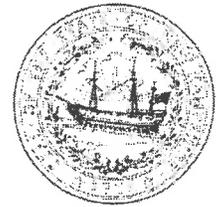




WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau
Land Resources Management

Check the status of your application: www.des.nh.gov/onestop



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

| | | | |
|-------------------------------|-------------------------------|-------------------------------|------------|
| Administrative Use Only | Administrative Use Only | Administrative Use Only | 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: **NH 145 over Bishop Brook** TOWN/CITY: **Stewartstown**

TAX MAP: BLOCK: LOT: UNIT:

USGS TOPO MAP WATERBODY NAME: NA STREAM WATERSHED SIZE: NA

LOCATION COORDINATES (If known): 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.

Bridge replacement of Br. No. 121/114, NH 145 over Bishop Brook with associated roadwork. The purpose is to remove the bridge from the State's Red List. The two lane bridge is currently on the NH DOT priority list at position 6 due to the rating of the bridge deck as being in poor condition and the rating of the substructure as being in serious condition. Approximately 500' of roadway work is intended and the bridge span will increase to 50'.

4. SHORELINE FRONTAGE

NA This lot has no shoreline frontage. SHORELINE FRONTAGE:
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...

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 - 1219
- b. Designated River the project is in ¼ miles of: _____; and
date a copy of the application was sent to the Local River Management Advisory Committee: Month: ___ Day: ___ Year: ___
- NA

7. APPLICANT INFORMATION (Desired permit holder)LAST NAME, FIRST NAME, M.I.: **David Scott**TRUST / COMPANY NAME: **NHDOT**MAILING ADDRESS: **7 Hazen Drive**TOWN/CITY: **Concord**STATE: **NH**ZIP CODE: **03302-0483**EMAIL or FAX: **603-271-2759**PHONE: **603-271-2731**ELECTRONIC COMMUNICATION: By initialing here: DS, I hereby authorize NHDES to communicate all matters relative to this application electronically**8. PROPERTY OWNER INFORMATION (If different than applicant)**

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

9. AUTHORIZED AGENT INFORMATION

LAST NAME, FIRST NAME, M.I.:

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

10. PROPERTY OWNER SIGNATURE:

See the Instructions & Required Attachments document for clarification of the below statements

By signing the application, I am certifying that:

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.
2. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document.
3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.
4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.
5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.
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.
7. I have submitted a Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) 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.
8. I authorize NHDES and the municipal conservation commission to inspect the site of the proposed project.
9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.
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.
11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
12. The mailing addresses I have provided are up to date and appropriate for receipt of NHDES correspondence. NHDES will not

*David L Scott*

Property Owner Signature

David L Scott

Print name legibly

5/26/16

Date

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

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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:3.1

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 Sq. Ft. / Lin. Ft. | | TEMPORARY Sq. Ft. / Lin. Ft. | |
|-------------------------------------|---------------------------------|------------------------------|---------------------------------|------------------------------|
| Forested wetland | 481 | <input type="checkbox"/> ATF | 280 | <input type="checkbox"/> ATF |
| Scrub-shrub wetland | | <input type="checkbox"/> ATF | | <input type="checkbox"/> ATF |
| Emergent wetland | 1725 | <input type="checkbox"/> ATF | 335 | <input type="checkbox"/> ATF |
| Wet meadow | | <input type="checkbox"/> ATF | | <input type="checkbox"/> ATF |
| Intermittent stream | 66 | <input type="checkbox"/> ATF | 55 | <input type="checkbox"/> ATF |
| Perennial Stream / River | 1696 / 132 | <input type="checkbox"/> ATF | 2439 / 20 | <input type="checkbox"/> ATF |
| Lake / Pond | / | <input type="checkbox"/> ATF | / | <input type="checkbox"/> ATF |
| Bank - Intermittent stream | 134 / 66 | <input type="checkbox"/> ATF | 119 / 72 | <input type="checkbox"/> ATF |
| Bank - Perennial stream / River | 1318 / 200 | <input type="checkbox"/> ATF | 957 / 100 | <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 |
| TOTAL | 5420 / 398 | | 4185 / 192 | |

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) 9605 sq. ft. X \$0.20 = \$ 1921.00

