

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

**DATE:** June 23, 2016

**FROM:** Matt Urban  
Wetlands Program Manager

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

**SUBJECT** Dredge & Fill Application  
Weare, 40882  
**(Request for Expedited Review)**

Bureau of  
Environment

**TO** Gino Infascelli, 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 Highway Maintenance District 5 for the subject minor impact project. This project is classified as minor per Env-Wt 303.03(l). The project is located on NH Route 77 in the Town of Weare, NH. The proposed work consists of replacing a failing retaining wall and replacement of an 18" crossing with a 36" crossing. A more detailed discussion has been provided in an executive summary here within.

The Department would like to request that this review be expedited to meet our safety concerns and project scheduling timeframe.

This project was not reviewed at a monthly natural resource agency coordination meeting.

This project will require a one-time mitigation payment into the Arm-Fund in the amount of \$15,840.

A payment voucher has been processed for this application (Voucher #446221) in the amount of \$329.

The lead people to contact for this project are Brian Desfosses, District 5 (666-3336 or gclifford@dot.state.nh.us) or Matt Urban, Wetlands Program Manager, Bureau of Environment (271-3226 or murban@dot.state.nh.us).

If and when this application meets with the approval of the Bureau, please send the permit directly to Matt Urban, Wetlands Program Manager, Bureau of Environment.

MRU: mru  
Enclosures  
cc:  
BOE, Original  
Town of Weare (4 Copies via certified mail)  
Piscataquog River Local Advisory Committee (via certified mail)  
Edna Feighner, NH Division of Historic Resources

Carol Henderson, NH Fish & Game (Via Electronic Notification)  
Maria Tur, US Fish & Wildlife (Via Electronic Notification)  
Mark Kern, US Environmental Protection Agency (Via Electronic Notification)  
Michael Hicks, US Army Corp of Engineers (Via Electronic Notification)  
Brian Desfosses, District 5 (Via Electronic Notification)

# **WETLANDS PERMIT REQUEST**

**NH ROUTE 77, WEARE**

**INCLUDING WORK ON:**

**MAP 202, LOT 150 & MAP 202, LOT 149**

**APPLICANT:**

**NHDOT DISTRICT 5**

**16 EAST POINT DRIVE**

**BEDFORD, NH 03110**

**ATTN: BRIAN DESFOSSES, P.E.**

## **Executive Summary**

This application seeks the approval of a NHDES Dredge and Fill permit in order to impact areas adjacent to the Piscataquog River. These construction activities are necessary for the reconstruction of a retaining wall that structurally supports NH Route 77. Additionally, during these construction activities, an existing, partially failed culvert of irregular dimension that crosses NH Route 77 will be replaced with a 36" Reinforced Concrete Pipe (RCP).

### **Expedited Permit Request**

DOT District 5 respectfully requests that this permit be reviewed as an expedited permit as the road shoulder is currently sloughing into the river. The existing retaining wall is in a moderate state of failure, and in some areas, the road embankment is being stabilized by large trees that are growing on an unstable slope. We are concerned as a District for the safety of the travelling public as an unfortunate traveler pulling a foot or two off the highway due to an emergency or other situation would likely cause catastrophic slope failure and lose their life.

The original expedited minimum impact permit was approved in 2004. After ordering the construction materials, further analysis was completed by the NHDOT Geotechnical Section. The summarized results of their analysis are enclosed at the end of this package. Through their analysis, they found the original permitted design to be unsatisfactory and potentially unsafe in several ways. Due to this design change, the plans had to be redesigned and reapproved. At the same time, political issues in Town blocked the repair effort as it was felt that the revised traffic patterns during construction would unreasonably burden some local property and business owners.

Now, in 2016, it is necessary to complete this important work. In the unfortunate event of a hurricane, flood, or an everyday occurrence as described above, the highway could fail in this area and one or more members of the travelling public could be seriously hurt or killed. Also, it is much more advantageous to complete this work in a safe and controlled manner rather than to wait for the highway to actually fail and release significant amounts of sediment into the Piscataquog River. With this in mind, we are requesting the expedited permit so that construction activities can occur during August, when flow rates in the river are low, school bus traffic is non-existent, and construction should be able to be undertaken and completed in an accelerated manner so that the road can be closed, deconstructed, reconstructed, and reopened as soon as possible. Currently, we estimate the duration of the construction to be 3-4 weeks.

### **Culvert Crossing Impacts**

The first impact will be to the area of the existing, irregular granite box culvert. Impacts are expected at the inlet and outlet of the culvert. At the inlet end, the existing culvert and headwall will need to be removed, and the new pipe placed. A new headwall will then either be cast in place or purchased as a precast unit and installed. At the outlet end, the new culvert will be laid and a new headwall constructed at the outlet (either CIP or precast). Trees will be cut at both the inlet and outlet as necessary to accommodate construction equipment and the proposed features, as required. As the area drained by the existing culvert is only approximately 43.3 acres, the stream crossing is classified as a Tier 1 crossing. This project will adhere to Env-Wt 904.07 section of the stream crossing rules.

The total impact to the upstream crossing area is 115 square feet (including 15 sf. of channel impact), which will allow for the placement of the pipe and headwall. A total of 5 linear feet of channel thread is proposed to be impacted.

### **River Bank Impacts**

The second impact will be to the area of the riverbank along the north side of the Piscataquog River. Impacts are necessary to this riverbank as the riverbank and highway embankment are essentially integral. In order to excavate the highway and remove and replace the existing retaining wall, the riverbank has to be impacted. Once the new wall is constructed, this feature will be connected and made integral with the downstream end of the culvert crossing described above. Downstream of the culvert outlet and headwall, a small stone riprap apron will be constructed to absorb energy and resist riverbank erosion. Once the wall construction is underway, a 3-foot wide grassed panel will be constructed at the toe of the wall to resist lateral movement, and also to allow for future inspection and maintenance of the wall. A slope will then be created that closely models the existing slope on the north side of the river. Impacts to trees, brush, and ground cover in the area of the riverbank will be limited to the extent possible to avoid future erosion and sedimentation issues.

As we are removing an existing length of 79 linear feet of retaining wall, we have subtracted this existing impact from the 140 linear feet of impact shown on the proposed plan. The net impact is therefore 61 linear feet, and together with the 5 linear feet of impact to the channel upstream of the proposed 36" RCP, a net total of 66 linear feet of impact is shown for mitigation purposes.

A total of 1530 sf. of bank impacts are proposed above the ordinary high water mark, mostly from re-grading the area. The area immediately surrounding the cross-culvert is proposed to be covered with riprap for stability, while the remainder areas are proposed to be stabilized with grass cover (via hydroseeding).

### **Sensitive Species**

The NH Natural Heritage Bureau has reported back that sensitive species have been identified in the area. The sensitive species identified were the Brook Floater, and three species of turtles, namely Blanding's Turtle, the Spotted Turtle, and the Wood Turtle. In consultation with Kim Tuttle of NH Fish & Game, no impacts to any of these sensitive species are expected so long as sediment control measures are implemented as planned.

### **Designated River**

It should be noted that the Piscataquog River is a Designated River. No impacts to the river are expected in this application or during the construction process.

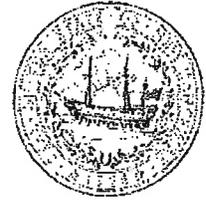
**WETLANDS  
PERMIT  
APPLICATION**



# WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau  
Land Resources Management

Check the status of your application: [www.des.nh.gov/onestop](http://www.des.nh.gov/onestop)



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

|  |  |  |            |
|--|--|--|------------|
| <i>Administrative<br/>Use<br/>Only</i> | <i>Administrative<br/>Use<br/>Only</i> | <i>Administrative<br/>Use<br/>Only</i> | File No.:  |
|  |  |  | Check No.: |
|  |  |  | Amount:    |
|  |  |  | Initials:  |

**1. REVIEW TIME:**  
Indicate your Review Time below. Refer to Guidance Document A for instructions.

Standard Review (Minimum, Minor or Major Impact)       Expedited Review (Minimum Impact only)

**2. PROJECT LOCATION:**  
Separate applications must be filed with each municipality that jurisdictional impacts will occur in.

ADDRESS: **186 Route 77, Weare, NH**      TOWN/CITY: **Weare**

TAX MAP: **202**      BLOCK:      LOT: **149, 150**      UNIT:

USGS TOPO MAP WATERBODY NAME: **Piscataquog River**       NA      STREAM WATERSHED SIZE: **43.3Ac.**       NA

LOCATION COORDINATES (If known): **43d6'50.4" / 71d44'17.58"**       Latitude/Longitude        
 UTM       State Plane

**3. PROJECT DESCRIPTION:**  
Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. DO NOT reply "See Attached" in the space provided below.

**Replace existing retaining wall that is reinforcing NH Route 77 on the south side of the road. Replace an existing culvert that drains water from the north to the south across Route 77, outletting just downstream of the proposed retaining wall (on lots 202-149 and 202-150). The existing wall will be replaced in approximately its existing location, which is the Right-Of-Way boundary, and a small maintenance and observation path will be constructed at the toe.**

**4. SHORELINE FRONTAGE**

NA This lot has no shoreline frontage.      **SHORELINE FRONTAGE: 66 If net impacted (see plan)**

Shoreline frontage is calculated by determining the average of the distances of the actual natural navigable shoreline frontage and a straight line drawn between the property lines, both of which are measured at the normal high water line.

**5. RELATED PERMITS, ENFORCEMENT, EMERGENCY AUTHORIZATION, SHORELAND, ALTERATION OF TERRAIN, ETC...**

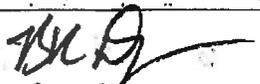
**Wetlands, Shoreland**

**6. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:**  
See the Instructions, & Required Attachments document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID:    **NHB 16 - 1109**

b.  Designated River the project is in ¼ miles of: **Piscataquog River**; and  
 date a copy of the application was sent to the Local River Management Advisory Committee: Month: **6** Day: **24** Year: **16**

NA

|  |  |   |                        |
|--|--|---|------------------------|
| <b>7. APPLICANT INFORMATION (Desired permit holder)</b>  |  |   |                        |
| LAST NAME, FIRST NAME, M.I.: <b>Brian Desfosses</b>  |  |   |                        |
| TRUST / COMPANY NAME: <b>NHDOT District 5</b>  |  | MAILING ADDRESS: <b>16 East Point Drive</b>             |                        |
| TOWN/CITY: <b>Bedford</b>  |  | STATE: <b>NH</b>  | ZIP CODE: <b>03110</b> |
| EMAIL or FAX: <b>603-485-9825</b>  |  | PHONE: <b>603-666-3336</b>                              |                        |
| ELECTRONIC COMMUNICATION: By initialing here: <b>BAD</b> , I hereby authorize NHDES to communicate all matters relative to this application electronically   |  |   |                        |
| <b>8. PROPERTY OWNER INFORMATION (If different than applicant)</b>   |  |   |                        |
| LAST NAME, FIRST NAME, M.I.:   |  |   |                        |
| TRUST / COMPANY NAME:  |  | MAILING ADDRESS:  |                        |
| TOWN/CITY:   |  | STATE:  | ZIP CODE:              |
| EMAIL or FAX:  |  | PHONE:  |                        |
| ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically  |  |   |                        |
| <b>9. AUTHORIZED AGENT INFORMATION</b>   |  |   |                        |
| LAST NAME, FIRST NAME, M.I.: <b>Matt Urban</b>   |  | COMPANY NAME: <b>NHDOT</b>                              |                        |
| MAILING ADDRESS: <b>Hazen Drive</b>  |  |   |                        |
| TOWN/CITY: <b>Concord</b>  |  | STATE: <b>NH</b>  | ZIP CODE: <b>03301</b> |
| EMAIL or FAX:  |  | PHONE: <b>603-271-7969</b>                              |                        |
| ELECTRONIC COMMUNICATION: By initialing here  , I hereby authorize NHDES to communicate all matters relative to this application electronically   |  |   |                        |
| <b>10. PROPERTY OWNER SIGNATURE:</b>   |  |   |                        |
| See the Instructions & Required Attachments document for clarification of the below statements   |  |   |                        |
| By signing the application, I am certifying that:  |  |   |                        |
| <ol style="list-style-type: none"> <li>1. I authorize the applicant and/or agent indicated on this form to act in my behalf in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.</li> <li>2. I have reviewed and submitted information &amp; attachments outlined in the Instructions and Required Attachment document.</li> <li>3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.</li> <li>4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.</li> <li>5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.</li> <li>6. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.47.</li> <li>7. I have submitted a Request for Project Review (RPR) Form (<a href="http://www.nh.gov/nhdhr/review">www.nh.gov/nhdhr/review</a>) to the NH State Historic Preservation Officer (SHPO) at the NH Division of Historical Resources to identify the presence of historical/ archeological resources while coordinating with the lead federal agency for NHPA 106 compliance.</li> <li>8. I authorize NHDES and the municipal conservation commission to inspect the site of the proposed project.</li> <li>9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.</li> <li>10. I understand that the willful submission of falsified or misrepresented information to the New Hampshire Department of Environmental Services is a criminal act, which may result in legal action.</li> <li>11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.</li> <li>12. The mailing addresses I have provided are up to date and appropriate for receipt of NHDES correspondence. NHDES will not</li> </ol> |  |   |                        |
| <br>Property Owner Signature  |  | <b>Brian Desfosses</b><br>Print name legibly <b>ADE</b> |                        |
|  |  | <b>6/20/16</b><br>Date                                  |                        |

[shoreland@des.nh.gov](mailto:shoreland@des.nh.gov) or (603) 271-2147  
NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095  
[www.des.nh.gov](http://www.des.nh.gov)

## MUNICIPAL SIGNATURES

### 11. CONSERVATION COMMISSION SIGNATURE

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.

|  |                    |      |
|--|--------------------|------|
|  | Print name legibly | Date |
|--|--------------------|------|

#### DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission's signature is obtained in the space above.
2. Expedited review requires the Conservation Commission signature be obtained prior to the submittal of the original application to the Town/City Clerk for signature.
3. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, the application is not eligible for expedited review and the application will reviewed in the standard review time frame.

### 12. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 2014), 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.

|  |                    |           |      |
|--|--------------------|-----------|------|
|  | Print name legibly | Town/City | Date |
|--|--------------------|-----------|------|

#### DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3,I

1. For applications where "Expedited Review" is checked on page 1, if the Conservation Commission signature is not present, NHDES will accept the permit application, but it will NOT receive the expedited review time.
2. IMMEDIATELY sign the original application form and four copies in the signature space provided above;
3. 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.
4. 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; and
5. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

#### DIRECTIONS FOR APPLICANT:

1. Submit the single, 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.

**13. IMPACT AREA:**

For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact

*Permanent: impacts that will remain after the project is complete.*

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

| JURISDICTIONAL AREA                 | PERMANENT<br>Sq. Ft. / Lin. Ft.              | TEMPORARY<br>Sq. Ft. / Lin. Ft. |
|-------------------------------------|--|---------------------------------|
| Forested wetland                    | 100 sf <input type="checkbox"/> ATF          | <input type="checkbox"/> ATF    |
| Scrub-shrub wetland                 | <input type="checkbox"/> ATF                 | <input type="checkbox"/> ATF    |
| Emergent wetland                    | <input type="checkbox"/> ATF                 | <input type="checkbox"/> ATF    |
| Wet meadow                          | <input type="checkbox"/> ATF                 | <input type="checkbox"/> ATF    |
| Intermittent stream                 | 5 lf / 15 sf <input type="checkbox"/> ATF    | <input type="checkbox"/> ATF    |
| Perennial Stream / River            | / <input type="checkbox"/> ATF               | / <input type="checkbox"/> ATF  |
| Lake / Pond                         | / <input type="checkbox"/> ATF               | / <input type="checkbox"/> ATF  |
| Bank - Intermittent stream          | / <input type="checkbox"/> ATF               | / <input type="checkbox"/> ATF  |
| Bank - Perennial stream / River     | 66 lf / 1530 sf <input type="checkbox"/> ATF | / <input type="checkbox"/> ATF  |
| Bank - Lake / Pond                  | / <input type="checkbox"/> ATF               | / <input type="checkbox"/> ATF  |
| Tidal water                         | / <input type="checkbox"/> ATF               | / <input type="checkbox"/> ATF  |
| Salt marsh                          | <input type="checkbox"/> ATF                 | <input type="checkbox"/> ATF    |
| Sand dune                           | <input type="checkbox"/> ATF                 | <input type="checkbox"/> ATF    |
| Prime wetland                       | <input type="checkbox"/> ATF                 | <input type="checkbox"/> ATF    |
| Prime wetland buffer                | <input type="checkbox"/> ATF                 | <input type="checkbox"/> ATF    |
| Undeveloped Tidal Buffer Zone (TBZ) | <input type="checkbox"/> ATF                 | <input type="checkbox"/> ATF    |
| Previously-developed upland in TBZ  | <input type="checkbox"/> ATF                 | <input type="checkbox"/> ATF    |
| Docking - Lake / Pond               | <input type="checkbox"/> ATF                 | <input type="checkbox"/> ATF    |
| Docking - River                     | <input type="checkbox"/> ATF                 | <input type="checkbox"/> ATF    |
| Docking - Tidal Water               | <input type="checkbox"/> ATF                 | <input type="checkbox"/> ATF    |
| <b>TOTAL</b>                        | <b>66 lf / 1645 sf</b>                       | <b>/</b>                        |

**14. APPLICATION FEE: See the Instructions & Required Attachments document for further instruction**

Minimum Impact Fee: Flat fee of \$ 200

Minor or Major Impact Fee: Calculate using the below table below

Permanent and Temporary (non-docking) 1645 sq. ft. X \$0.20 = \$ 329

Temporary (seasonal) docking structure:           sq. ft. X \$1.00 = \$          

Permanent docking structure:           sq. ft. X \$2.00 = \$          

Projects proposing shoreline structures (including docks) add \$200 = \$          

Total = \$          

The Application Fee is the above calculated Total or \$200, whichever is greater = \$ 329

**DES AQUATIC RESOURCE MITIGATION FUND  
STREAM PAYMENT CALCULATION**

|   |                                 |                    |
|---|---------------------------------|--------------------|
| <b>INSERT LINEAR FEET OF IMPACT on BOTH BANKS AND CHANNEL</b> |                                 |                    |
|   | <b>Right Bank</b>               | 0.00               |
|   | <b>Left Bank</b>                | 61.0000            |
|   | <b>Channel</b>                  | 5.0000             |
|   | <b>TOTAL IMPACT</b>             | 66.0000            |
|   | <b>Stream Impact Cost:</b>      | <b>\$13,200.00</b> |
|   | <b>DES Administrative cost:</b> |                    |
|   |                                 | \$2,640.00         |
| <b>***** TOTAL ARM FUND STREAM PAYMENT*****</b>               |                                 |                    |
|   |                                 | <b>\$15,840.00</b> |

Note: 5 Linear Feet of Channel Impact at inlet (intermittent stream channel)  
 Total of 140 LF of permanent Bank Impacts (minue 79LF of existing retaining wall) = 61LF to be mitigated.

