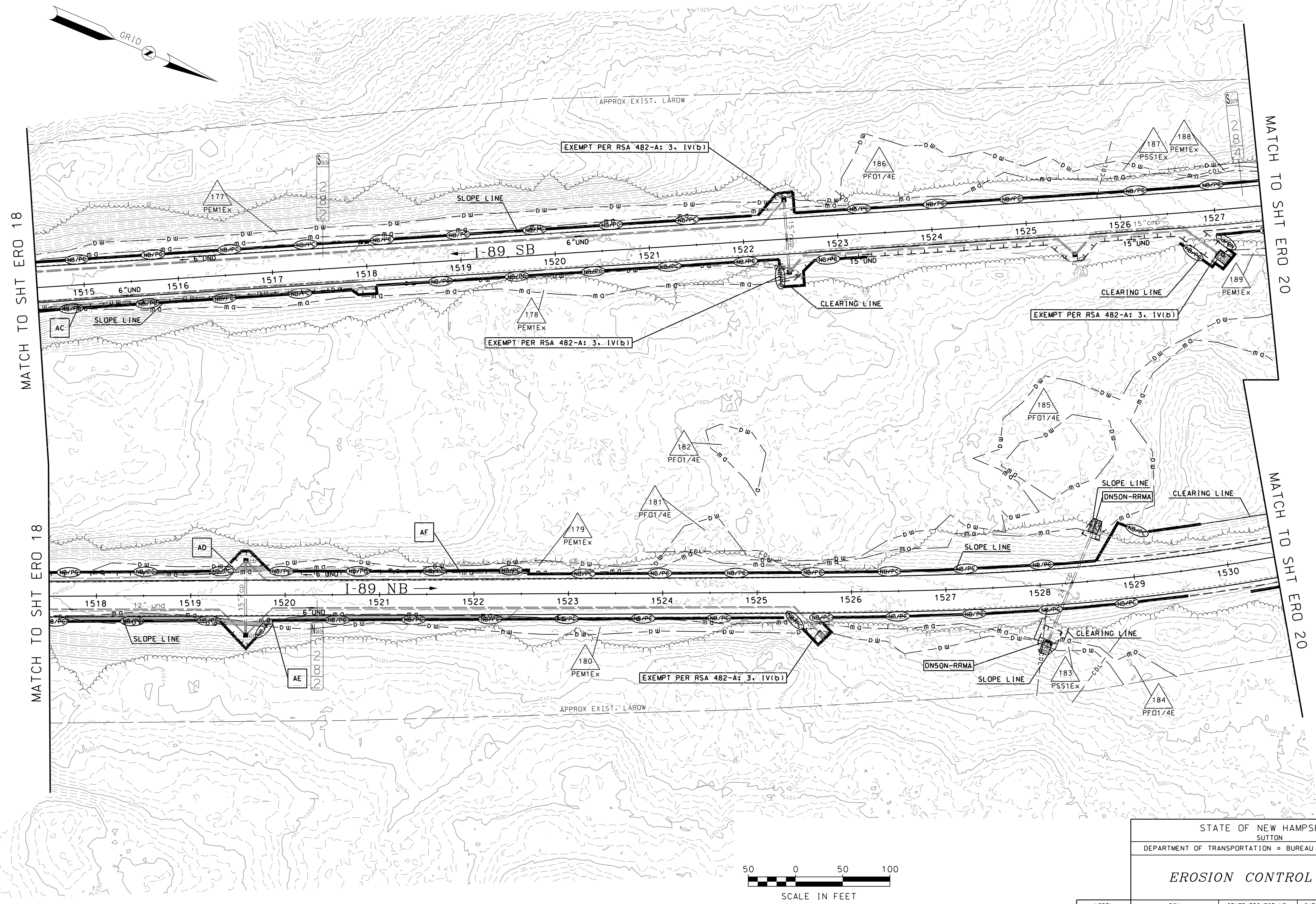
MATCH TO SHT ERO 19

MATCH TO SHT ERO 19

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	DESCRIPTION

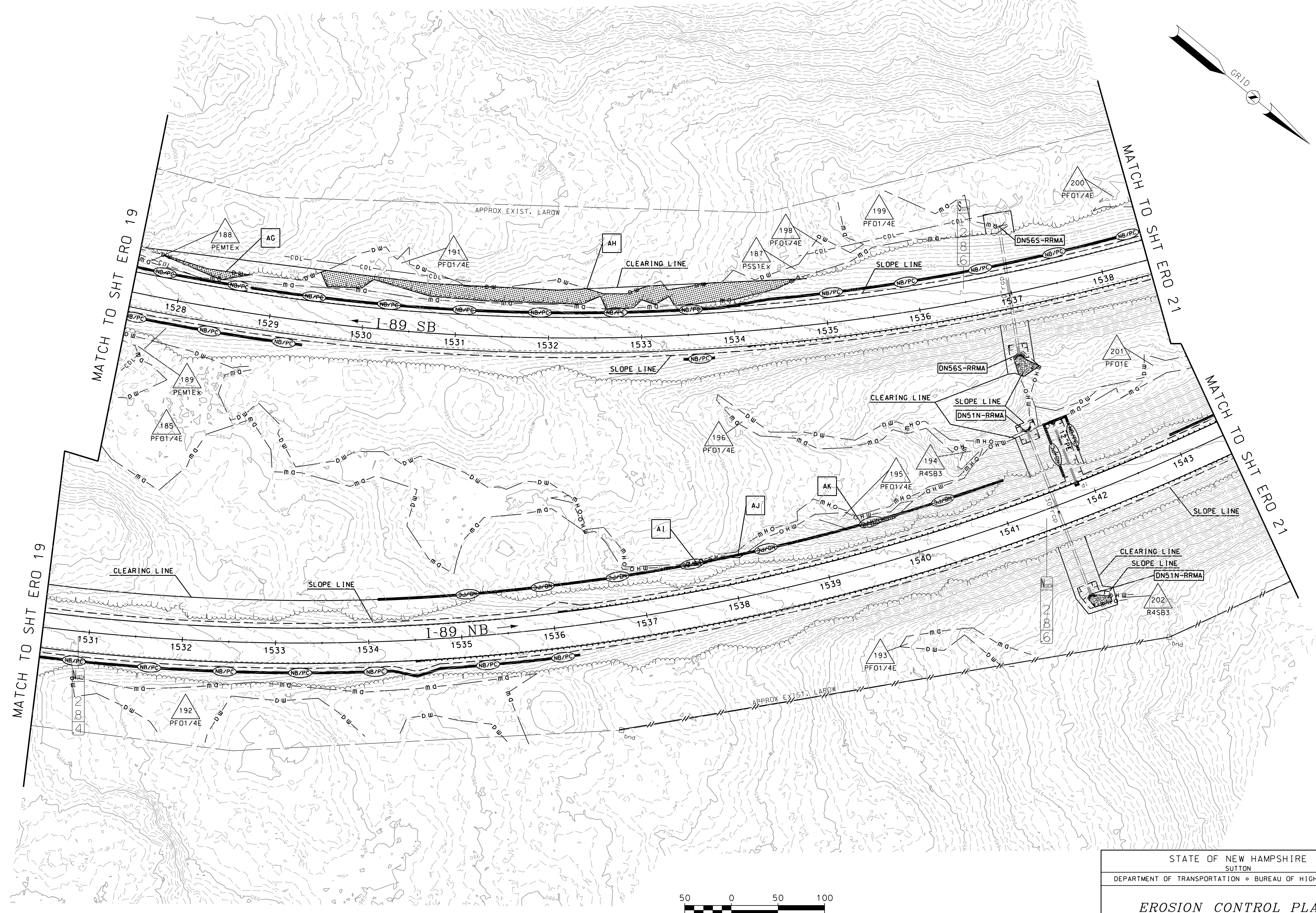
NUMBER	DATE	STATION



STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
EROSION CONTROL PLANS				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 19	42419eroplans	42419	45	47

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

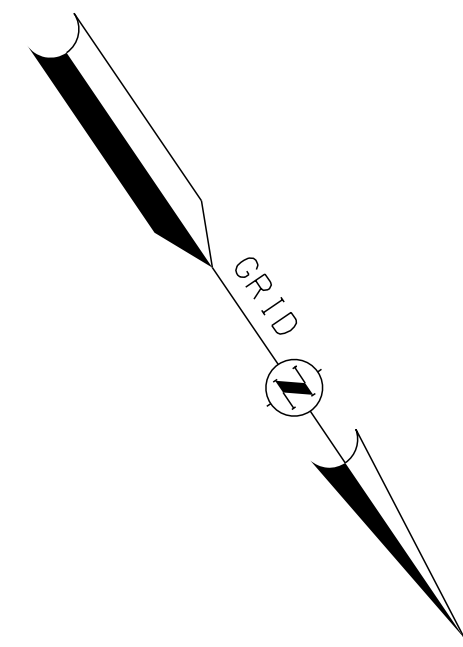
REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION