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

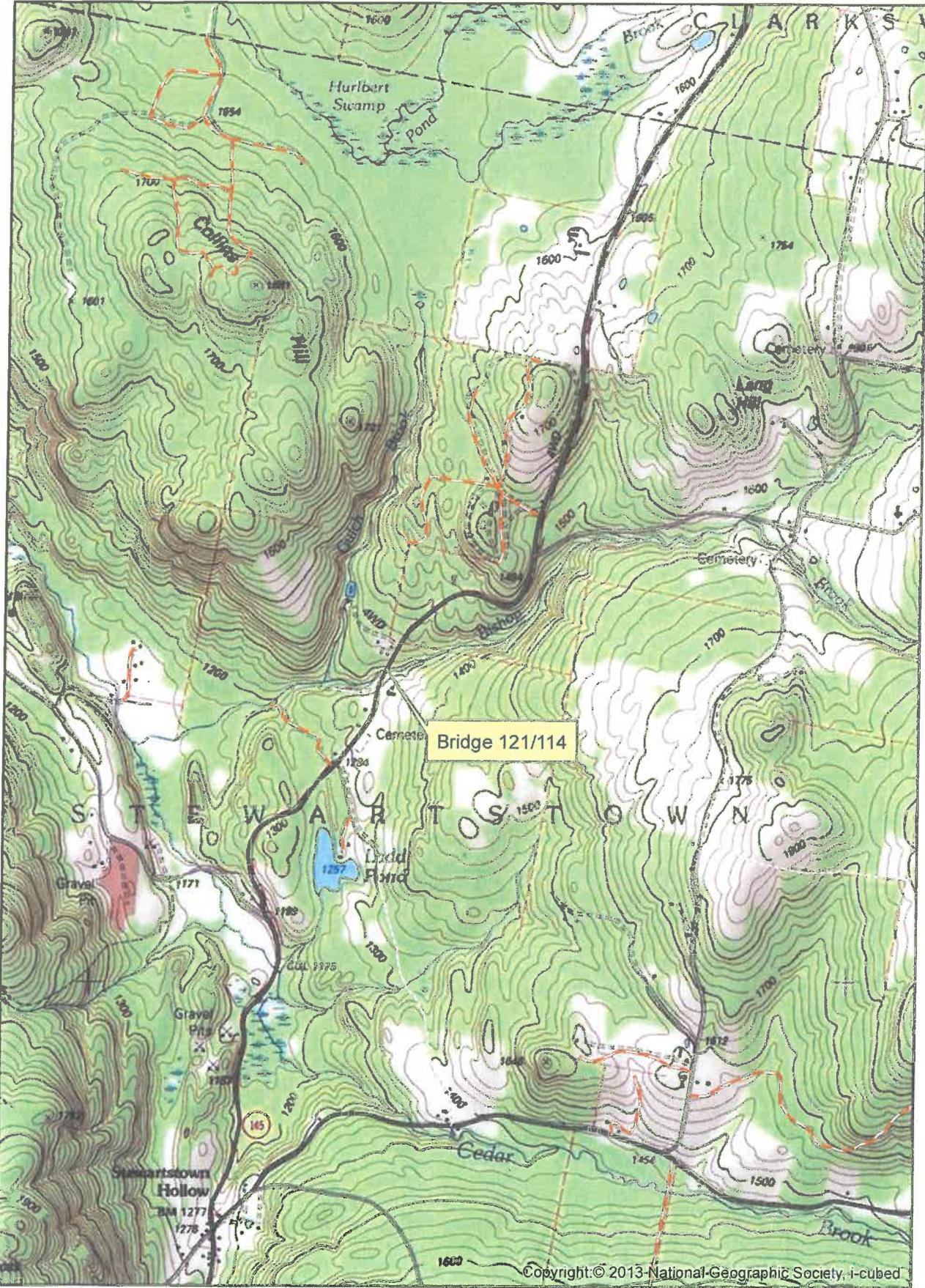
Permanent docking structure: _____ sq. ft. X \$2.00 = \$ _____

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

Total = \$ 1921.00

The Application Fee is the above calculated Total or \$200, whichever is greater = \$ 1921.00

Stewartstown, 16312

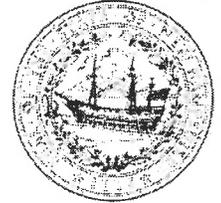


1 inch = 2,000 feet

**WETLANDS PERMIT APPLICATION – ATTACHMENT A
MINOR AND MAJOR - 20 QUESTIONS**

Water Division/ Wetlands Bureau/ Land Resources Management

Check the Status of your application: www.des.nh.gov/onestop



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

Env-Wt 302.04 Requirements for Application Evaluation - For any major or minor project, the applicant shall demonstrate by plan and example that the following factors have been considered in the project's design in assessing the impact of the proposed project to areas and environments under the department's jurisdiction. Respond with statements demonstrating:

1. The need for the proposed impact.

This project proposes to replace the existing NH 145 bridge over Bishop Brook. The existing bridge has a bridge deck in poor condition and a substructure in serious condition. The bridge is the sixth priority on the State's Red List. The need for the project is evidenced by the cracks, spalls and delaminations of the bridge abutments, as well as, cracks, spalls and crumbling of the bridge backwalls. The bridge seats and wings also express significant areas of deterioration. Roadway features adjacent to the bridge, including pavement, guardrail, and drainage structures, are also in poor condition. Based on the project area and in part on the stream crossing assessment recommendations, the bridge length will increase from 36 feet to 50 feet. The increase in span length will cause impacts to the channel and banks of Bishop Brook. A failing cross drainage pipe south of the bridge will be replaced causing impacts at the outlet of the new pipe to an intermittent stream. Also, a drainage swale for treatment of roadway runoff that will result from the increase in impervious area will be stone lined and cause impacts to existing wetlands. Access to complete the project and the associated roadway approach work will also have impacts on an intermittent stream north of the bridge and on other wetland areas.

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

The span length of 50 feet was settled upon in order to satisfy the stream crossing rules and achieve a stable design, while considering and, when possible, minimizing construction impacts. The design of the bridge was selected to have the minimum amount of impacts to the wetlands and Bishop Brook while meeting the intent of the project and accomplishing a sufficiently stable design for the bridge replacement. The bridge has been designed with 1.5 to 1 slopes from the toe of slope to the face of the abutments and wingwalls that transition to 2 to 1 slopes from the back of the wingwalls to the roadway. More typical slopes would be around 4 to 1, but with these steeper slopes the design allows less impacts to the channel and banks of Bishop Brook.

The no build alternative is not a viable option as the condition of the bridge is poor and poses safety concerns. The no-build alternative does not meet the purpose and need of the project.

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3. The type and classification of the wetlands involved.