## Matt Urban

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**From:** Sommer, Lori <Lori.Sommer@des.nh.gov>  
**Sent:** Monday, June 20, 2016 11:48 AM  
**To:** Matt Urban  
**Cc:** Brian Desfosses; Infascelli, Gino  
**Subject:** RE: Weare

Hi Matt and Brian,

Thanks for sending the pictures. I would agree with your proposal to mitigation for the 60 LF only and add the footage of intermittent stream impact in the calculations. I hope this helps you to continue moving forward with this project. Have a good day,

Lori

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**From:** Matt Urban [<mailto:MUrban@dot.state.nh.us>]  
**Sent:** Friday, June 17, 2016 9:06 AM  
**To:** Sommer, Lori  
**Cc:** Brian Desfosses  
**Subject:** Weare

Hi Lori,

I wanted to shoot you a quick email to get your preliminary concurrence for how to approach the mitigation for this project.

I have attached a draft plan that I have highlighted to help tell the story.

We are proposing to replace a failing retaining wall with a newly constructed wall adjacent to the Piscataquog River in the Town of Wear on Route 77. The existing wall also has an 18" pipe that is currently buried in the slope and seeps out. We are going to replace that pipe with a 36" pipes that has an established outlet with scour protection.

Ultimately to complete the proposed work we will permanently be impacting approximately 140 LF of Bank (Shown in Green on the plan).

Of that 140 total LF approximately 80 LF is existing wall that will be removed and replaced (Shown in Orange). We would like to not have to mitigate for the LF feet of existing wall that is going to be replaced (Only areas of new wall would be mitigated)

That said approx. 140LF (total impacts) - 80LF (existing wall) = 60 LF of new wall to be mitigated.

We will also have a small length of intermittent channel that will be permanently dredged at the inlet of the pipe. We are currently showing approx. 22 LF but are looking to reduce this length. We intend to include whatever the final length is with the mitigation package.

Can you let me know if you are comfortable with this approach for only mitigating the length of new wall and not the existing.

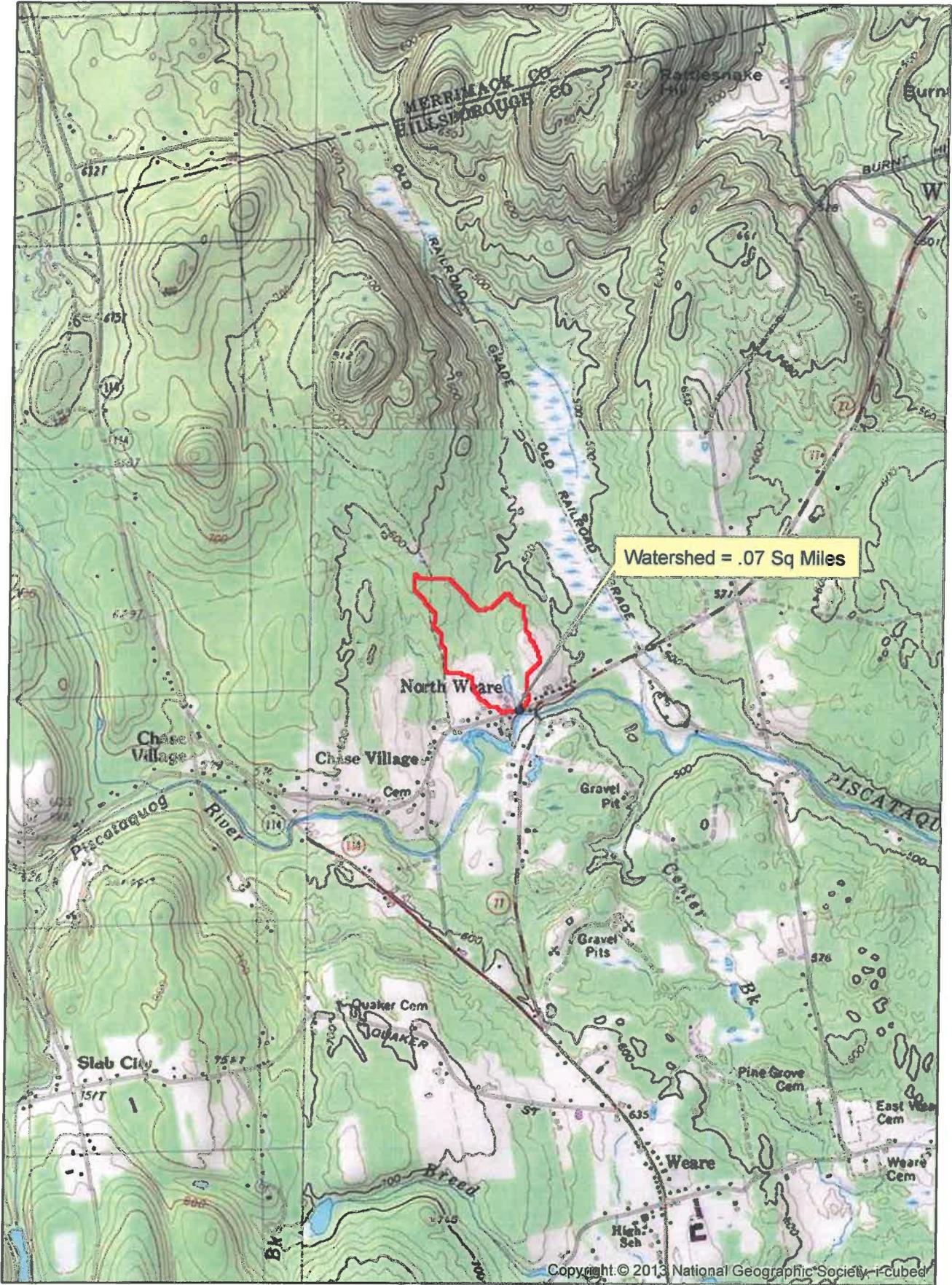
Note...we will have no impacts below OHW on the Piscataquog River.

Once I have final numbers I intend to touch base with you again...(we are trying to submit this by next Friday so your initial thoughts would be helpful.)

Thanks,  
Matt

**USGS MAP  
AND  
WEARE TAX MAPS**

# Weare



Watershed = .07 Sq Miles

0 0.25 0.5 1 Miles

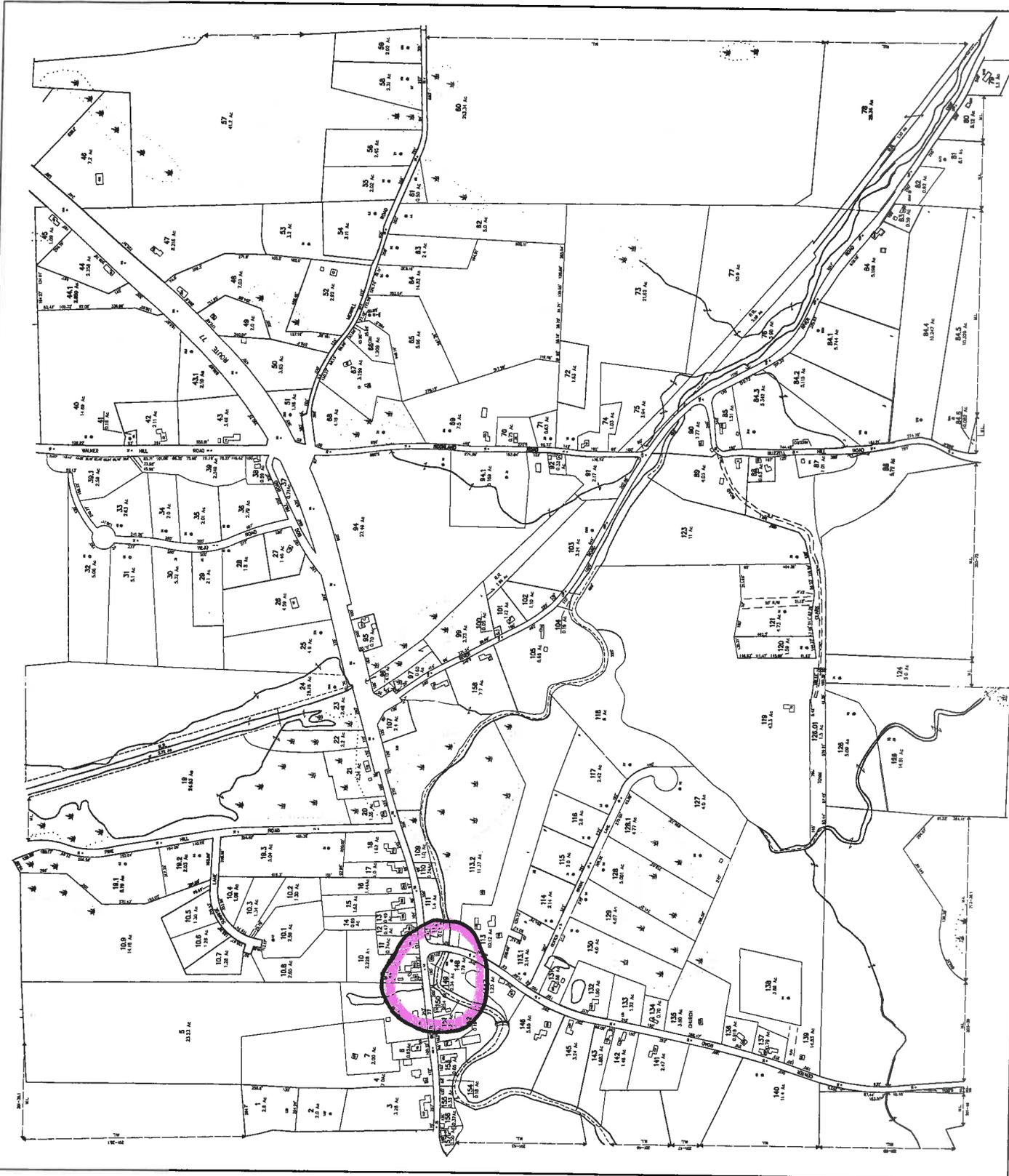
1:24,000

# Weare



0 62.5 125 250 Feet

1:1,000



THIS MAP IS FOR RECORD PURPOSES - IT IS NOT VALID FOR LEGAL DESCRIPTION OR CONVEYANCE. PLEASE CONSULT THE LOCAL MAPS BY HAMPSHIRE STATE. PHOTOGRAPHIC SURVEY BY JAMES W. HARRIS, INC., 100 WASHINGTON ST., SUITE 200, CONCORD, NH 03301.

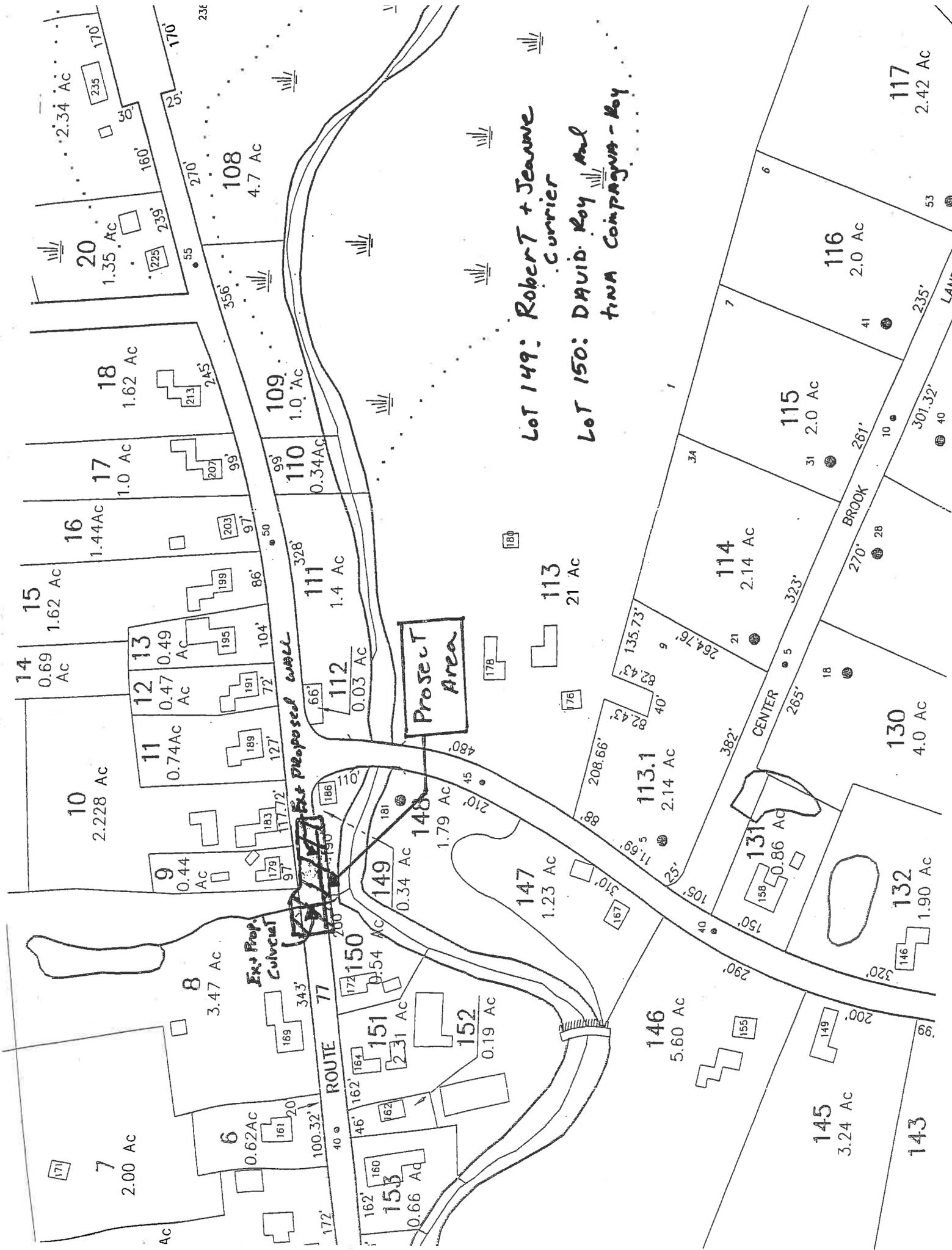
INDEX DIAGRAM MAP NO. 202  
 MAP NO. 202  
 INDEX DIAGRAM MAP NO. 202