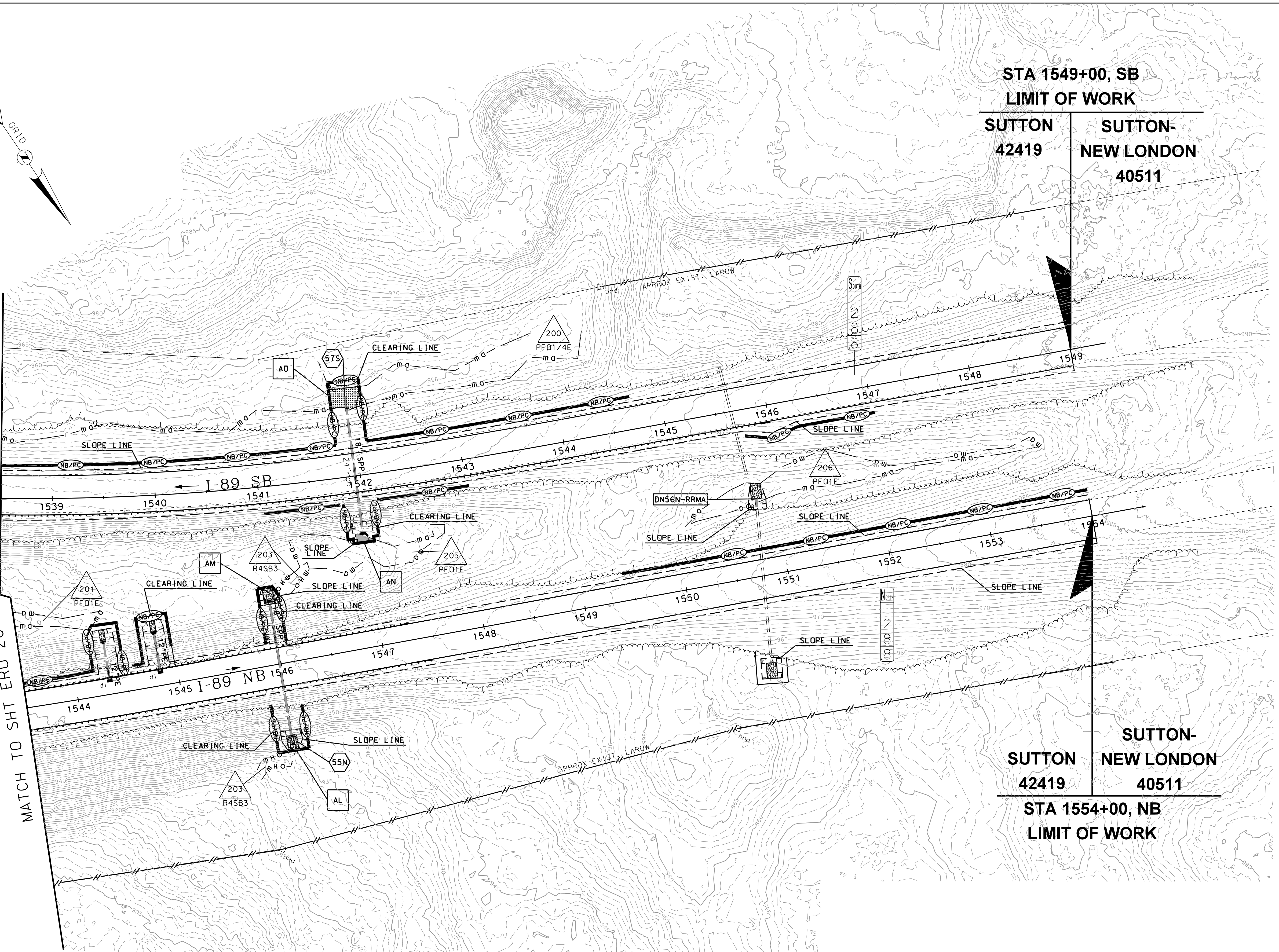
STATE OF NEW HAMPSHIRE
SUTTON
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 20	42419eroplans	42419	46	47



MATCH TO SHT ERO 20



STA 1549+00, SB
LIMIT OF WORK

SUTTON 42419 SUTTON-NEW LONDON 40511

SUTTON-NEW LONDON 40511
SUTTON 42419

STA 1554+00, NB
LIMIT OF WORK

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	CW	DATE	03/21
SHEET CHECKED	CNS	DATE	03/21
AS BUILT DETAILS		DATE	

GENERAL NOTE: ROUTINE ROADWAY MAINTENANCE ACTIVITIES (RRMA) WILL BE SUBMITTED SEPARATELY AND BMP'S FOR EROSION CONTROL ASSOCIATED WITH THOSE ACTIVITIES WILL BE IMPLEMENTED WHEN THE WORK IS PERFORMED.



STATE OF NEW HAMPSHIRE SUTTON				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
<i>EROSION CONTROL PLANS</i>				
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERO 21	42419eroplans	42419	47	47