The classifications for the impacted wetlands have been defined for the project as follows: a) Bank, b) Ditch, c) PEM1E, palustrine emergent persistent seasonally flooded/saturated, d) PFD1E, palustrine forested broad leafed deciduous seasonally flooded/saturated, e) R2UB1, riverine lower perennial unconsolidated bottom cobble-gravel, and f) R4SB3, riverine intermittent streambed cobble-gravel. The Town of Stewartstown has not designated any wetlands as Prime Wetlands under NH RSA 482-A:15.

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

The wetlands that are proposed to be impacted by the bridge replacement project are associated with Bishop Brook. Wetlands and intermittent streams occur both north and south of the bridge. The wetlands identified in the project area are types that are common in New Hampshire. The impacts include impacts to the channel and banks of Bishop Brook, impacts to the channel and banks of intermittent streams that drain to Bishop Brook and impacts to forested and emergent wetlands that are in close proximity to Bishop Brook and either feed the intermittent streams or Bishop Brook directly. The project area is relatively small and not very complicated.

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

Bishop Brook is an outstanding water resource. Outstanding resource waters are protected against degradation in NH. Therefore, the project activities cannot permanently degrade water quality or result at any time in water quality lower than that necessary to protect the existing and designated uses in Bishop Brook. Swales for stormwater treatment were included in the project design to protect the water quality of Bishop Brook. Bishop Brook is a tributary to the Connecticut River, a NH Designated River. No rare wetland types were identified in the project area.

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

The surface area of the wetlands that will be permanently impacted is 5,420 square feet (0.12 acres) The surface area of the wetlands that will be temporarily impacted is 4,185 square feet (0.10 acres). The combined total of permanent and temporary impacts is 9,605 square feet (0.22 acres).

7. The impact on plants, fish and wildlife including, but not limited to:
 - a. Rare, special concern species;
 - b. State and federally listed threatened and endangered species;
 - c. Species at the extremities of their ranges;
 - d. Migratory fish and wildlife;
 - e. Exemplary natural communities identified by the DRED-NHB; and
 - f. Vernal pools.

Environmental assessment of the site has not found indicators of significant impacts on plants, fish or wildlife.

- a. **Rare, special concern species-** The NHB database review established that records exist of the occurrence of rare plants in the project vicinity: Loesel's wide-lipped orchid and Case's ladies-tresses. None were found on site.
- b. **State or federally listed threatened or endangered species-** The rare plants are Loesel's wide-lipped orchid, a State of NH threatened plant, and Case's ladies-tresses, a State of NH endangered plant. A rare plant survey was conducted on August 4, 2015 with no occurrences of either rare plant species detected in proximity to the project area. The USFWS Official Species List includes the Northern Long-Eared Bat (NLEB) and the Canada Lynx. The project as proposed will not affect the Canada Lynx as appropriate habitat for the Lynx is not likely to be impacted by the limited actions within the small project area proposed. A bat inspection was completed for the bridge on August 4, 2015 which resulted in no evidence that the bridge over Bishop Brook was providing habitat for any species of bat. The project adheres to the criteria of the FHWA and FRA Range-Wide Programmatic Informal Biological Assessment for Transportation Projects as Not Likely to Adversely Affect NLEB with a time-of-year restriction on clearing.
- c. **Species at the extremities of their ranges-** None known
- d. **Migratory fish or wildlife-** None known
- e. **Exemplary natural communities identified by the DRED-NHB and-** None known
- f. **Vernal pools-** None observed

8. The impact of the proposed project on public commerce, navigation and recreation.

The proposed project will not impact public commerce, navigation or recreation once completed. The proposed bridge is approximately 20 feet above the streambed. During construction the project area will not be accessible to the public for safety reasons. Drivers will utilize a detour to navigate around the project area.

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 shall be required to indicate the type of material to be used and the effect of the construction of the wall on the view of other users of the lake.

The proposed project will not interfere with the aesthetic interest of the public. The existing bridge is a concrete cast-in-place deck on steel girders on concrete abutments. The proposed bridge will be a concrete deck on steel girders on concrete abutments. The current bridge and roadway are in a visibly deteriorated condition. The new bridge and roadway approach improvements will actually improve the aesthetics through this section of roadway. The general alignment and elevation of the new bridge and roadway approaches will be very similar to the existing condition, so the look and feel of the area should be similar once the project is complete. The new bridge and roadway will be safer and more stable, which will positively impact the general public.

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 shall be required to document the extent to which the dock would block or interfere with the passage through this area.

The proposed project will not interfere with or obstruct public rights of passage or access. Once completed the new bridge will maintain the same previous access.

The project will require a temporary closure of the existing bridge for six months for construction of the new bridge, with both northbound and southbound traffic detoured around the project area. Accessible detour routes exist, and the roadway that will be closed during the bridge replacement is not heavily travelled, so the proposed action will not constitute a major traffic disruption beyond normal project conditions.

11. The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties.

The impact within wetlands upon abutting owners will be minimal cut slope work to construct the treatment swale, and drainage work within existing ROW and drainage easements previously acquired, to construct the proposed bridge. The project as proposed will not alter the risk of flooding on abutting properties. Also, access will remain as it exists currently once the project is complete.

12. The benefit of a project to the health, safety, and well being of the general public.

The benefit of the project is to the general public's safety with the removal of a structural deficient red-listed bridge and replacement with a new bridge.

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 the applicant shall 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.

Anticipated impacts to surface waters from an increase in impervious area through the project area will be addressed and mitigated by the installation of a treatment swale on the southeast quadrant of the project to treat additional run-off that results from the project.