PROPERTY MAPS OF  
**WEARE**  
 NEW HAMPSHIRE

REPRODUCED AND REVISED ANNUALLY BY:  
 CA TECHNOLOGIES  
 UTILITIES INT.  
 CONCORD, NH

SCALE: 1" = 200'  
 FEET  
 METERS

LEGEND  
 ROAD  
 DRIVE  
 HIGHWAY  
 RAILROAD  
 WATER LAKE  
 WETLAND  
 UNIMPROVED LOT  
 IMPROVED LOT  
 CHURCH



Lot 149: Robert + Jeanne  
Currier

Lot 150: David Roy and  
Tina Compagna - Roy

Propsect Area

Prop. Culvert

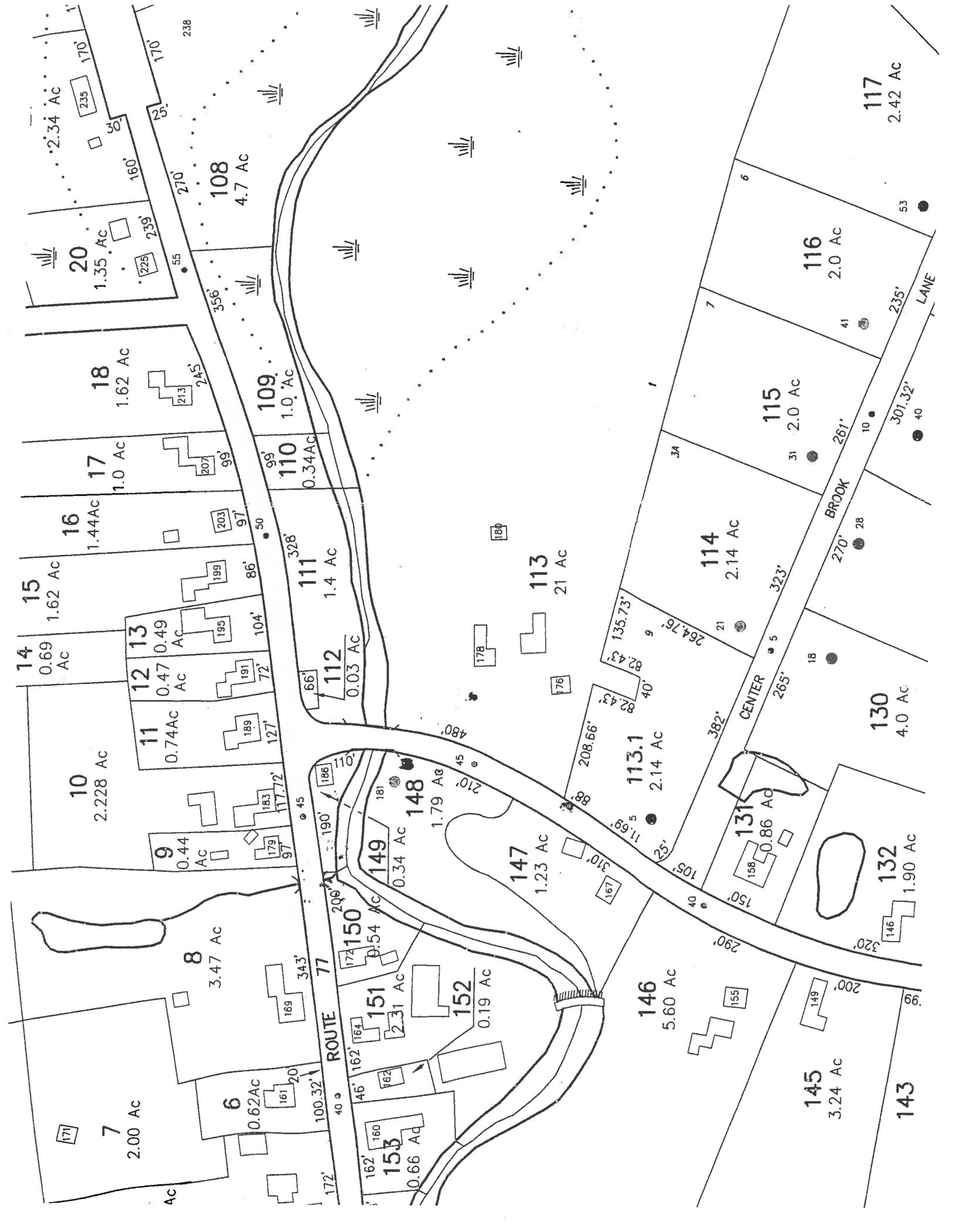
Prop. Proposed Canal

ROUTE 77

BROOK

CENTER

L.A.M.R.



**EASEMENT DEEDS  
FROM ABUTTING  
PROPERTY OWNERS  
TO NHDOT**

#639  
NH DEPT

TRANSPORTATION

|            |       |
|------------|-------|
| FEES:      | 10.47 |
| SURCHARGE: | 2.00  |
| CASH:      | 0     |

**EASEMENT DEED**

KNOW ALL MEN BY THESE PRESENTS, THAT We, Robert C. Currier, Jr. and Jeanne M. Currier, married, of 179 Concord Stage Road, Weare, NH 03281, County of Hillsborough, for mutual consideration with the State of New Hampshire, acting through the NH Department of Transportation, whose address is PO Box 483, 7 Hazen Drive, Concord, New Hampshire 03302-0483, do give, grant, bargain, sell, alien, convey and confirm unto the State of New Hampshire, it and its successors and assigns forever:

Property situated in Weare, NH

The permanent right and easement to construct, reconstruct, maintain, and repair a retaining wall and associated slope and drainage features to reinforce and drain New Hampshire Route 77, so that the public highway and appurtenances thereto can be maintained. The affected area is in, on, and over the following described tract of land;

All that land that is 20 feet southerly of the NH Route 77 southerly sideline and 130 feet easterly of the grantor's westerly lot line.

Containing approximately 2600 square feet (0.06 acres), more or less and being an interest in that property recorded December 26, 2002 in the Hillsborough County Registry of Deeds in book 6798 page 1461.

Also granting the temporary right and easement to enter upon the property as will be necessary to construct slopes, retaining walls, and related improvements for the purpose of creating the above-referenced features on the property in accordance with the standard practice of highway construction. The property owner shall have unencumbered use of the area at all other times.

Executed this 5<sup>th</sup> day of May, 2016.

Robert C. Currier, Jr.  
Robert C. Currier, Jr.

Jeanne M. Currier  
Jeanne M. Currier

STATE OF NEW HAMPSHIRE, Hillsborough ss May, 5<sup>th</sup> A. D. 2016

Personally appeared before me the above named, Robert + Jeanne Currier and acknowledged the foregoing instrument to be their voluntary act and deed.

Angela Snyder  
Notary Public/Justice of the Peace  
My commission expires: 5/23/16



#639

NH DEPT

TRANSPORTATION

|            |       |
|------------|-------|
| FEES:      | 10.47 |
| SURCHARGE: | 2.00  |
| CASH:      | 0     |

**EASEMENT DEED**

KNOW ALL MEN BY THESE PRESENTS, THAT We, David Roy and Tina M. Compagna-Roy, married, of 172 Concord Stage Road, Weare, NH 03281, County of Hillsborough, for mutual consideration with the State of New Hampshire, acting through the NH Department of Transportation, whose address is PO Box 483, 7 Hazen Drive, Concord, New Hampshire 03302-0483, do give, grant, bargain, sell, alien, convey and confirm unto the State of New Hampshire, it and its successors and assigns forever:  
Property situated in Weare, NH

The permanent right and easement to construct, reconstruct, maintain, and repair a retaining wall and associated slope and drainage features to reinforce and drain New Hampshire Route 77, so that the public highway and appurtenances thereto can be maintained. The affected area is in, on, and over the following described tract of land;

All that land that is 20 feet southerly of the NH Route 77 southerly sideline and 50 feet westerly of the grantor's easterly lot line.

Containing approximately 1000 square feet (0.023 acres), more or less and being an interest in that property recorded August 28, 2003 at the Hillsborough County Registry of Deeds in book 7048 page 2215.

Also granting the temporary right and easement to enter upon the property as will be necessary to construct slopes, retaining walls, and related improvements for the purpose of creating the above-referenced features on the property in accordance with the standard practice of highway construction. The property owner shall have unencumbered use of the area at all other times.

Executed this 21<sup>st</sup> day of May, 2016.  
*[Signature]*  
David Roy

*[Signature]*  
Tina M. Compagna-Roy

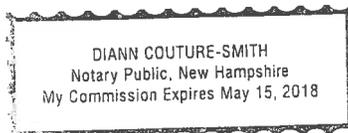
STATE OF NEW HAMPSHIRE,

SS

A. D. 2016

Personally appeared before me the above named, DAVID ROY, and TINA COMPAGNA-ROY acknowledged the foregoing instrument to be their voluntary act and deed.

*[Signature]*  
Notary Public/Justice of the Peace  
My commission expires: 5-15-2018



**MINOR & MAJOR PERMIT**  
**20 QUESTIONS**  
**AND NARRATIVE**

**1. The need for the proposed impact;**

It is necessary to impact jurisdictional areas because the existing retaining wall and the existing cross-culvert are in a severely degraded condition. The road will be excavated to the bottom elevation of the lowest T-wall section, the existing culvert removed, and the road reconstructed. The improvements and impacts are necessary to provide a safe road network and improve the service life and stability of Route 77.

**2. The alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site;**

In order to adequately stabilize the roadway, a new retaining wall must be installed for roadway support. The proposed wall limits impacts to the bank of the river to the extent possible while providing a safe and reliable structural support.

The culvert replacement is necessary to adequately convey drainage flow under the roadway, and the new 36 inch pipe will allow for some animal passage, though it may be noted that the slope of the pipe is steep (21%) due to the existing topography. The culvert has been designed in a way that scour protection is provided without impact to the bank within the observed high water mark of the river.

**3. The type/classification of the wetlands involved;**

PF01E: Palustrine, Forested, Seasonally Flooded/Saturated Bank

R4SB4: Riverine, Stream Bed, Sandy Bottom

**4. The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters;**

Impacts will be to a contributory small stream that flows to the Piscataquog River, as well as to the bank of the Piscataquog River.

**5. The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area;**

The surface waters to be impacted have not been identified as rare.

**6. The surface area of the wetlands that will be impacted;**

100 sf Riverine (100 sf permanent)  
15 sf Palustrine (15 sf permanent)  
1530 sf bank impacts (non-wetland)

**7. The impact on plants, fish, and wildlife including:**

**a. Rare, special concern species:** While rare special concern species were noted in the area, the proposal has been designed and the construction scheduled to avoid any impacts to these species. A copy of the NHB results along with the coordination with F&G can be found elsewhere in this package.

**b. State and federally listed threatened and endangered species:** The species identified in the NHB were the Brook Floater, and three species of turtles, namely

Blanding's Turtle, the Spotted Turtle, and the Wood Turtle. Coordination with NHF&G has been provided elsewhere within this package. In addition, the Department completed an IPaC search which identified Northern Long-Eared Bat (NLEB) and Small Whorled Pagonia. The Department, through ACOE, has submitted the Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form, to the USF&WS. As for the Small Whorled Pagonia, a site inspection was completed between the months of May and June, when the plant is typically flowering, no plants were identified within the project area and therefore no impacts to this species are anticipated.

- c. **Species at the extremities of their ranges:** There are no species known to be at the extremities of their ranges.
  - d. **Migratory fish and wildlife:** Although no migratory species were identified, the proposed project will have no impact to any migratory species in the area.
  - e. **Exemplary natural communities identified by the New Hampshire Natural Heritage Inventory (NHI)- Department of Resources and Economic Development:** The results of the NHB review revealed no records in this area.
  - f. **Vernal Pools:** There were no vernal pools identified and/or delineated in the project area.
8. **The impact of the proposed project on public commerce, navigation and recreation;** The proposed project will have no effect on public navigation or recreation. Public commerce will be allowed by rerouting traffic along this section of Route 77 around Center Road (Truck Route 77) during the construction period.
9. **The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake the applicant would be required to indicate the type of material to be utilized and the effect of the construction of the wall on the view of other users of the lake;** The project is proposed to have a concrete retaining wall, which is similar aesthetically to the existing wall.
10. **The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel the applicant would be required to document the extent to which the dock would block or interfere with the passage through this area;** The project will not interfere with or obstruct public rights of passage or access. During construction a detour or one lane of alternating traffic will be maintained at all times. This will ensure access to all nearby businesses and residential homes in this area. If needed, detour signs can be in placed to redirect oversized loads once lanes are open. Upon completion of this project the road will be reopened to two way traffic as it was prior to construction.
11. **The impact upon abutting owners pursuant to RSA 482-A, II. For example, if an applicant is proposing the rip-rapping of a stream the applicant would be required to document the effect of such work on upstream and downstream abutting properties;**

The project is not expected to have an impact on abutting properties. The project is proposing to install riprap along the surface of the steep slope that will be disturbed as a result of the construction. It is not anticipated that the installation of this riprap will redirect and water whereby causing upstream or downstream impacts to abutting property owners.

- 12. The benefit of a project to the health, safety, and well being of the general public;**  
The project will provide a safer, longer lasting structure and roadway. If the structure is not rehabilitated, the road will fail and large quantities of sediment will enter the river.
- 13. The impact of a proposed project on quantity or quality of surface and ground water. For example, where an applicant proposes to fill wetlands he/she would be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site;**  
The project as proposed will not impact the quantity or quality of surface and/or groundwater at this site. Best Management Practices (BMP's) will be used to prevent any adverse effect to water quality. No changes to the existing flow regime are proposed.
- 14. The potential of a proposed project to cause or increase flooding, erosion, or sedimentation;**  
The completed project will allow existing channelized flows to enter the Piscataquog River, and therefore, it will not increase the chance of flooding, new erosion or sedimentation.
- 15. The extent to which a project that located in surface waters reflects or redirects current or wave energy which might cause damage or hazards;**  
The project does not change the existing structure configuration or waterway opening enough to significantly change or redirect the stream current.
- 16. The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owned only a portion of a wetland would document his percentage of ownership of that wetland and the percentage of that ownership that would be impacted;**  
The work consists of the repair of an existing retaining wall structure that supports a highway. There are no similar structures in the vicinity owned by other parties that would require this type of construction.
- 17. The impact of the proposed project on the values and functions of the total wetland or wetland complex;**  
Project has minimized overall impacts and will not impact the values and functions of the Piscataquog River.
- 18. The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication;**  
This project is not located in or near any Natural Landmarks listed on the National Register.

**New Hampshire Department of Transportation  
District 5, Bureau of Highway Maintenance  
Alongside Piscataquog River**

**Project # 40882,  
NH Route 77, Weare**

- 19. The impact upon the value of areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.**  
The project will not impact any of the designated value areas.
- 20. The degree to which a project redirects water from one watershed to another.**  
The proposed project will not redirect water.

**Summary for Subcatchment 1S: Area to culvert**

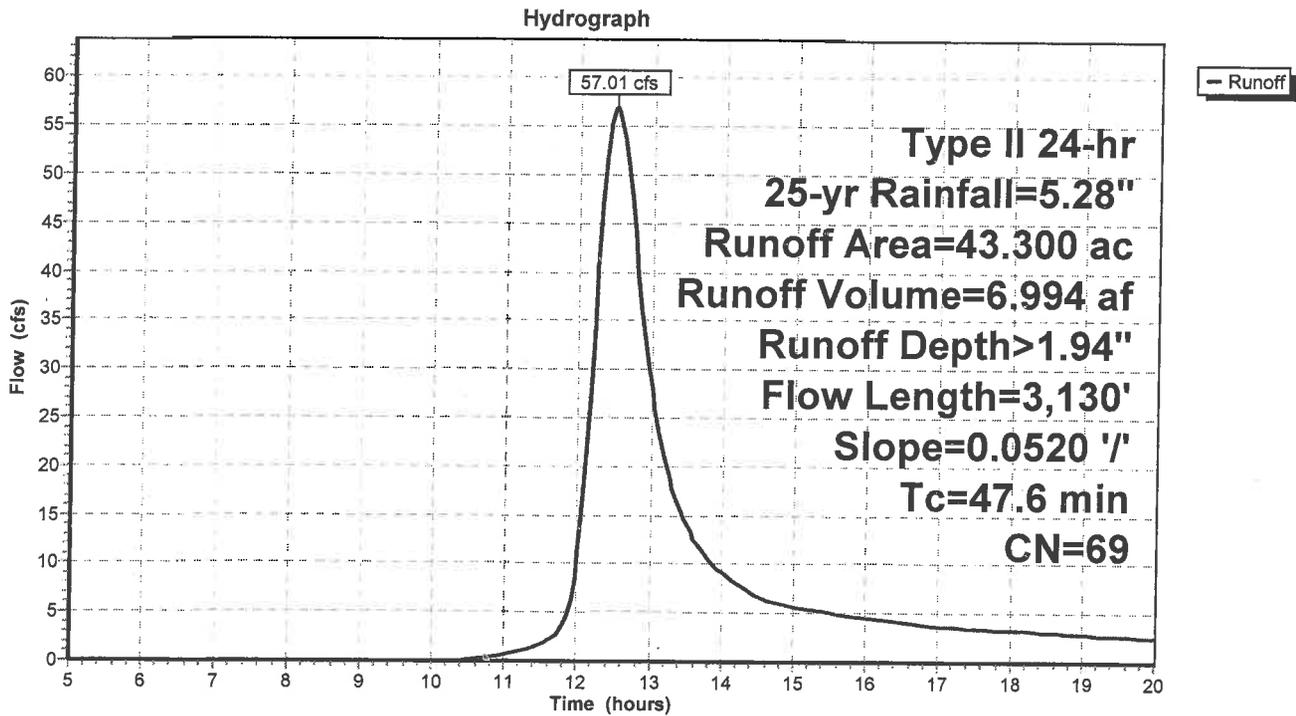
Runoff = 57.01 cfs @ 12.48 hrs, Volume= 6.994 af, Depth> 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type II 24-hr 25-yr Rainfall=5.28"

| Area (ac) | CN | Description                 |
|-----------|----|-----------------------------|
| 8.000     | 65 | 2 acre lots, 12% imp, HSG B |
| 2.000     | 82 | 2 acre lots, 12% imp, HSG D |
| 11.700    | 55 | Woods, Good, HSG B          |
| 21.400    | 77 | Woods, Good, HSG D          |
| 0.200     | 98 | Water Surface, HSG B        |
| 43.300    | 69 | Weighted Average            |
| 41.900    |    | 96.77% Pervious Area        |
| 1.400     |    | 3.23% Impervious Area       |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description    |
|----------|---------------|---------------|-------------------|----------------|----------------|
| 47.6     | 3,130         | 0.0520        | 1.10              |                | Lag/CN Method, |