The project will not reduce the effectiveness or functioning of the impacted wetlands. There will be installation of rip rap for stabilization, which will reduce the potential for erosion in these areas. This project will have a SWPPP to ensure water quality is maintained by preventing sediment from entering the streams and wetlands. The SWPPP dictates that erosion and sediment controls will be utilized during construction to protect water quality. Therefore, the proposed project will not negatively impact the amount or quality of water entering or exiting the project area.

14. The potential of a proposed project to cause or increase flooding, erosion, or sedimentation.

There is no potential for the proposed project to cause or increase flooding, erosion or sedimentation since the proposed bridge opening is neither restricting flow or creating additional flow through the site. Also, for the replacement of the existing culvert, the replacement will not decrease hydraulic capacity. Installation of the new crossing associated with the stormwater treatment swale will ensure water can move through the project area without causing erosion or damage to the facility. The project will prevent further erosion/sediment by adding rip rap where it is necessary, including in very steeply sloped areas. Erosion and sediment controls will be utilized during construction to prevent erosion and sedimentation.

15. The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards.

The project will not reflect or redirect current or wave energy which might cause damage or hazards.

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 owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted.

The portions of wetlands affected by this project will be minimal and localized to the area in the footprint of the new bridge crossing and associated roadway. Due to the location of the bridge and current use of the properties, it is highly unlikely that abutting land owners would apply to make permanent changes to the wetlands on their property.

17. The impact of the proposed project on the values and functions of the total wetland or wetland complex.

The impact of the proposed project on the values and functions of the total wetland / wetland complex will be minimal. The project has been designed to minimize impacts and reduce the likelihood of future failures that would negatively impact the wetlands and surface waters surrounding the project area. Since the quantity and type of wetland and channel impacts are relatively small when considered in the broader landscape, there will not be any observable or measureable impacts on the values and functions of the total wetland complex.

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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.

There is no 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.

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.

There will be no 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.

20. The degree to which a project redirects water from one watershed to another.

There is no redirecting of water from one watershed to another watershed. The Bishop Brook watershed drainage area at this location has been estimated to be over 4 square miles in size. The water that drains from the project area will continue to enter Bishop Brook.

Additional comments

The proposed project will minimize impacts to streams and wetland areas in the project areas. Proper Best Management Practices will be utilized to prevent erosion and the transportation of sediment downstream.

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

| | | |
|---|---------------------------------|--------------------|
| INSERT LINEAR FEET OF IMPACT on BOTH BANKS AND CHANNEL | Right Bank | 25.00 |
| | Left Bank | 34.0000 |
| | Channel | 36.0000 |
| | TOTAL IMPACT | 95.0000 |
| | Stream Impact Cost: | \$19,000.00 |
| | DES Administrative cost: | \$3,800.00 |
| ***** TOTAL ARM FUND STREAM PAYMENT***** | | \$22,800.00 |

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting

DATE OF CONFERENCE: May 20, 2015

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

| | | |
|--|---|--|
| NHDOT Matt Urban Ron Crickard Mark Hemmerlien Jason Savage David Scott Tobey Reynolds Joshua Lafond Kathleen Corliss Jon Hebert Mike Dugas Rebecca Martin Jason Tremblay Colleen White Jim Kirouac Michael Licciardi Steve Glines | Ron Kleiner Federal Highway Administration Jamie Sikora Army Corps of Engineers Michael Hicks Richard Kristoff NHDES Gino Infascelli Lori Sommer NH Fish & Game Carol Henderson | NH Natural Heritage Bureau Amy Lamb Strafford RPC Colin Lentz PIM-INC Todd Kilburn Jerry Kruegler CHA William Horne Robert Faulkner |
|--|---|--|

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:

(minutes on subsequent pages)

| | |
|--|-----|
| Finalization of April 15 th 2015 Meeting Minutes..... | 3 |
| Central Turnpike Drainage Rehabilitation Project, 29024, Non-Federal | 5 |
| Bethlehem, 26763, X-A004(296) | 20 |
| Stewartstown, 16312, X-0001(240) | 38 |
| Dixville, 29776, Non-Federal..... | 47 |
| Carroll-Jefferson, 25066, X-A003(023) | 59 |
| Conway, 25103, X-A003(039) | 68 |
| Cornish, 29024, Non-Federal | 93 |
| Farmington, 16146, X-A001(152)..... | 113 |

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

Stewartstown, 16312, X-0001(240)

Rebecca Martin provided a brief overview of the project and showed photographs of the bridge over Bishop Brook. Michael Licciardi explained that the bridge on Route 145 over Bishop Brook is the 6th priority bridge on the State's Red List. The two lane bridge (121/114) is proposed for replacement due to the fact that the bridge deck is in poor condition and the substructure is in serious condition. The new bridge span is proposed to be 50 feet with Northeast Extreme Tee (NEXT) beams for the superstructure. The length is based on the stream crossing assessment conducted by the Bureau of Environment and the orientation of the stream channel to the roadway (skewed). M. Licciardi stated that the bridge will be 27 feet wide.

M. Licciardi described that the vertical and horizontal alignment of the new bridge will be approximately the same as the existing. There will be 360 feet of road reconstruction (220 feet to the south of the bridge and 140 feet to the north). The wetland impacts have been estimated to be 3,800 square feet of permanent impacts and 3,200 feet of temporary impacts. Mark Hemmerlein stated that the brook is an Outstanding Resource Water.

R. Martin explained that the NHB review resulted in a result for historic records of two rare plants. The area will be surveyed when the plants are flowering, in August. Amy Lamb recommended flagging the area, if any of the plants are found.

Mike Hicks inquired about the historic status of the bridge. R. Martin explained that the bridge was surveyed and has been determined not to be eligible for the National Register. The adjacent Farm property is eligible and slope easements will be discussed with the property owners.

Lori Sommer asked for a description of the armoring. M. Licciardi showed the areas on the plans where armoring will be installed. The stone is intended to extend from the abutments on both sides. L. Sommer said that mitigation will not be required given that the structure is designed to meet the stream crossing rules.

The project is expected to advertise in January 2016 with construction in spring and summer of 2016. Jason Tremblay stated that the wetland permit is expected to be submitted this summer.

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

Dixville, 29776, Non-Federal

Jon Hebert provided a description of the project and purpose for the action. J. Hebert explained that the pedestrian culvert passing under NH Route 26 is an 84 inch CMP pedestrian passage that was constructed in 1978. The passage provides access to the recreational trail system and is utilized by snowmobiles. The current passage is not large enough to accommodate all users. The proposed replacement is a 3 sided structure around 20 feet wide that will accommodate passage of trail groomers, horses, and other users.

To replace the pedestrian culvert a temporary detour of NH Route 26 to include the area south of the roadway will be necessary. Two-way traffic is intended to be maintained through the project

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting

DATE OF CONFERENCE: October 21st, 2015

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT

Matt Urban
Ron Crickard
Anthony Weatherbee
Mark Hemmerlien
Kerry Ryan
David Scott
Jim Kirouac
Cheryl Rasmussen
Matt Healey
Jennifer Reczek
Bob Landry
Ron Kliener
Meli Dube

Army Corps of Engineers

Micheal Hicks
Michael Wierbonks
Michael Kamnski
Chris Marron

NHDES

Gino Infascelli
Lori Sommer
(Gilford/Farmington only)
Corey Clark

NH Fish & Game

Carol Henderson

**NH Natural Heritage
Bureau**

Amy Lamb

Stantec

Timothy Adams
Michael Hazelett

CLD

John Byatt

Town of Farmington

Dale Sprague

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:

(minutes on subsequent pages)

| | |
|--|---|
| Finalization of September 16 th Meeting Minutes | 2 |
| Acworth 095/060, 40749, Non-Federal..... | 2 |
| Acworth (104/063 & 105/064, 40750, Non-Federal | 2 |
| Acworth (157/067), 40751, Non-Federal | 3 |
| Stewartstown, 16312, X-0001(240) | 3 |
| Seabrook-Hampton, 40424, X-A004(397) | 5 |
| Gilford, 16297, X-A003(033)..... | 6 |
| Farmington, 16146, X-A001(152)..... | 7 |

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

To dewater the workzone a temporary channel is proposed to be dug through a sandbar on the inside of a curve on the Cold River. Material will be pushed off to the side to create that channel and upon project completion the material will be moved back to its original location. Some equipment would be required to dig the channel.

Gino Infascelli showed concern with the location of the bridge structures on the map and Matt Urban and T. Weatherbee clarified.

Mike Hicks mentioned EFH Habitat and said to coordinate with Mike Johnson.

G. Infascelli asked how long it would take to complete the project. T. Weatherbee said that it could take around a month if there are no unforeseen circumstances dealing with the water or weather. G. Infascelli asked if using larger sandbags would help make dewatering easier. G. Infascelli asked that a description about the equipment to be used be included with the application and in the construction sequence. He also said that the Designated River type needs to be identified.

C. Henderson asked what time of year the project would be done because there are salmon and trout in the river. T. Weatherbee said it would potentially be done in the summer.

G. Infascelli mentioned that if the structure was in the wrong location then a NHB report would have to be done for the proper location.

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

Acworth (157/067), 40751, Non-Federal

Tony Weatherbee provided an overview of the project. The scope of the project is to rehab the existing concrete slab bridge that carries NH Rte. 123A over Honey Brook. The existing structure is has a 10'-0" max span and is 26'-10" wide. Proposed work consists of installing concrete underpinnings and removing a portion of bedrock from the channel that is directing water into the west abutment.

There would be some permanent impacts in front of the abutment that is not on ledge and for the location where ledge is to be removed.

Carol Henderson said that there are wild brook trout in the stream and that it is best to work in the summer or early fall.

Mark Hemmerlien asked about access and T. Weatherbee said that they will walk into the brook and they can place the riprap from the roadway.

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

Stewartstown, 16312, X-0001(240)

Rebecca Martin provided a brief overview of the changes to the project from when it was presented in May of this year. The new proposal includes an expanded span from 50 feet to 80 feet due to constructability concerns. R. Martin explained that the group is hoping to gain a better

understanding of the mitigation concerns associated with the bridge replacement and the proposed longer span. Additional impacts are expected due to the increased bridge span. R. Martin shared that the inspection of the bridge for evidence of bat utilization did not yield any evidence that bats are using the bridge. She commented that the inspection will need to be repeated within 7 days of the start of the bridge work. R. Martin also commented that the clearing necessary for the project is anticipated to be during the inactive season of the Northern Long Eared Bat (NLEB), and so, the project is anticipated to be Not Likely to Adversely Affect the NLEB. R. Martin explained that the rare plant survey was completed this summer, with no signs of either Case's Ladies Tresses or Loesel's Wide Lipped Orchid seen.

Michael Licciardi explained that the bridge on Route 145 over Bishop Brook is on the State's Red List, and is number 6 on the Priority List. The two lane bridge (121/114) is proposed for replacement due to the fact that the bridge deck is in poor condition and the substructure is in serious condition. The road is a 35 mph road.