**Subcatchment 1S: Area to culvert**

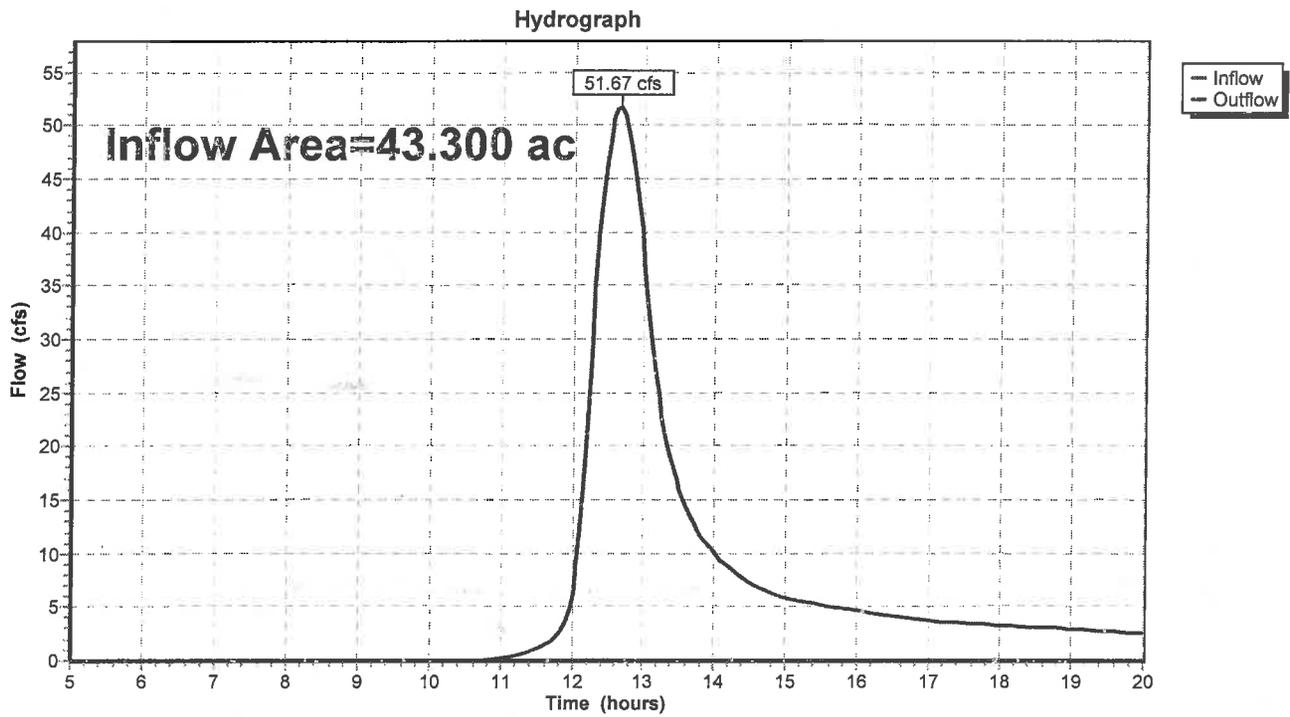


### Summary for Reach 3R: Riprap apron

Inflow Area = 43.300 ac, 3.23% Impervious, Inflow Depth > 1.92" for 25-yr event  
Inflow = 51.67 cfs @ 12.64 hrs, Volume= 6.931 af  
Outflow = 51.67 cfs @ 12.64 hrs, Volume= 6.931 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

### Reach 3R: Riprap apron



## **ACOE APPENDIX B**



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

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

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 PGP, GC 5 regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

| <b>1. Impaired Waters</b>   | Yes        | No |
|---|------------|----|
| 1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See <a href="http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm">http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm</a> to determine if there is an impaired water in the vicinity of your work area.*  | X          |    |
| <b>2. Wetlands</b>  | 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, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, <a href="http://www.nhnaturalheritage.org">www.nhnaturalheritage.org</a> , specifically the book <a href="#">Natural Community Systems of New Hampshire</a> .   |            | 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 size of the existing impervious surface area?   | 1.2 Ac +/- |    |
| 2.7 What is the size of the proposed impervious surface area?   | Same       |    |
| 2.8 What is the % of the impervious area (new and existing) to the overall project site?  | 2.7%       |    |
| <b>3. Wildlife</b>  | Yes        | No |
| 3.1 Has the NHB 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 a NHB determination.)   | 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:<br><ul style="list-style-type: none"> <li>• PDF: <a href="http://www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm">www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm</a>.</li> <li>• Data Mapper: <a href="http://www.granit.unh.edu">www.granit.unh.edu</a>.</li> <li>• GIS: <a href="http://www.granit.unh.edu/data/downloadfreedata/category/databycategory.html">www.granit.unh.edu/data/downloadfreedata/category/databycategory.html</a>.</li> </ul> |            | X  |
| 3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?  |            | X  |
| 3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?   |            | X  |
| 3.5 Are stream crossings designed in accordance with the PGP, GC 21?  | X          |    |

**STREAM  
CROSSING  
FORMS**

**NH Department of Transportation  
Bureau of Highway Maintenance (District 5)  
Project, # 40882 (Route 77, Weare Retaining Wall)**

**Env-Wt 904.07 In-Kind Replacement of Tier 1 or Tier 2 Existing Legal Crossings**

- In order to qualify under this section, the crossing cannot have a history of causing or contributing to flooding that damages the crossing or other infrastructure. Does the crossing have a history of flooding? No
- The replacement stream crossing shall be the same size and type as the existing OR an upgrade. Please describe how this applies to the subject project. **The existing culvert is 18"x18" stone and the proposed culvert is a 36" RCP so it is an upgrade.**

**If the above criteria do not apply to this project, the crossing does not qualify under this section and must be designed according to 904.02 (Tier 1 crossings) or 904.05 (Tier 2 crossings).**

**If the above criteria apply to this project, please provide the following information.**

The project may qualify as a **minimum** impact project if:

The crossing does not diminish the hydraulic capacity of the crossing. Yes

The crossing does not diminish the capacity of the crossing to accommodate aquatic life passage. Yes

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

Env-Wt 904.01

(a) Not be a barrier to sediment transport;

**The proposed culvert will not be a barrier.**

(b) Prevent the restriction of high flows and maintain existing low flows;

**The proposed culvert will allow greater flows to reach the river and will maintain existing low flows.**

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

**The existing culvert is buried and inaccessible.**

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

**The proposed culvert will reduce flooding at the inlet and allow flows to be directed downstream.**

(e) Preserve watercourse connectivity where it currently exists;

**The proposed culvert will allow for connectivity between the stream and the river.**

(f) Restore watercourse connectivity where: (1) Connectivity previously was disrupted as a result of human activity(ies); and (2) Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both;

**The proposed culvert will allow for connectivity although it does not exist currently as the existing culvert is buried and degraded.**

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

**The proposed culvert will not allow for erosion or scour.**

(h) Not cause water quality degradation.

**The proposed culvert will not cause water quality degradation.**

If the project does not qualify as a minimum impact project due to reasons stated above, it may qualify as a **minor** impact project if:

The crossing does not adversely impact the stability of the stream banks or stream bed upstream or downstream of the crossing.

**The project will stabilize the River bank and will not adversely impact the upstream stream bank.**

The crossing does not cause an increase in the frequency of flooding or overtopping of banks.

**The crossing will not increase the frequency of flooding.**

**If the project does not meet the above criteria for minimum OR minor, the crossing does not qualify under this section and must be designed according to 904.02 (Tier 1 crossings) or 904.05 (Tier 2 crossings).**

c:\documents and settings\n16cjp\desktop\stream xing reports\904\_07.doc

**ENV-WT 404.05**  
**RETAINING WALLS**  
**QUESTIONNAIRE**

Env-Wt 404.05 Walls

The following requirements relative to walls shall apply to nontidal waters.

**Address each statement explaining how you meet these requirements.**

(1) Walls shall be permitted only where lack of space or other limitations of the site make alternative stabilization methods impractical.

**The existing grade on the south slope of NH route 77 is so steep that a wall is necessary for stability. There is an existing severely deteriorated wall that we are removing and reconstructing to add to the stability of the existing grade.**

(2) Applications for walls shall include cross-section and plan views of the proposed installation and sufficient plans to clearly indicate the relationship of the project to fixed points of reference, abutting properties, and features of the natural shoreline.

**Cross sections and plan views have been included with the application package.**

(3) Walls on great ponds or water bodies where the state holds fee simple ownership shall be located on the shoreward side of the normal high-water shoreline.

**The proposed wall is near the top of bank and not near the observed high water mark of the river.**

(4) Applications for walls adjacent to great ponds or water bodies where the state holds fee simple ownership shall include a stamped surveyed plan showing the location of the normal high water shoreline and the footprint of the proposed project.

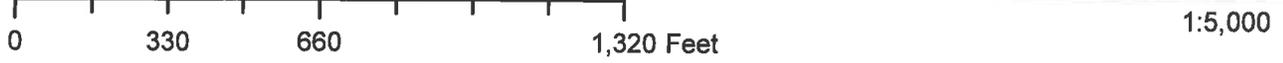
**The project was surveyed using NHDOT survey forces and the observed high water mark was delineated by Matt Urban of NHDOT and field located with ground survey.**

**SOIL MAP OF  
SUBCATCHMENT  
FOR CULVERT DESIGN**

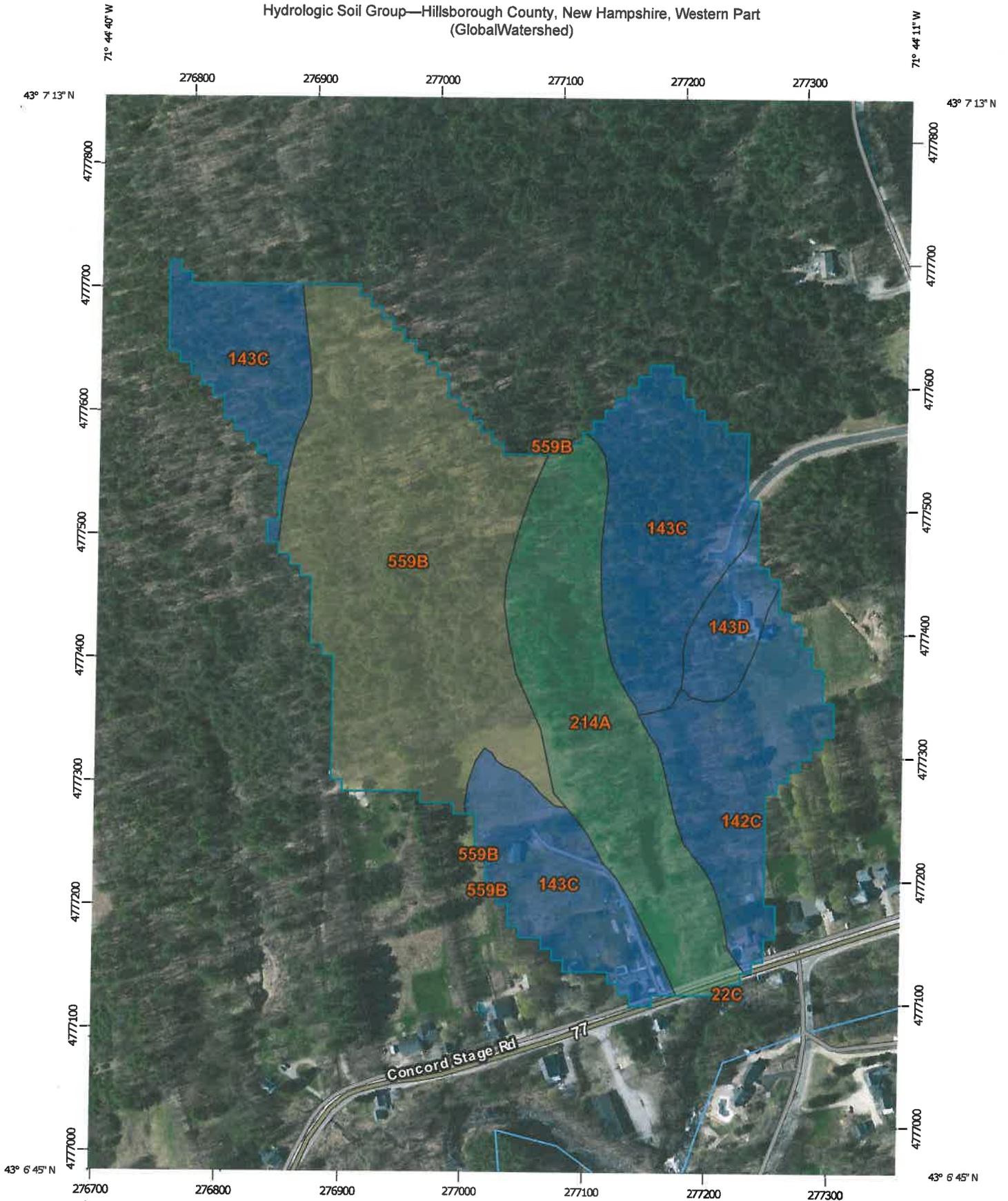
# Weare



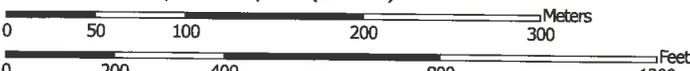
Watershed = .07 Sq Miles



Hydrologic Soil Group—Hillsborough County, New Hampshire, Western Part  
(Global Watershed)



Map Scale: 1:4,250 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84



## MAP LEGEND

**Area of Interest (AOI)**  
 Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

A

A/D

B

B/D

C

C/D

D

Not rated or not available

**Soil Rating Lines**

A

A/D

B

B/D

C

C/D

D

Not rated or not available

**Soil Rating Points**

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

**Background**

Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hillsborough County, New Hampshire, Western Part  
 Survey Area Data: Version 16, Sep 18, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 8, 2011—May 1, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

## Hydrologic Soil Group

| Hydrologic Soil Group— Summary by Map Unit — Hillsborough County, New Hampshire, Western Part (NH602) |  |        |              |                |
|---|--|--------|--------------|----------------|
| Map unit symbol   | Map unit name  | Rating | Acres in AOI | Percent of AOI |
| 22C   | Colton loamy sand, 8 to 15 percent slopes                | A      | 0.0          | 0.0%           |
| 142C  | Monadnock fine sandy loam, 8 to 15 percent slopes        | B      | 5.1          | 11.8%          |
| 143C  | Monadnock stony fine sandy loam, 8 to 15 percent slopes  | B      | 13.1         | 30.3%          |
| 143D  | Monadnock stony fine sandy loam, 15 to 35 percent slopes | B      | 1.5          | 3.5%           |
| 214A  | Naumburg fine sandy loam, 0 to 3 percent slopes          | A/D    | 8.3          | 19.1%          |
| 559B  | Skerry stony fine sandy loam, 0 to 8 percent slopes      | C/D    | 15.3         | 35.3%          |
| <b>Totals for Area of Interest</b>  |  |        | <b>43.2</b>  | <b>100.0%</b>  |

Sub catchment #1

$$T_c = 3,130' \text{ long}$$

Pond Area = 0.20 Ac

$$\text{Avg slope} = 0.052 \%$$

B soil = 8 Ac House (2 Ac)

~~5 Ac House (5 Ac)~~

11.7 ~~Ac~~ Ac Woods

D Soil = 2 Ac House (2 Ac)

21.4 ~~Ac~~ Ac Woods

## StreamStats Version 3.0

## Flow Statistics Ungaged Site Report

Date: Thurs Apr 14, 2016 2:01:55 PM GMT-4

Study Area: New Hampshire

NAD 1983 Latitude: 43.114 ( 43 06 50)

NAD 1983 Longitude: -71.7381 (-71 44 18)

Drainage Area: 0.07 mi<sup>2</sup>

| Peak Flows Region Grid Basin Characteristics                  |                            |                                 |      |
|---|----------------------------|---------------------------------|------|
| 100% Peak Flow Statewide SIR2008 5206 (0.07 mi <sup>2</sup> ) |                            |                                 |      |
| Parameter   | Value                      | Regression Equation Valid Range |      |
|   |                            | Min                             | Max  |
| Drainage Area (square miles)                                  | 0.07 (below min value 0.7) | 0.7                             | 1290 |
| Mean April Precipitation (inches)                             | 3.855                      | 2.79                            | 6.23 |
| Percent Wetlands (dimensionless)                              | 0.0000                     | 0                               | 21.8 |
| Stream Slope 10 and 85 Method (feet per mi)                   | 124                        | 5.43                            | 543  |