The project design proposed in May of this year was to be 50 foot span. The length was based on the stream crossing assessment conducted by the Bureau of Environment and the orientation of the stream channel to the roadway (skewed). M. Licciardi explained that the proposed 50 foot span would require extensive excavation and pose construction difficulties. The new proposal is a new bridge with an 80 foot span that will result in a slight grade raise, approximately 1.5 feet of the roadway. M. Licciardi stated that the bridge will be 27 feet wide curb-curb. The new bridge will include a 3 foot bench for wildlife passage on the north side. The length of the project including the bridge will be 570 feet and the roadway alignment will be similar to the existing condition. M. Licciardi described the stormwater treatment that will be incorporated into the project.

M. Licciardi stated that the advertising date for the project is August 23, 2016 and that the bridge will be closed during construction. He described the wetland and stream impacts associated with the project. There are expected to be 163 feet of impacts to the southern bank, 119 feet of linear impacts to the northern bank and around 149 feet of impacts to the channel (431 feet of linear impacts). The project as proposed would include 5,803 square feet of permanent wetland impacts and 2,640 square feet of temporary impacts.

David Scott explained that a shorter span had been intended, but the terrain climbs so significantly that there were anticipated to be constructability issues on the north side. Mike Hicks asked about how the project will impact the hydraulics of the stream, he inquired if the new span would allow more water to pass through. D. Scott explained that the profile of the stream will be approximately the same.

Gino Infascelli inquired about the amount of rip rap intended to be used and if it would be possible to minimize the stone used and re-vegetate more of the bank area. M. Licciardi described the steep slopes in the area that necessitate installation of stone to protect the bridge. G. Infascelli asked if humus might be installed over the stone to promote vegetation above the water level. D. Scott agreed that this is possible but not beneath the structure.

Carol Henderson asked for clarification about the wildlife bench, which was provided by M. Licciardi.

Matt Urban commented that when he reviewed the plans he believed there might be opportunity to take some credit for the area directly under the bridge where impacts already exist. G. Infascelli thought this seemed possible and recommended a discussion with Lori Sommer.

Amy Lamb recommended comparing any new impact areas to the project area that was previously surveyed. If impacts are proposed outside of the original area surveyed, they should be evaluated for potential impacts to the rare roadside plants.

M. Urban clarified that the rip rap will be keyed in to the channel but will not represent a new restriction to the channel.

A discussion with Lori Sommer was held briefly during the meeting break. She asked for a set of plans to review the new impacts. L. Sommer thought that mitigation would likely be required for the new bank and channel impacts but not the other wetland impacts.

Seabrook-Hampton, 40424, X-A004(397)

Meli Dube, NHDOT, provided an overview of the project area and proposed scope of work. This project involves resurfacing US Route 1 from MM1.8 in Seabrook to MM5.2 in Hampton with potential curb and guardrail replacement, minor drainage work and minor repair work on two bridges carrying US1 over the Hampton Falls River and the Taylor River. Due to the lack of a set scope, the project was brought to the meeting for the purpose of an initial review of the sensitive resources in the area. These resources include tidal waters and tidal buffer zone, protected shoreland, rare plant species, flood zones and invasive species associated with Dodge Pond, Hampton Falls River and the Taylor River. M. Dube does not anticipate impacts to flood zones because no fill is anticipated as part of the project. M. Dube requested input on whether impacts associated with curb resetting, in kind guardrail replacement, guardrail extension, resurfacing and the bridge work within the tidal buffer zone would require a wetlands permit. Gino Infascelli, NHDES, indicated that any rail and curb work would require a permit and suggested reviewing a similar job on Interstate 95 in the Town of Hampton Falls as an example of how to permit earth disturbing work within a previously disturbed tidal buffer zone. Mike Hicks, ACOE, noted that the ACOE does not have jurisdiction in tidal uplands but that any fill below the highest observable tide line within the salt marsh would not qualify for a Standard Programmatic General Permit (SPGP) but would instead require an Individual Permit.

Jennifer Reczek, NHDOT, gave a description of the work proposed at the two bridges. The bridge over the Hampton Falls River would involve pavement and membrane removal and replacement and partial to full depth deck repair, as well as patching spalled concrete on the abutments. Work on the Taylor River bridge involves pavement and membrane removal and replacement patching and repairs to spalled concrete at the corner of the deck and abutment. Work at both structures would require access during several low tide windows to chip out the bad concrete and install the patching. Matt Urban, NHDOT, asked for confirmation that impacts associated with the bridge work constitute only temporary impacts and not permanent impacts to the wetlands, G. Infascelli agreed. M. Hicks indicated that this work would qualify under the ACOE SPGP but that there may be time of year restrictions associated with work in the channel due to conflicts with Essential Fish Habitat. Due to tidal buffer zone impacts, the permit will also need to be approved individually by the Governor and Council. M. Hicks also inquired about review of the Cultural Resources in the

Stewartstown Bridge Replacement, X-0001(240), 16312

Rebecca Martin provided a brief overview of the changes to the project from when it was presented in October of last year. The new proposal includes a reduced span from 80 feet back to 50 feet due to Front Office direction. The intent of the meeting is to discuss any concerns associated with the bridge replacement and returning to a shorter span (50 feet), as was initially proposed in May 2015.

The proposed project includes bridge replacement of NH Route 145 over Bishop Brook (Br. No. 121/114). Work includes removal of the entire existing bridge structure and construction of a new bridge. Roadway work will also be included for the bridge approaches along the same alignment.

The original proposal was a 50 foot bridge span. Materials and Research and the Construction Bureau had recommended the increased span of 80 feet due to constructability concerns. When the 80 foot span was presented to the Front Office, the design team was directed to return to the 50 foot span.