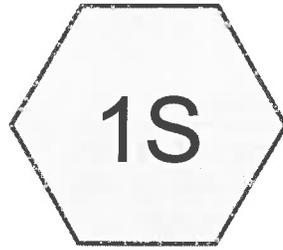
Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

| LowFlows Region Grid Basin Characteristics      |   |                                 |      |
|---|---|---------------------------------|------|
| 100% Low Flow Statewide (0.07 mi <sup>2</sup> ) |   |                                 |      |
| Parameter                                       | Value                                     | Regression Equation Valid Range |      |
|   |   | Min                             | Max  |
| Drainage Area (square miles)                    | 0.07 (below min value 3.26)<br>(44 acres) | 3.26                            | 689  |
| Mean Basin Slope from 30m DEM (percent)         | 5.206                                     | 3.19                            | 38.1 |
| Maximum Basin Elevation (feet)                  | 580.966                                   | 260                             | 6290 |
| Percent Coniferous Forest (percent)             | 29.0292                                   | 3.07                            | 56.2 |
| Jan to Mar Basin Centroid Precip (inches)       | 7.8                                       | 5.79                            | 15.1 |
| Mean Annual Temperature (degrees F)             | 69.000 (above max value 48.7)             | 36                              | 48.7 |
| Jun to Oct Mean Basinwide Temp (degrees F)      | 60.476                                    | 52.9                            | 64.4 |
| Jun to Oct Gage Precipitation (inches)          | 17.2                                      | 16.5                            | 23.1 |
| Percent Mixed Forest (percent)                  | 20.4209                                   | 6.21                            | 46.1 |
| Mar to May Gage Precipitation (inches)          | 8.8                                       | 6.83                            | 11.5 |

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

| Groundwater Recharge Region Grid Basin Characteristics                |  |
|---|--|
| 100% Groundwater Recharge Statewide 2004 5019 (0.07 mi <sup>2</sup> ) |  |

**DRAINAGE  
CALCULATIONS  
FOR CULVERT DESIGN**



Area to culvert



Culvert



Riprap apron



**20160414 hydrology**

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Page 2

**Area Listing (all nodes)**

| Area<br>(acres) | CN        | Description<br>(subcatchment-numbers) |
|-----------------|-----------|---------------------------------------|
| 8.000           | 65        | 2 acre lots, 12% imp, HSG B (1S)      |
| 2.000           | 82        | 2 acre lots, 12% imp, HSG D (1S)      |
| 0.200           | 98        | Water Surface, HSG B (1S)             |
| 11.700          | 55        | Woods, Good, HSG B (1S)               |
| 21.400          | 77        | Woods, Good, HSG D (1S)               |
| <b>43.300</b>   | <b>69</b> | <b>TOTAL AREA</b>                     |

**20160414 hydrology**

Prepared by NH DOT

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Page 3

**Soil Listing (all nodes)**

| Area<br>(acres) | Soil<br>Group | Subcatchment<br>Numbers |
|-----------------|---------------|-------------------------|
| 0.000           | HSG A         |                         |
| 19.900          | HSG B         | 1S                      |
| 0.000           | HSG C         |                         |
| 23.400          | HSG D         | 1S                      |
| 0.000           | Other         |                         |
| <b>43.300</b>   |               | <b>TOTAL AREA</b>       |

**20160414 hydrology**

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Page 4

**Ground Covers (all nodes)**

| HSG-A<br>(acres) | HSG-B<br>(acres) | HSG-C<br>(acres) | HSG-D<br>(acres) | Other<br>(acres) | Total<br>(acres) | Ground<br>Cover      | Subcatchment<br>Numbers |
|------------------|------------------|------------------|------------------|------------------|------------------|----------------------|-------------------------|
| 0.000            | 8.000            | 0.000            | 2.000            | 0.000            | 10.000           | 2 acre lots, 12% imp | 1S                      |
| 0.000            | 0.200            | 0.000            | 0.000            | 0.000            | 0.200            | Water Surface        | 1S                      |
| 0.000            | 11.700           | 0.000            | 21.400           | 0.000            | 33.100           | Woods, Good          | 1S                      |
| <b>0.000</b>     | <b>19.900</b>    | <b>0.000</b>     | <b>23.400</b>    | <b>0.000</b>     | <b>43.300</b>    | <b>TOTAL AREA</b>    |                         |

**20160414 hydrology**

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**Pipe Listing (all nodes)**

| Line# | Node Number | In-Invert (feet) | Out-Invert (feet) | Length (feet) | Slope (ft/ft) | n     | Diam/Width (inches) | Height (inches) | Inside-Fill (inches) |
|-------|-------------|------------------|-------------------|---------------|---------------|-------|---------------------|-----------------|----------------------|
| 1     | 2P          | 507.50           | 493.50            | 66.5          | 0.2105        | 0.012 | 36.0                | 0.0             | 0.0                  |

**20160414 hydrology**

Prepared by NH DOT

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Type II 24-hr 25-yr Rainfall=5.28"

Printed 6/17/2016

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: Area to culvert** Runoff Area=43.300 ac 3.23% Impervious Runoff Depth>1.94"  
Flow Length=3,130' Slope=0.0520 '/' Tc=47.6 min CN=69 Runoff=57.01 cfs 6.994 af

**Reach 3R: Riprap apron** Inflow=51.67 cfs 6.931 af  
Outflow=51.67 cfs 6.931 af

**Pond 2P: Culvert** Peak Elev=511.30' Storage=0.574 af Inflow=57.01 cfs 6.994 af  
Primary=51.67 cfs 6.931 af Secondary=0.00 cfs 0.000 af Outflow=51.67 cfs 6.931 af

**Total Runoff Area = 43.300 ac Runoff Volume = 6.994 af Average Runoff Depth = 1.94"**  
**96.77% Pervious = 41.900 ac 3.23% Impervious = 1.400 ac**

**Summary for Pond 2P: Culvert**

Inflow Area = 43.300 ac, 3.23% Impervious, Inflow Depth > 1.94" for 25-yr event  
 Inflow = 57.01 cfs @ 12.48 hrs, Volume= 6.994 af  
 Outflow = 51.67 cfs @ 12.64 hrs, Volume= 6.931 af, Atten= 9%, Lag= 9.5 min  
 Primary = 51.67 cfs @ 12.64 hrs, Volume= 6.931 af  
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Peak Elev= 511.30' @ 12.64 hrs Surf.Area= 0.201 ac Storage= 0.574 af

Plug-Flow detention time= 10.0 min calculated for 6.908 af (99% of inflow)  
 Center-of-Mass det. time= 6.7 min ( 836.3 - 829.6 )

| Volume           | Invert            | Avail.Storage         | Storage Description  |
|------------------|-------------------|-----------------------|--|
| #1               | 507.50'           | 1.500 af              | <b>Custom Stage Data (Prismatic) Listed below (Recalc)</b> |
|                  |                   |                       |  |
| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet)                                      |
| 507.50           | 0.100             | 0.000                 | 0.000  |
| 515.00           | 0.300             | 1.500                 | 1.500  |

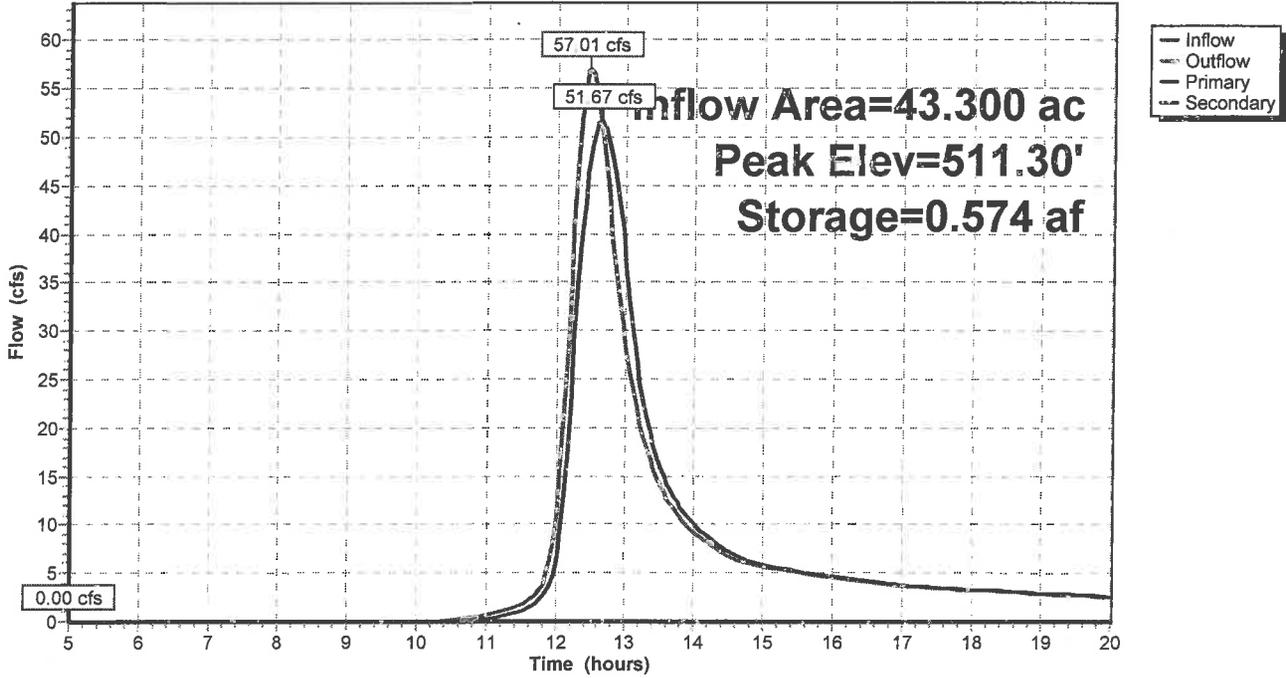
| Device | Routing   | Invert  | Outlet Devices  |
|--------|-----------|---------|---|
| #1     | Primary   | 507.50' | <b>36.0" Round PROP 36" RCP</b><br>L= 66.5' RCP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 507.50' / 493.50' S= 0.2105'/' Cc= 0.900<br>n= 0.012, Flow Area= 7.07 sf |
| #2     | Secondary | 514.00' | <b>300.0' long x 30.0' breadth Road overtopping</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63               |

**Primary OutFlow** Max=51.62 cfs @ 12.64 hrs HW=511.30' (Free Discharge)  
 ↑1=PROP 36" RCP (Inlet Controls 51.62 cfs @ 7.30 fps)

**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=507.50' (Free Discharge)  
 ↑2=Road overtopping ( Controls 0.00 cfs)

### Pond 2P: Culvert

#### Hydrograph



**NH NATURAL  
HERITAGE BUREAU (NHB)  
SENSITIVE SPECIES  
REPORT**

## Brian Desfosses

---

**From:** Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>  
**Sent:** Tuesday, May 17, 2016 9:41 AM  
**To:** Brian Desfosses  
**Subject:** RE: NH Route 77 Retaining wall reconstruction NHB16-1109

Brian,

The NHFG Nongame and Endangered Wildlife Program has reviewed NHB16-1109 for the proposed road, retaining wall and culvert repairs on Rt. 77 in Weare. The NHB database check identified the following species in the vicinity of the project:

Brook Floater (*Alasmodonta varicosa*) E --  
Blanding's Turtle (*Emydoidea blandingii*) E --  
Spotted Turtle (*Clemmys guttata*) T --  
Wood Turtle (*Glyptemys insculpta*) SC --  
1Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern

We do not expect impacts to Blanding's, spotted, or wood turtle as the construction is proposed to occur in August avoiding the turtle nesting season (end of May through the first week of July). The project also proposes to avoid the use of erosion control fabric with netting to avoid entrapment and mortality to reptiles. We do not expect impacts to brook floater mussel as there will be no work in the Piscataquog River. As long as all efforts are taken to avoid sediment from entering the river during the construction phase and thereafter, we do not expect impacts to brook floater mussel. Pollution, habitat degradation including sedimentation, substrate instability, and elevated water temperatures during low water periods have been identified as risk factors to populations. Long-term quantitative monitoring has revealed startling brook floater population declines in the Piscataquog River so if the work plan changes and impacts to the river bed are anticipated, please contact this office as soon as possible so that we may evaluate whether a Phase 1 mussel study is needed. Please feel free to call me if you have any questions about this review.

Regards,

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

---

**From:** Brian Desfosses [<mailto:BDesfosses@dot.state.nh.us>]  
**Sent:** Monday, May 16, 2016 2:01 PM  
**To:** Tuttle, Kim  
**Subject:** NH Route 77 Retaining wall reconstruction

Kim –

Here is the preliminary permit information, as discussed.

We will be working approximately 5-10 feet from the river and will have no equipment in the water. Per your suggestion, we will use the jute matting with no netting to stabilize slopes post-construction.

We are looking to perform this work in August of this year, which will largely depend on getting the wetland permit expedited.

The NHB File # is 16-1109.

Please let me know if you need any additional information.

Thank you.

Brian

Brian A. Desfosses, P.E.  
Assistant District Engineer  
NHDOT – District 5  
Bedford, NH  
ph. 603-666-3336

# Memo



NH NATURAL HERITAGE BUREAU  
NHB DATACHECK RESULTS LETTER

**To:** Brian Desfosses, NHDOT - District 5  
16 East Point Drive  
Bedford, NH 03110

**From:** Amy Lamb, NH Natural Heritage Bureau  
**Date:** 4/20/2016 (valid for one year from this date)  
**Re:** Review by NH Natural Heritage Bureau  
NHB File ID: NHB16-1109

**Town:** Weare

**Location:** Tax Maps: ROW near Map 202, Lot  
149

**Description:** Remove existing road, culvert, and retaining wall, reconstruct retaining wall in similar alignment, replace culvert in-kind, reconstruct road, pave surface.

**cc:** Kim Tuttle

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

**Comments:** This site is within an area flagged for possible impacts to the state-listed *Alasmidonta varicosa* (brook floater) in the North Branch Piscataquog River. Please contact NH Fish & Game.

| Invertebrate Species                              | State <sup>1</sup> | Federal | Notes  |
|---|--------------------|---------|--|
| Brook Floater ( <i>Alasmidonta varicosa</i> )     | E                  | --      | Contact the NH Fish & Game Dept (see below). |
| Vertebrate species                                | State <sup>1</sup> | Federal | Notes  |
| Blanding's Turtle ( <i>Emydoidea blandingii</i> ) | E                  | --      | Contact the NH Fish & Game Dept (see below). |
| Spotted Turtle ( <i>Clemmys guttata</i> )         | T                  | --      | Contact the NH Fish & Game Dept (see below). |
| Wood Turtle ( <i>Glyptemys insculpta</i> )        | SC                 | --      | Contact the NH Fish & Game Dept (see below). |

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

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

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.

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

DRED/NHB  
172 Pembroke Rd.  
Concord, NH 03301



## New Hampshire Natural Heritage Bureau - Animal Record

### Blanding's Turtle (*Emydoidea blandingii*)

**Legal Status**

Federal: Not listed  
 State: Listed Endangered

**Conservation Status**

Global: Apparently secure but with cause for concern  
 State: Critically imperiled due to rarity or vulnerability

**Description at this Location**

Conservation Rank: Not ranked  
 Comments on Rank:

Detailed Description: 2007: Area 11771: Adult turtle nesting. Shell about 10" in length.

General Area: 2007: Area 11771: Nesting on sandy bank.

General Comments:

Management

Comments:

**Location**

Survey Site Name: Peaslee Meadow Brook  
 Managed By:

County: Hillsborough

Town(s): Weare

Size: 1.9 acres

Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2007: Area 11771: River Road near town dump.

**Dates documented**

First reported: 2007-06-19

Last reported: 2007-06-19

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

## New Hampshire Natural Heritage Bureau - Animal Record

### Blanding's Turtle (*Emydoidea blandingii*)

#### Legal Status

Federal: Not listed  
 State: Listed Endangered

#### Conservation Status

Global: Apparently secure but with cause for concern  
 State: Critically imperiled due to rarity or vulnerability

#### Description at this Location

Conservation Rank: Not ranked  
 Comments on Rank:

Detailed Description: 2011: Area 12961: 1 adult female observed, laying eggs.

General Area: 2011: Area 12961: School yard.

General Comments:

Management

Comments:

#### Location

Survey Site Name: Peaslee Meadow Brook  
 Managed By:

County: Hillsborough

Town(s): Weare

Size: 7.7 acres

Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2011: Area 12961: Center Woods Elementary School, at the intersection of Rte. 114 and Center Woods Road.

#### Dates documented

First reported: 2011-06-09

Last reported: 2011-06-09

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

## New Hampshire Natural Heritage Bureau - Animal Record

### Spotted Turtle (*Clemmys guttata*)

#### Legal Status

Federal: Not listed  
 State: Listed Threatened

#### Conservation Status

Global: Demonstrably widespread, abundant, and secure  
 State: Imperiled due to rarity or vulnerability

#### Description at this Location

Conservation Rank: Not ranked  
 Comments on Rank:

Detailed Description: 2012: Area 13013: 1 adult observed.

General Area: 2012: Area 13013: Marsh.

General Comments:

Management

Comments:

#### Location

Survey Site Name: North Weare  
 Managed By: Chicoine Land / Pine Hill Road

County: Hillsborough

Town(s): Weare

Size: 1.9 acres

Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2012: Area 13013: Pine Hill Road, Weare [approximately 650m north of intersection with Rte. 77].

#### Dates documented

First reported: 2012-05-26

Last reported: 2012-05-26

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

## New Hampshire Natural Heritage Bureau - Animal Record

### Wood Turtle (*Glyptemys insculpta*)

#### Legal Status

Federal: Not listed  
State: Special Concern

#### Conservation Status

Global: Apparently secure but with cause for concern  
State: Rare or uncommon

#### Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).  
Comments on Rank:

Detailed Description: 2012: Area 13001: 1 adult male observed.2009: Area 12284: 1 female observed.1997: Area 6463: 1 seen. Adult, shell about 5".

General Area: 2012: Area 13001: Bridge over river with adjacent floodplain.1997: Area 6463: Roadside.

General Comments:

Management

Comments:

#### Location

Survey Site Name: North Weare, Piscataquog River

Managed By: Gooch on the River

County: Hillsborough

Town(s): Weare

Size: 13.4 acres

Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2012: Area 13001: Center Road bridge over North Branch Piscataquog River, Weare.2009: Area 12284: West Branch of the Piscataquog River at River Road crossing in Weare.1997: Area 6463: South side of road on shoulder. [North Weare where Rte. 77 turns south (intersection of Rte. 77 and Concord Stage Rd.)]

#### Dates documented

First reported: 1997-07-15

Last reported: 2012-06-06

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.



**US FISH & WILDLIFE**  
**IPAC RESULTS**



## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
New England Ecological Services Field Office  
70 COMMERCIAL STREET, SUITE 300  
CONCORD, NH 03301  
PHONE: (603)223-2541 FAX: (603)223-0104  
URL: [www.fws.gov/newengland](http://www.fws.gov/newengland)

Consultation Code: 05E1NE00-2016-SLI-1606

June 15, 2016

Event Code: 05E1NE00-2016-E-02322

Project Name: Weare

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

### To Whom It May Concern:

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

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

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

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

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

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

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan ([http://www.fws.gov/windenergy/eagle\\_guidance.html](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



United States Department of Interior  
Fish and Wildlife Service

Project name: Weare

## Official Species List

**Provided by:**

New England Ecological Services Field Office

70 COMMERCIAL STREET, SUITE 300

CONCORD, NH 03301

(603) 223-2541

<http://www.fws.gov/newengland>

**Consultation Code:** 05E1NE00-2016-SLI-1606

**Event Code:** 05E1NE00-2016-E-02322

**Project Type:** TRANSPORTATION

**Project Name:** Weare

**Project Description:** Repair failing retaining wall and replace culvert that goes through the wall.

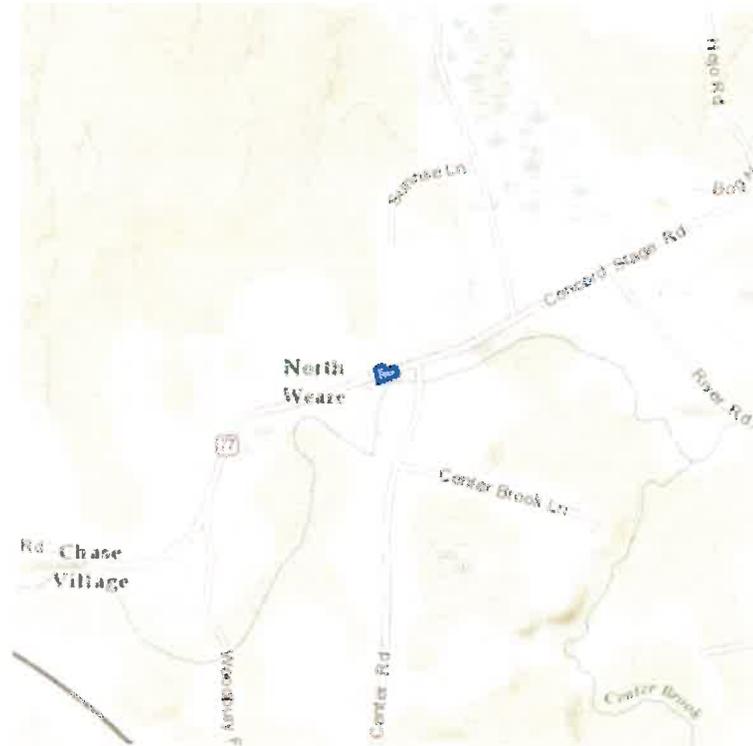
**Please Note:** The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



United States Department of Interior  
Fish and Wildlife Service

Project name: Weare

### Project Location Map:



**Project Coordinates:** MULTIPOLYGON (((-71.73855006694794 43.11408523805458, -71.73849105834961 43.11386006795704, -71.73792779445648 43.11403824610262, -71.73803240060806 43.11418117984445, -71.73830062150955 43.11413027197469, -71.7383462190628 43.11421838172249, -71.73858225345612 43.11416159989954, -71.73855006694794 43.11408523805458)))

**Project Counties:** Hillsborough, NH



United States Department of Interior  
Fish and Wildlife Service

Project name: Weare

## Endangered Species Act Species List

There are a total of 2 threatened or endangered species on your 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. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

| Flowering Plants  | Status     | Has Critical Habitat | Condition(s) |
|---|------------|----------------------|--------------|
| Small Whorled pogonia ( <i>Isotria medeoloides</i> )      | Threatened |                      |              |
| <b>Mammals</b>  |            |                      |              |
| Northern long-eared Bat ( <i>Myotis septentrionalis</i> ) | Threatened |                      |              |



United States Department of Interior  
Fish and Wildlife Service

Project name: Weare

## **Critical habitats that lie within your project area**

There are no critical habitats within your project area.

**US FISH & WILDLIFE  
CORRESPONDENCE**

## Rebecca A. Martin

---

**From:** Kevin Nyhan  
**Sent:** Wednesday, May 27, 2015 3:15 PM  
**To:** Rebecca A. Martin  
**Subject:** Fwd: Northern Long Eared Bat & NHDOT

Sent from my iPhone

Begin forwarded message:

**From:** "Preston, Emily" <[Emily.Preston@wildlife.nh.gov](mailto:Emily.Preston@wildlife.nh.gov)>  
**Date:** May 27, 2015 at 2:31:24 PM EDT  
**To:** Kevin Nyhan <[KNyhan@dot.state.nh.us](mailto:KNyhan@dot.state.nh.us)>  
**Cc:** "Henderson, Carol" <[Carol.Henderson@wildlife.nh.gov](mailto:Carol.Henderson@wildlife.nh.gov)>  
**Subject:** RE: Northern Long Eared Bat & NHDOT

Hi Kevin,

There are more than 7 hibernacula. Here are the towns that the hibernacula are found in, which at least reduces the miles of roads you need to think about for NLEB hibernacula.

Acworth  
Alexandria  
Alstead  
Bristol  
Campton  
Gorham  
Groton  
Lyman  
Rye  
Warner  
Woodstock

There is also some known summer roost trees in Newington.

I am working on data sharing agreements so you can get the location data.

*Emily*

---

**From:** Kevin Nyhan [<mailto:KNyhan@dot.state.nh.us>]  
**Sent:** Wednesday, May 27, 2015 11:57 AM  
**To:** Preston, Emily  
**Cc:** Henderson, Carol  
**Subject:** FW: Northern Long Eared Bat & NHDOT

Hi Emily,

I recognize that you are extremely busy. Please let me know if there is anything I can do to assist you in responding to my request regarding NLEB hibernacula.

Thank you,  
Kevin

---

**From:** Kevin Nyhan  
**Sent:** Wednesday, May 13, 2015 10:55 AM  
**To:** Preston, Emily ([Emily.Preston@wildlife.nh.gov](mailto:Emily.Preston@wildlife.nh.gov))  
**Cc:** vonOettingen, Susi; Rebecca A. Martin; Ronald Crickard; Melilotus Dube  
**Subject:** FW: Northern Long Eared Bat & NHDOT

Hi Emily,  
Have you had a chance to consider my email requesting hibernacula locations?  
Thank you,  
Kevin

---

**From:** Kevin Nyhan  
**Sent:** Tuesday, May 05, 2015 9:40 AM  
**To:** 'Preston, Emily ([Emily.Preston@wildlife.nh.gov](mailto:Emily.Preston@wildlife.nh.gov))'; 'vonOettingen, Susi'  
**Cc:** Rebecca A. Martin; Ronald Crickard  
**Subject:** RE: Northern Long Eared Bat & NHDOT

Hi Emily/Susi,  
Have you had a chance to consider my email below?  
Thank you,  
Kevin Nyhan

---

**From:** Kevin Nyhan  
**Sent:** Tuesday, April 28, 2015 2:50 PM  
**To:** Preston, Emily ([Emily.Preston@wildlife.nh.gov](mailto:Emily.Preston@wildlife.nh.gov)); vonOettingen, Susi  
**Cc:** Rebecca A. Martin; Ronald Crickard  
**Subject:** Northern Long Eared Bat & NHDOT

Good afternoon Emily and Susi,

Spring is here!

I cannot thank you both enough for the work and assistance you provided to NHDOT over the last fall/winter in preparing for the listing of NLEB. I think we are ahead of the curve.

One of the items regarding NLEB we discussed in October, and which has presented itself in the listing, is the need to understand where the winter hibernacula are for NLEB. We also discussed that there are 7 known hibernacula in NH, with only 1 known hibernacula that occurs within 5 miles of a NH highway. For our planning purposes could we have access to those locations? I think it is critical in meeting some of the requirements we have to meet. I understand that this may need to be a "fuzzy" GIS layer due to the sensitivity.

Thank you,

Kevin

Kevin T. Nyhan  
Bureau of Environment Administrator

**Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form**

Federal agencies should use this form for the optional streamlined consultation framework for the northern long-eared bat (NLEB). This framework allows federal agencies to rely upon the U.S. Fish and Wildlife Service’s (USFWS) January 5, 2016, intra-Service Programmatic Biological Opinion (BO) on the final 4(d) rule for the NLEB for section 7(a)(2) compliance by: (1) notifying the USFWS that an action agency will use the streamlined framework; (2) describing the project with sufficient detail to support the required determination; and (3) enabling the USFWS to track effects and determine if reinitiation of consultation is required per 50 CFR 402.16.

This form is not necessary if an agency determines that a proposed action will have no effect to the NLEB or if the USFWS has concurred in writing with an agency's determination that a proposed action may affect, but is not likely to adversely affect the NLEB (i.e., the standard informal consultation process). Actions that may cause prohibited incidental take require separate formal consultation. Providing this information does not address section 7(a)(2) compliance for any other listed species.

IPaC Official Species List Consultation Code: 05E1NE00 - 2016 - SL1 - 1606

**Information to Determine 4(d) Rule Compliance:**

|  | YES                                 | NO                                  |
|--|-------------------------------------|-------------------------------------|
| 1. Does the project occur wholly outside of the WNS Zone <sup>1</sup> ?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 2. Have you contacted the appropriate agency <sup>2</sup> to determine if your project is near known hibernacula or maternity roost trees?                                       | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Could the project disturb hibernating NLEBs in a known hibernaculum?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 4. Could the project alter the entrance or interior environment of a known hibernaculum?   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Does the project remove any trees within 0.25 miles of a known hibernaculum at any time of year?  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 6. Would the project cut or destroy known occupied maternity roost trees, or any other trees within a 150-foot radius from the maternity roost tree from June 1 through July 31. | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

You are eligible to use this form if you have answered yes to question #1 **or** yes to question #2 **and** no to questions 3, 4, 5 and 6. The remainder of the form will be used by the USFWS to track our assumptions in the BO.

**Agency and Applicant<sup>3</sup>** (Name, Email, Phone No.): Brian Desfosses, NHDOT District 5

bdesfosses@dot.state.nh.us, 603-223-3802

**Project Name:** NH Route 77 Weare Retaining Wall

**Project Location** (include coordinates if known): -71.73855006694794, 43.11408523805458

**Basic Project Description** (provide narrative below or attach additional information): The project proposes construction of 121 lineal foot retaining wall along the south side of NH Route 77, just west of the intersection of Center Road. The project will also include the reconstruction of the existing cross-culvert and stabilization of disturbed slopes in the area. Some minor tree cutting will be necessary within about 40 feet of the existing road.

<sup>1</sup> <http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSZone.pdf>

<sup>2</sup> See <http://www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html>

<sup>3</sup> If applicable - only needed for federal actions with applicants (e.g., for a permit, etc.) who are party to the consultation.

**General Project Information**

**YES NO**

|  |                                     |                                     |
|--|-------------------------------------|-------------------------------------|
| Does the project occur within 0.25 miles of a known hibernaculum?                        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Does the project occur within 150 feet of a known maternity roost tree?                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Does the project include forest conversion <sup>4</sup> ? (if yes, report acreage below) | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Estimated total acres of forest conversion   | 0.036 ac                            |                                     |
| If known, estimated acres <sup>5</sup> of forest conversion from April 1 to October 31   | 0.036 ac                            |                                     |
| If known, estimated acres of forest conversion from June 1 to July 31 <sup>6</sup>       | 0.036 ac                            |                                     |
| Does the project include timber harvest? (if yes, report acreage below)                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Estimated total acres of timber harvest  |                                     |                                     |
| If known, estimated acres of timber harvest from April 1 to October 31                   |                                     |                                     |
| If known, estimated acres of timber harvest from June 1 to July 31                       |                                     |                                     |
| Does the project include prescribed fire? (if yes, report acreage below)                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Estimated total acres of prescribed fire   |                                     |                                     |
| If known, estimated acres of prescribed fire from April 1 to October 31                  |                                     |                                     |
| If known, estimated acres of prescribed fire from June 1 to July 31                      |                                     |                                     |
| Does the project install new wind turbines? (if yes, report capacity in MW below)        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Estimated wind capacity (MW)   |                                     |                                     |

Agency Determination:

By signing this form, the action agency determines that this project may affect the NLEB, but that any resulting incidental take of the NLEB is not prohibited by the final 4(d) rule.

If the USFWS does not respond within 30 days from submittal of this form, the action agency may presume that its determination is informed by the best available information and that its project responsibilities under 7(a)(2) with respect to the NLEB are fulfilled through the USFWS January 5, 2016, Programmatic BO. The action agency will update this determination annually for multi-year activities.

The action agency understands that the USFWS presumes that all activities are implemented as described herein. The action agency will promptly report any departures from the described activities to the appropriate USFWS Field Office. The action agency will provide the appropriate USFWS Field Office with the results of any surveys conducted for the NLEB. Involved parties will promptly notify the appropriate USFWS Field Office upon finding a dead, injured, or sick NLEB.

Signature: 

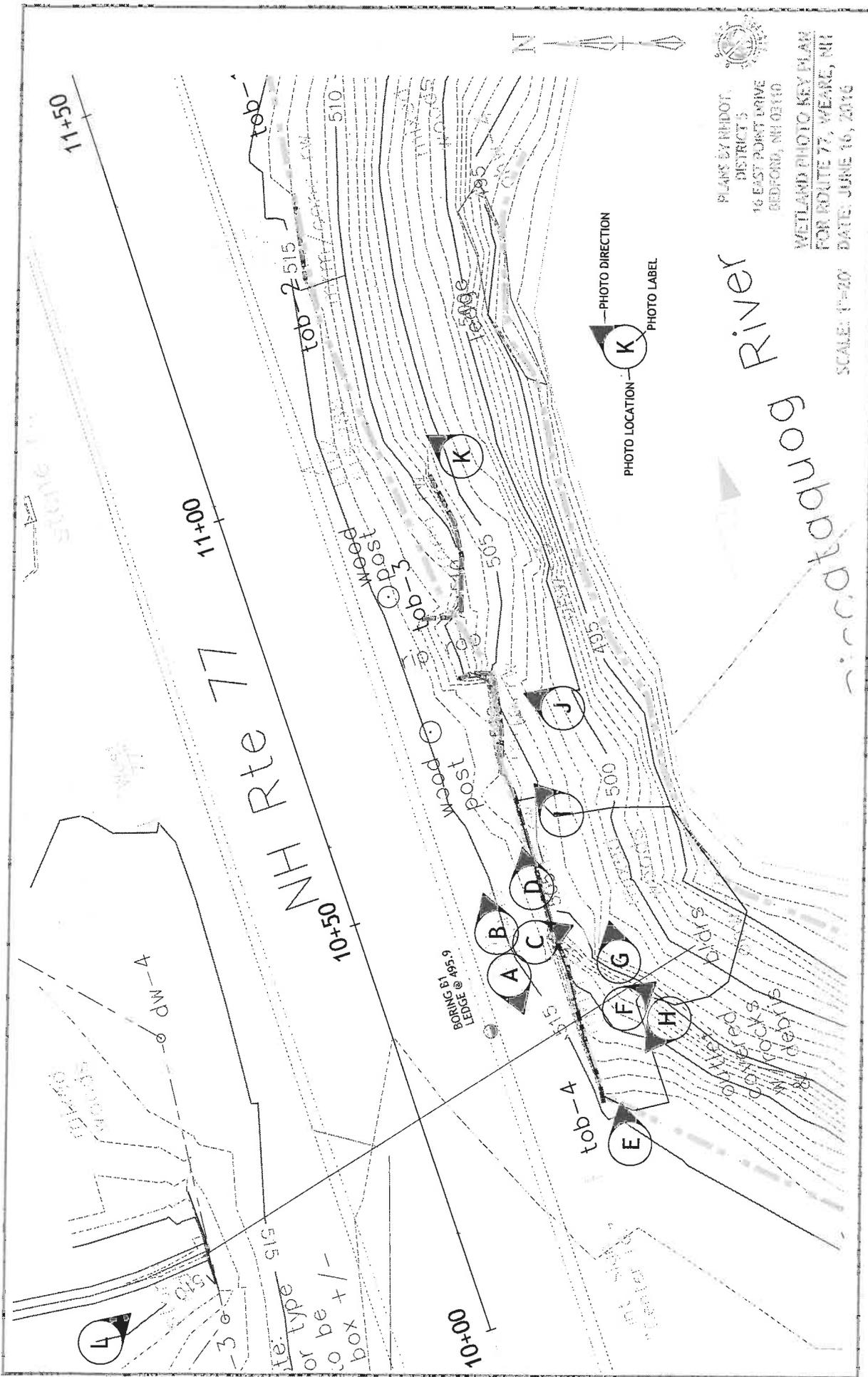
Date Submitted: 6/17/16

<sup>4</sup> Any activity that temporarily or permanently removes suitable forested habitat, including, but not limited to, tree removal from development, energy production and transmission, mining, agriculture, etc. (see page 48 of the BO).