Michael Licciardi explained that there is an approximately \$400,000 difference between the cost of construction and sixty years of maintenance of the two bridges. David Scott explained the shorter span will cost less to build and to maintain. To construct the 80 foot span bridge the cost would be \$962,000. The 50 foot span will be \$880,000. D. Scott stated that he believes the Front Office is concerned with building and maintaining a bridge that is larger than what is needed.

Matt Urban explained that the 50 foot span is still compliant and exceeds the 38 foot bank full width. M. Urban explained that the reason for bringing the project back to the Natural Resource meeting is to avoid any surprises when the wetland permit application is received. Gino Infascelli commented that the mitigation has been discussed and an ARM fund payment agreed upon.

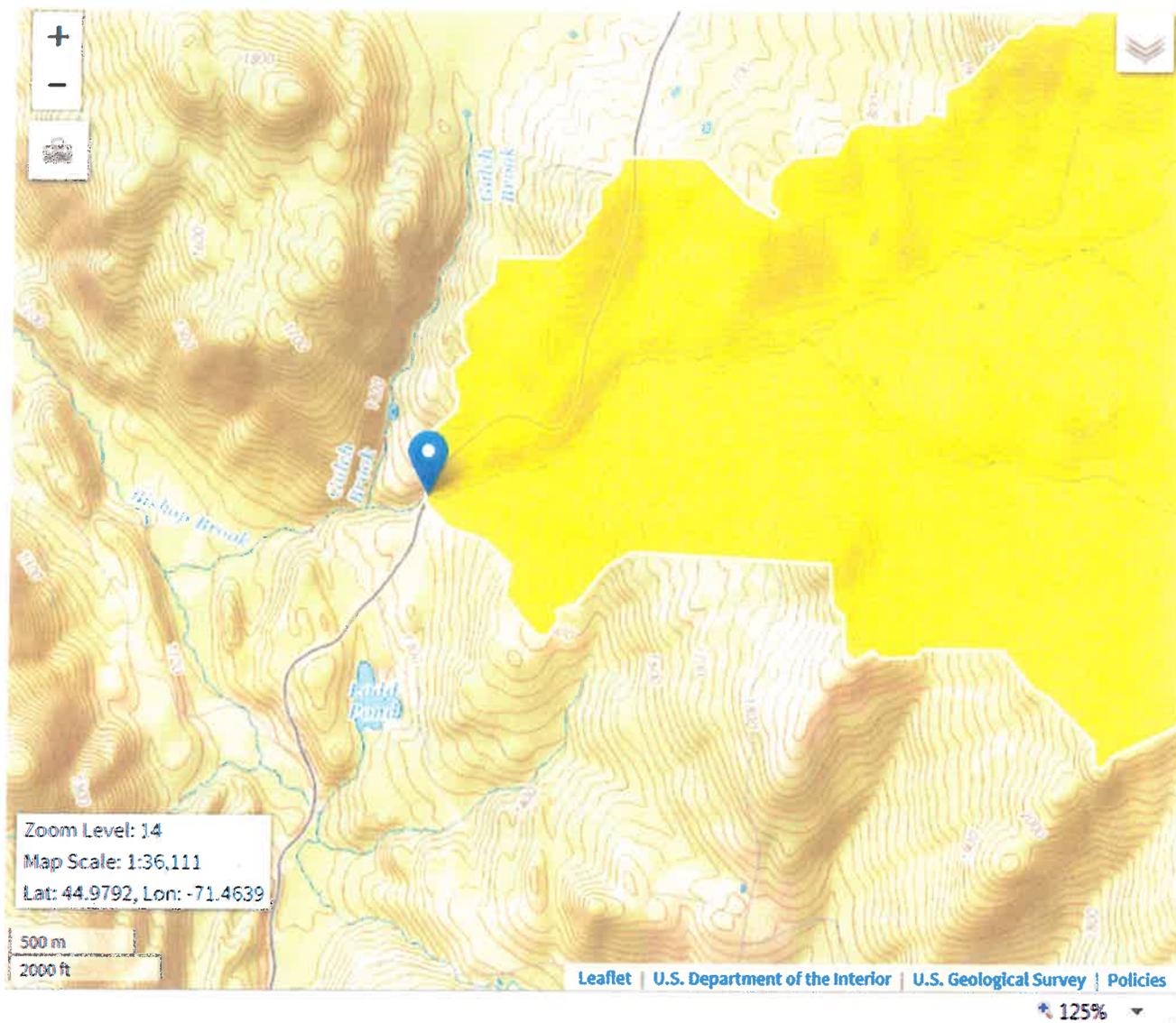
Carol Henderson inquired about a wildlife bench. D. Scott explained that the bench is still intended. C. Henderson explained that any flat area can serve as the bench and that the smoother the surface, the easier for animals to utilize.

C. Henderson inquired about installing humus with seed over the stone. D. Scott agreed to include this in the project, but not under the bridge.