<sup>5</sup> If the project removes less than 10 trees and the acreage is unknown, report the acreage as less than 0.1 acre.

<sup>6</sup> If the activity includes tree clearing in June and July, also include those acreage in April to October.

**PHOTO  
KEY PLAN**



PLANS BY BRIDOT  
 DISTRICT 5  
 16 EAST POINT DRIVE  
 BEDFORD, NH 03110

WELAND PHOTO KEY PLAN  
 FOR ROUTE 77, WEARE, NH  
 DATE: JUNE 16, 2010

SCALE: 1"=20'

4

fe: type 915  
 or to be +/-  
 box + / -

100+00

top-4

top-2

11+50

11+00

NH Rte 77

10+50

River

WATER

BORING B1 495.9  
 LEDGE @ 495.9

WOOD POST

WOOD POST

WOOD POST

WOOD POST

WOOD POST

WOOD POST

**EXISTING  
CONDITIONS  
PHOTOGRAPHS**



**A. Looking West from edge of pavement at road**



**B. Looking East from top of wall**



**C. Looking South from edge of pavement at road**



**D. Looking East from top of wall**



**E. Looking East from end of existing wall**



**F. Looking South from buried culvert outlet**



**G. Looking East along existing wall**



**H. Looking Northwest at end of existing wall**



**I. Looking East from middle of existing wall**



**J. Looking East near end of existing wall**



**K. Looking East near end of proposed wall**



**L. Looking South at upstream channel and culvert entrance (sedimented)**

**CONSTRUCTION**

**SEQUENCE**

**NARRATIVE**

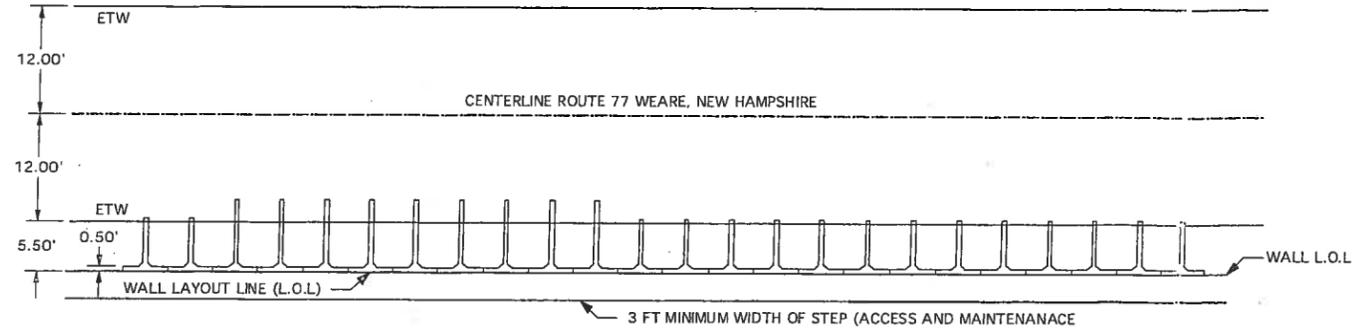
## **PROPOSED CONSTRUCTION SEQUENCE**

1. Close road to through traffic and set up detours around Center Road (Truck Route 77).
2. Install siltation control measures
3. Excavate existing roadway – truck excess material to a suitable location in the Town of Weare transfer station for stockpiling.
4. Remove existing retaining wall and culvert
5. Over excavate base of retaining wall to competent bedrock or to a level at the base of the concrete leveling pad.
6. Pour concrete leveling pad. Allow curing for 3-5 days.
7. Construct new culvert, use precast or pour headwalls and construct riprap outlet pad.
8. Construct T-wall sections, adding select fill material between courses and compacting in lifts no greater than 6 inches.
9. Once the first course of wall is complete, construct the grassed panel immediately downstream of the wall. Blend grades and stabilize the soil mass.
10. Hydroseed areas to be grassed, and cover the remainder slopes with riprap as depicted on the plan set.
11. Continue adding T-wall sections until the wall is complete.
12. Open one lane of traffic, as safety allows – alternate traffic.
13. Place precast coping blocks along top of wall. Pour the cast-in-place gravity slab to anchor the coping.
14. Add select material on top of the cast-in-place slab to finished subgrade.
15. Install guardrail on top of the coping blocks.
16. Pave roadway and open up to two-way traffic.
17. Remove sediment control measures one the site is stabilized.

**PROPOSED  
RETAINING WALL  
ELEVATION VIEW  
AND CROSS-SECTION  
PLANS**

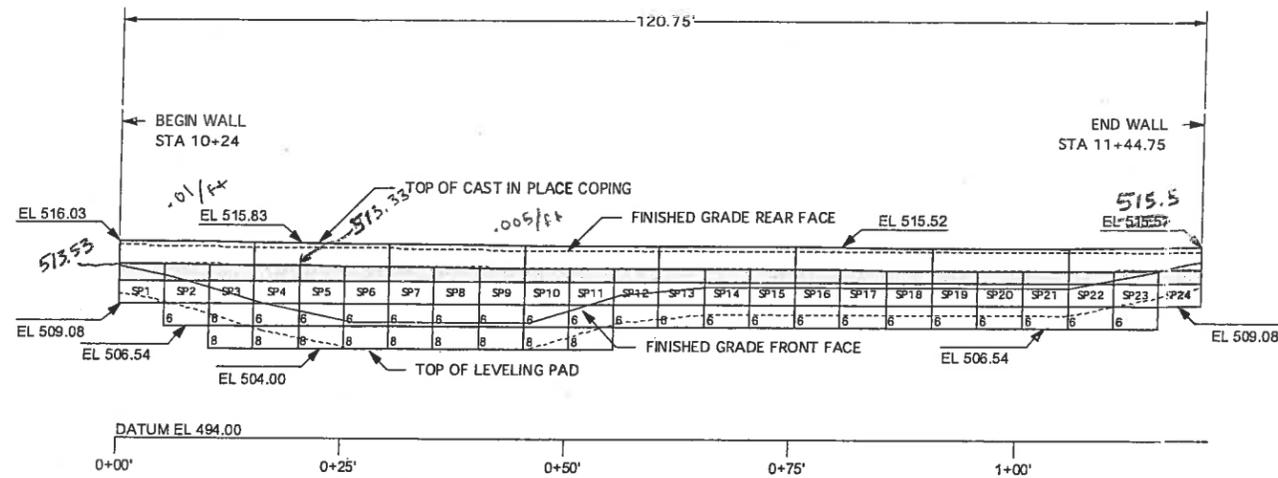






| PANEL TYPE         | QNTY (ea) | AREA (sf)     | SELECT FILL (cy) |
|--------------------|-----------|---------------|------------------|
| 2.5 x 5.0 x 06 Std | 22        | 275.00        | 50               |
| 2.5 x 5.0 x 08 Std | 9         | 112.50        | 28               |
| Special Units      | 24        | 488.98        | 110              |
| <b>TOTALS:</b>     | <b>55</b> | <b>876.48</b> | <b>188</b>       |

NOTE: Select backfill quantities are between stems only.



DEVELOPED ELEVATION (FRONT FACE)

SPECIAL NOTES:

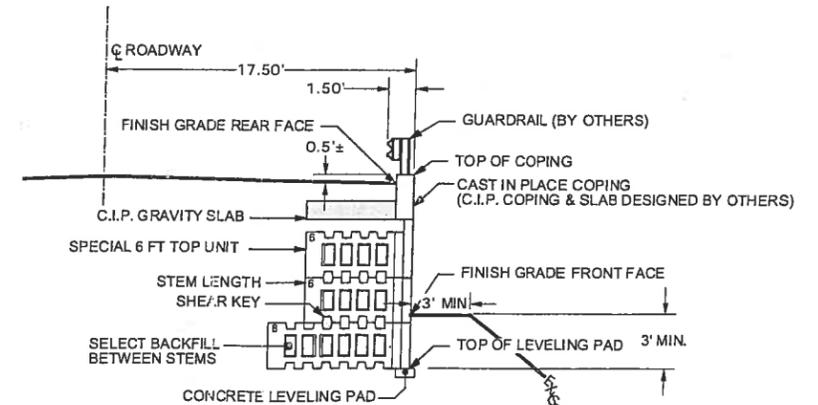
- THESE DRAWINGS WERE PREPARED BASED ON INFORMATION GIVEN IN THE FOLLOWING:
  - PLAN AND CROSS SECTION RECEIVED FROM NHDOT ON APRIL 30TH 2004.
  - TEST BORING REPORT RECEIVED FROM NHDOT ON APRIL 30TH 2004.

- APPLIED BEARING PRESSURE AT MAXIMUM HEIGHT:
  - 2772 psf
- THE FOLLOWING ASSUMPTIONS WERE MADE:
  - THE FOUNDATION SOILS ARE CAPABLE OF DEVELOPING SUFFICIENT BEARING CAPACITY TO SUPPORT THE WALL LOADS WITH AN ACCEPTABLE FACTOR OF SAFETY.

- T-WALL FACE FORM FINISH:
  - PLAIN CONCRETE FINISH

GENERAL NOTES:

- SELECT BACKFILL BETWEEN STEMS:
  - ANGLE OF INTERNAL FRICTION - 34° (MIN)
  - DENSITY - 120 pcf (MIN)
  - 15% MAXIMUM PASSING #200 SIEVE
  - 100% PASSING 4" SIEVE
  - 95% STANDARD COMPACTION (ASTM D-698)
- UNCLASSIFIED BACKFILL BEHIND STEMS:
  - ANGLE OF INTERNAL FRICTION - 30°
  - DENSITY - 120 pcf
  - 95% STANDARD COMPACTION (ASTM D-698)
- HORIZONTAL JOINT:
  - 1/2" FIBER EXPANSION JOINT MATERIAL
- VERTICAL JOINT:
  - 3/8" SPACE
  - FILTER CLOTH BACKING
- CONCRETE LEVELING PAD:
  - 6" x 12"
  - 2500 psi CONCRETE
  - NO REBAR
  - GRADE TOLERANCE - 1/4" IN 10'
- CONSTRUCTION:
  - SEE T-WALL® CONSTRUCTION MANUAL
- FOUNDATION:
  - UNSUITABLE MATERIALS REMOVED AND REPLACED WITH COMPACTED SELECT FILL
- T-WALL UNIT REBAR:
  - GRADE 60 BLACK STEEL BARS



TYPICAL SECTION AT MAXIMUM HEIGHT  
SCALE: 1" = 5'

**PRELIMINARY**  
06/10/2004

The design contained on these drawings is based upon information provided by the owner. On the basis of this information, The Neel Company has designed, and is responsible for, the internal stability of the structure only. External stability, including foundation and slope stability, is the responsibility of the owner.

This drawing contains information proprietary to The Neel Company. The Neel Company is the exclusive licensee of the T-WALL patent. ©2004 The Neel Company

PRECASTER: CONCRETE SYSTEMS INC.  
PROJECT #:

CONTRACTOR: NEW HAMPSHIRE DOT  
PROJECT #:

DESIGNER



**THE NEEL COMPANY**  
8328-D TRAFORD LANE  
SPRINGFIELD, VIRGINIA 22152  
PH: (703) 913-7858  
FX: (703) 913-7859  
WEB: WWW.NEELCO.COM  
PROJECT #: TW 2650

CERTIFIED WITH RESPECT TO INTERNAL STABILITY OF T-WALL® STRUCTURES ONLY

REVISIONS

**WEARE ROAD, ROUTE 77**  
WEARE, NH

PRELIMINARY DESIGN  
WALL PLAN, ELEVATION AND SECTION  
T-WALL® RETAINING WALL SYSTEM

|              |            |
|--------------|------------|
| SCALE:       | 1" = 10'   |
| DATE:        | 06/10/2004 |
| DESIGNED BY: | NAS        |
| DRAWN BY:    | NAS        |
| CHECKED BY:  |            |
| SHEET:       | 3 OF 3     |

**EROSION CONTROL  
STRATEGIES  
FOR THE PROJECT**



**ORIGINAL  
WETLAND PERMIT  
(PERMIT# 2004-02131),  
PROJECT DESIGN,  
AND GEOTECHNICAL  
REVISION REPORT (2005)**

Copy of original expired permit  
(minimum impact)

DJD ✓  
KTN ✓  
Cing



State of New Hampshire  
DEPARTMENT OF ENVIRONMENTAL SERVICES

6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095  
(603) 271-2147 FAX (603) 271-6588



WETLANDS AND NON-SITE SPECIFIC PERMIT 2004-02131

Permittee: NH Dept of Transportation, PO Box 483, Concord, NH 03302  
Project Location: Rte 77, Weare  
Weare Tax Map/Lot No.  
Waterbody: Piscataquog River

NOTE  
CONDITIONS

APPROVAL DATE: 09/23/2004 EXPIRATION DATE: 09/23/2009

Based upon review of the above referenced application, in accordance with RSA 482-A and RSA 485-A:17, a Wetlands Permit and Non-Site Specific Permit was issued. This permit shall not be considered valid unless signed as specified below.

**PERMIT DESCRIPTION:** Replace approximately 125 linear feet of retaining wall and stone box culvert with a 24 in. culvert impacting approximately 1,000 sq. ft. of riverbank. NHDOT project #14138.

**THIS APPROVAL IS SUBJECT TO THE FOLLOWING PROJECT SPECIFIC CONDITIONS:**

1. All work shall be in accordance with plans by NHDOT dated 07/08/02 as received by the Department on September 7, 2004.
2. Dredged material shall be placed out of the DES Wetlands Bureau jurisdiction.
3. Appropriate siltation/erosion/turbidity controls shall be in place prior to construction, shall be maintained during construction, and shall remain until the area is stabilized.
4. Construction equipment shall not be located within surface waters.
5. Within three days of final grading in an area that is in or adjacent to wetlands or surface waters, all exposed soil areas shall be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack or netting and pinning on slopes steeper than 3:1.
6. The contractor responsible for completion of the work shall utilize techniques described in the DES Best Management Practices for Urban Stormwater Runoff Manual (January, 1996) and the Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire (August, 1992).
7. Extreme precautions to be taken within riparian areas to limit unnecessary removal of vegetation during road construction and areas cleared of vegetation to be revegetated as quickly as possible. Large trees are to be saved wherever possible.
8. There shall be no further alteration to wetlands or surface waters without amendment of this permit.
9. Proper headwalls shall be constructed within seven days of culvert installation.
10. Work shall be done during low flow.
11. Water shall be diverted by pumping around the construction or passed under a temporary access road.
12. Daily covering of the slope area with straw or similar.

**GENERAL CONDITIONS WHICH APPLY TO ALL DES WETLANDS PERMITS:**

1. A copy of this permit shall be posted on site during construction in a prominent location visible to inspecting personnel;
2. This permit does not convey a property right, nor authorize any injury to property of others, nor invasion of rights of others;
3. The Wetlands Bureau shall be notified upon completion of work;
4. This permit does not relieve the applicant from the obligation to obtain other local, state or federal permits that may be required (see attached form for status of federal wetlands permit);
5. Transfer of this permit to a new owner shall require notification to and approval by the Department;
6. This permit shall not be extended beyond the current expiration date.
7. This project has been screened for potential impacts to **known** occurrences of rare species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or have received only cursory inventories, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species.

APPROVED: [Signature]  
DES Wetlands Bureau

BY SIGNING BELOW I HEREBY CERTIFY THAT I HAVE FULLY READ THIS PERMIT AND AGREE TO ABIDE BY ALL PERMIT CONDITIONS.

[Signature]  
OWNER'S SIGNATURE (required)

[Signature]  
CONTRACTOR'S SIGNATURE (required)



State of New Hampshire  
DEPARTMENT OF ENVIRONMENTAL SERVICES

6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095

(603) 271-2147 FAX (603) 271-6588



**NOTICE TO RECIPIENTS OF MINIMUM IMPACT N.H. WETLANDS PERMITS**

Your permit was approved by the New Hampshire Wetlands Bureau as a minimum impact project, and your project is automatically approved under the Army Corp's New Hampshire Programmatic General Permit.

For the purpose of the NH PGP, Minimum Impact Projects do not include new construction of:

- Dams,
- Dikes,
- water withdrawal or diversion projects which require fill in wetlands or surface waters,
- wetlands restoration projects, or any projects which involve work in other than low flow conditions (July 1-September 30),
- any projects involving more than 3,000 square feet of a water body or wetland fill and secondary impacts.

Also, not included under Minimum Impact Projects are those projects that include the reconstruction or replacement of currently unserviceable structures/fills. The projects must be reviewed through the screening procedures for minor impact projects. The activities in section 10 waters not regulated by the Wetlands Bureau, formerly authorized under the Nationwide Permit Program and listed in Appendix A of this document are designated non-reporting activities.

These approvals do not relieve you from obtaining any necessary local permits that may be required by your town.

If you have any questions, feel free to give us a call at 603-271-2147

\*\*\*\*\*

*Copy  
9/24/04*

**RECEIVED**  
BUREAU OF ENVIRONMENT

SEP 24 2004

N.H. DEPARTMENT OF  
TRANSPORTATION

This notice was sent with minimum impact permit # 2004-02131 on 9-24-04 by NLP

# LEGEND

| TYPE OF WETLAND IMPACT           | PERMANENT IMPACT  |
|----------------------------------|---|
| N.H.V.B.<br>(NON-WETLAND)        |  |
| N.H.V.B. & A.C.O.E.<br>(WETLAND) |  |

N.H.V.B. - NEW HAMPSHIRE WETLANDS BOARD  
A.C.O.E. - ARMY CORP. OF ENGINEERS

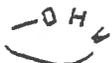
 WETLAND DESIGNATION NUMBER

 WETLAND IMPACT LOCATION

 WETLAND MITIGATION AREA

 TEMPORARY IMPACTS

 MITIGATION

 ORDINARY HIGH WATER

 TOP OF BANK

 TIDAL BUFFER ZONE

 TOP OF BANK &  
ORDINARY HIGH WATER

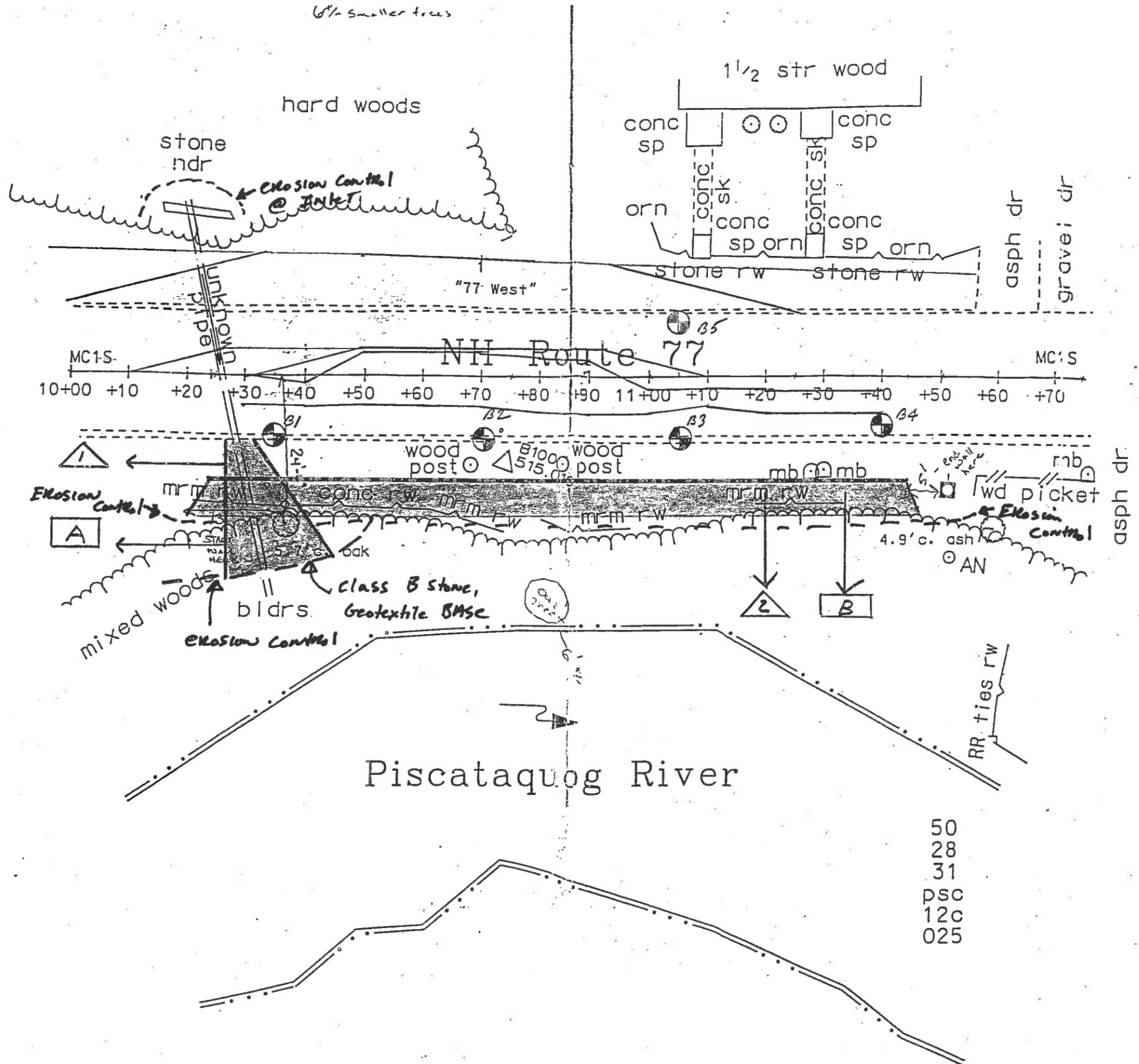
| WETLAND DESIGNATION | USFWS WETLAND CLASSIFICATION | LOCATION                                  | AREA (S.F.)               |                                     |                   |
|---------------------|------------------------------|---|---------------------------|-------------------------------------|-------------------|
|                     |                              |   | N.H.V.B.<br>(NON-WETLAND) | N.H.V.B. &<br>A.C.O.E.<br>(WETLAND) | TEMPORARY IMPACTS |
| 1<br>2              | R2UB1                        | A<br>B<br>C<br>D<br>E<br>F<br>G<br>H<br>I |                           | 2000                                | 1000              |

PERMANENT IMPACTS: 2000S.F.

TEMPORARY IMPACTS: 1000S.F.

TOTAL IMPACTS: 3000S.F.

NHDOT District 5 Rte. 77 Weare, just west of Center Rd.



**WEARE  
1832-I**  
 PLAN PREPARATION RECORD PLAN  
 SURVEY DATA PROCESSED BY : SEL  
 ANNOTATED BY : MTG  
 FIELD INSPECTED BY : SEL, MDY  
 COMPLETION DATE : 7-9-02  
 SURVEY BOOK NUMBERS : 12605  
 + N. H. D. O. T. +  
 SCALE IN FEET

Scale : 1" = 20'

50  
28  
31  
psc  
12c  
025

**From:** Tom Cleary  
**Sent:** Friday, June 10, 2005 10:02 AM  
**To:** Pamela Mitchell  
**Cc:** Fred Prior  
**Subject:** Weare Retaining Wall (Route 77)

Pam,

Geotechnical recommendations for the Weare retaining wall site are summarized below in reference to the attached Figures 1 and Figure 2. Additional information that should be referenced include, a) our e-mail dated August 22, 2002, b) test boring logs for B1 through B5 that were conducted at the site during July, 2002, and c) T-wall design plans dated July 15, 2004.

Recommendations:

- 1) Our recommendations are based on incorporating the original T-wall layout from the July 15, 2004 plans into the recommended modified layout that is indicated on Figures 1 and 2, since the T-wall units from the original layout have already been purchased.
- 2) The modified layout includes a P1-SP-6-8-10 module sequence for columns 2 through 23 (bottom of wall at El. 502.5), and a P1-SP-6-8 sequence for columns 1 and 24 (bottom of wall at El. 505.0). The lower bottom of wall grade is necessary in order to set the bottom of wall closer to the bedrock surface, and in turn make the external stability of the wall less dependent on the stability of the steep and erratic slope below the wall (as discussed in the August 22, 2002 e-mail dated).
- 3) The design includes placing 18 inches of Class B concrete within the lower portion of the bottom unit. The concrete is intended to provide continuity along the base of the wall, and to prevent any loss of infilling from within the T-wall units, if there is any localized erosion or slope failure in front of the wall. Some steel reinforcement for shrinkage purposes should be placed within the concrete.
- 4) An 18 inch wide aggregate underdrain with a 6 inch pipe is recommended as a backdrain outside the heel of the wall, as indicated on Figure 1. A means of outletting this backdrain (and the existing blocked culvert) will need further evaluation.
- 5) A minimum of six inches of structural fill is recommended below the bottom of the lowest unit for a work surface and for a cushion below the concrete units. Any localized bedrock or boulders that project above the El. 502 bottom of structural fill grade should be removed with a hoe-ram or similar means to provide the minimum six inches. (Note: the bedrock surface ranged between El. 496 and 501.8 in the 5 test borings). It is likely that boulders will be encountered within the excavation for the wall, based on the numerous boulders along the slope surface.
- 6) The immediate slope in front of the wall face that is excavated as part of the wall construction should be reconstructed so that the slope crest is a minimum of 4 feet from the wall face to provide a short buffer zone and a bench for future inspection; the wall toe (top of leveling pad) should be set a minimum of 3 feet below the final grade in front of the wall (similar to the T-wall plans). The surface of the reconstructed slope and bench should be covered with a minimum of 2 feet of Class C stone fill with a geotextile below (same geotextile used for the aggregate underdrain).
- 7) The addition of the lower 10 foot unit was discussed with the T-wall company (Kamal Dix), and they verified that the internal stability of the modified T-wall configuration with the added 10 foot lower unit is acceptable. The T-wall details on the 7/15/04 plans that are not affected by the

recommended modification look reasonable.

Hard copies of larger scale Figures 1 and 2, boring logs for B1 through B5 and the August 22, 2002 e-mail have been sent to you through the office mail. Please review the recommendations and let me know if you have any questions or comments. We should also plan on meeting with your construction group to discuss the design and constructibility issues in greater detail.

Tom  
x1654

**NOTES**

1. WETLANDS DELINEATED BY MATT URBAN IN MAY 2016 AND FIELD LOCATED BY NHDOT.
2. GROUND SURVEY WORK CONDUCTED IN MAY, 2016 BY NHDOT.
3. SOIL BORINGS PERFORMED BY NHDOT.
4. ALL DISTURBED SLOPES TO BE STABILIZED WITH GRASS BY HYDROSEEDING OR REGRAP IMMEDIATELY AFTER CONSTRUCTION ACTIVITIES AND RE-GRADING HAVE BEEN COMPLETED.

**TABLE OF WETLAND IMPACTS**

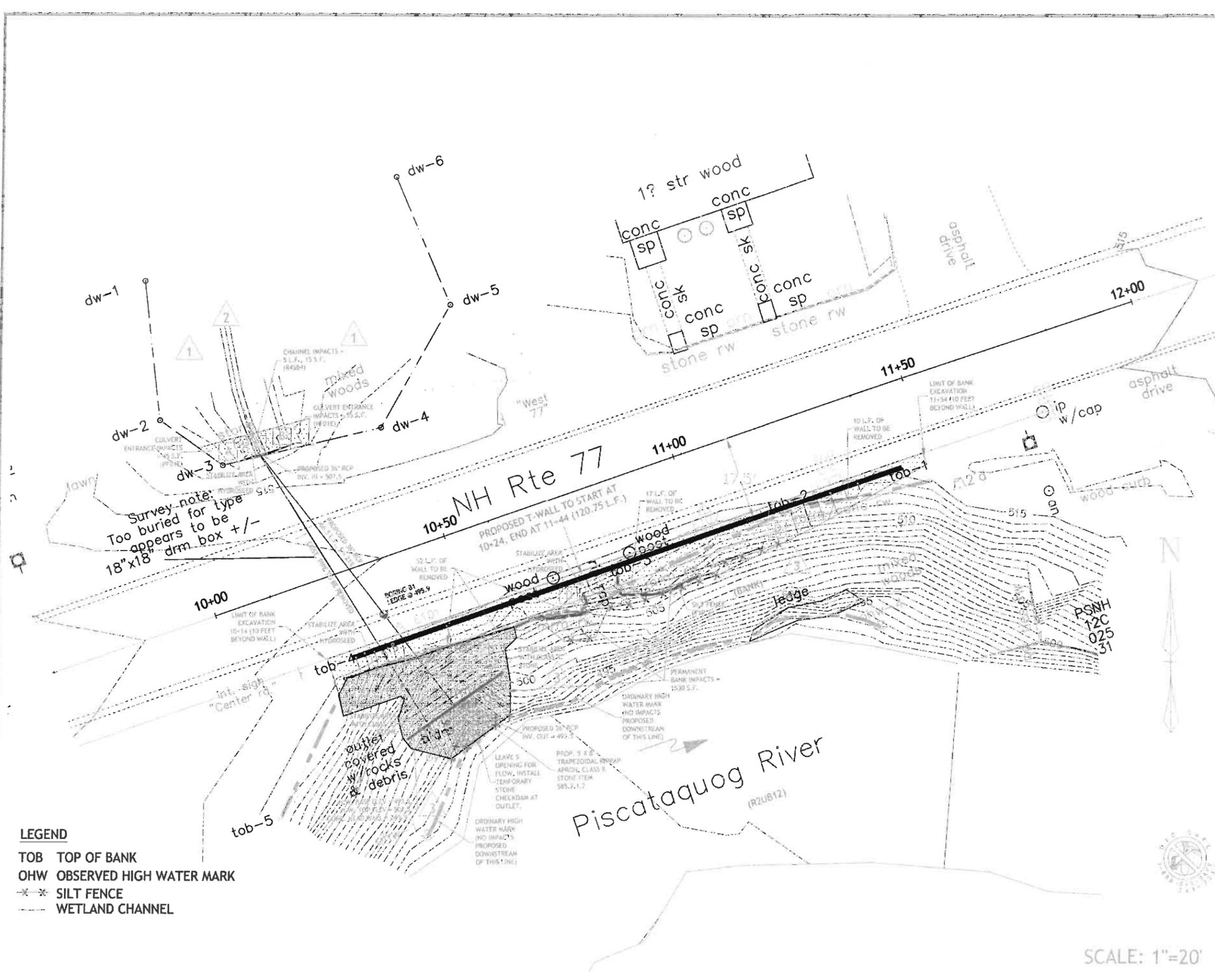
| WETLAND #  | USFWS CLASS | IMPACT LOCATION | KNOWN WETLAND | N.H.W.E. # | A.C.C.E. # | TEMPORARY IMPACTS | NOTE     |  |
|--|-------------|-----------------|---------------|------------|------------|-------------------|----------|--|
| 1  | PF01E       | A               | 0.5 A.F.      | 45 S.F.    |            | 0.5 A.F.          | DREDGE   |  |
| 1  | PF01E       | B               | 0.5 F.F.      | 30 S.F.    |            | 0.5 F.F.          | BRIDGE   |  |
| 2  | BASH        | C               | 0.5 F.F.      | 0.5 F.F.   | 15.5 F.F.  | 0.5 F.F.          | DREDGE   |  |
| 2  | BANK        | D               | 15.0 L.F.     | 0.5 F.F.   |            | 0.5 F.F.          | CUT-FILL |  |
| PERMANENT IMPACTS: 16.0 S.F.   |             |                 |               |            |            |                   |          |  |
| TEMPORARY IMPACTS: 0 S.F.  |             |                 |               |            |            |                   |          |  |
| TOTAL IMPACTS: 16.0 S.F.   |             |                 |               |            |            |                   |          |  |
| MITIGATION IMPACTS: 2 L.F. CHANNEL + 140 L.F. WALL (BANK) + 79 L.F. EXISTING WALL (BANK) |             |                 |               |            |            |                   |          |  |

**BANK IMPACTS**

THE INTENT OF THIS PLAN IS TO SHOW THE REMOVAL OF 79 L.F. OF EXISTING RETAINING WALL ALONG ROUTE 77, AND THE INSTALLATION OF 141 L.F. OF NEW T-WALL RETAINING WALL. THE TOTAL BANK IMPACT WILL BE 140 L.F., TO INCLUDE 9.5 FEET TO EITHER SIDE OF THE WALL TO ALLOW FOR EXCAVATION AND INSTALLATION.

**WALL DESIGN**

THE PROPOSED T-WALL WAS DESIGNED BY THE NEEL COMPANY (PROJECT #TW0650, NHDOT PROJECT #14138 AND 4088). SEE SPECIFICATIONS AND CONSTRUCTION GUIDELINES FOR THE T-WALL CONSTRUCTION.



**LEGEND**

- TOB TOP OF BANK
- OHW OBSERVED HIGH WATER MARK
- \* \* SILT FENCE
- WETLAND CHANNEL

PLANS BY NHDOT,  
DISTRICT 5  
16 EAST POINT DRIVE  
BEDFORD, NH 03110

WETLAND IMPACT PLAN  
FOR ROUTE 77, WEARE, NH  
DATE: JUNE 16, 2016



SCALE: 1"=20'