R. Martin confirmed that the bridge has been inspected for bats, with no signs of bat utilization.

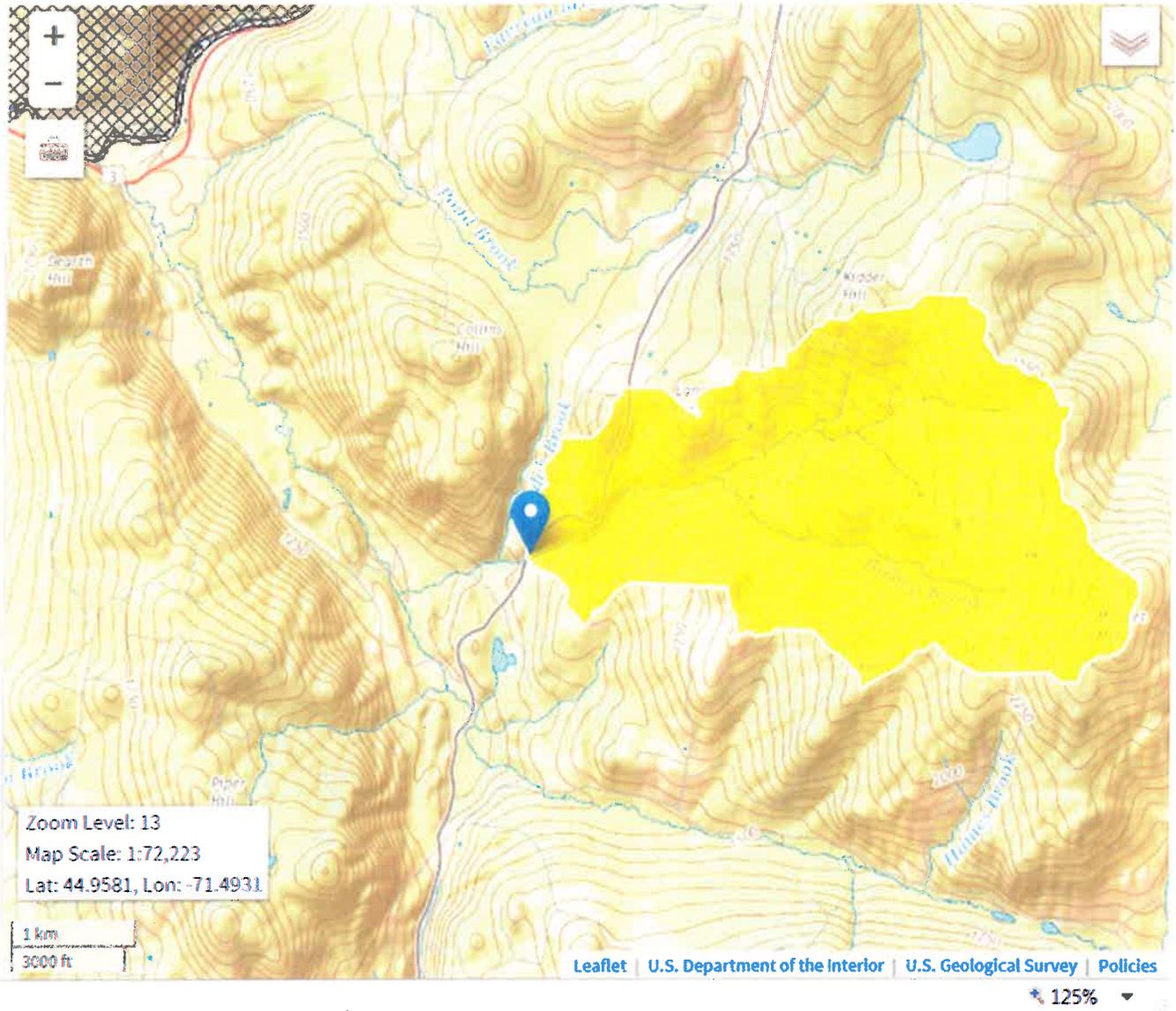
Amy Lamb commented that as long as the impact areas have not expanded, the rare plant survey (Case's Ladies Tresses or Loesel's Wide Lipped Orchid) has been complete and the project is not expected to impact rare plants.

USGS StreamStats Bishop Brook Crossing at Route 145



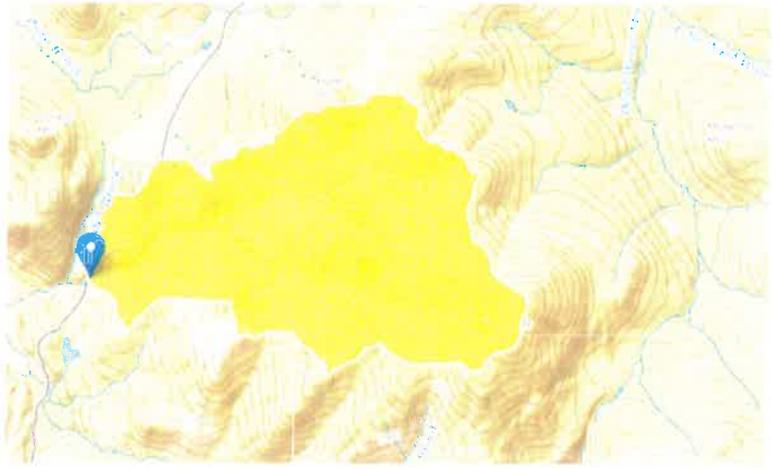
| Parameter Code | Parameter Description | Value | Unit |
|----------------|---|-------|--------------|
| DRNAREA | Area that drains to a point on a stream | 4.09 | square miles |

USGS StreamStats Bishop Brook Crossing at Route 145



StreamStats Report 16312

Region ID: NH
Workspace ID: NH20160523111532077000
Clicked Point (Latit...): 44.97059,-71.44175
Time: 2016-05-23 13:17:44 -0400



Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|----------------|---|-------|--------------|
| DRNAREA | Area that drains to a point on a stream | 4.09 | square miles |

**NH Department of Transportation
Bureau of Environment
Project, # 16312**

Env-Wt 904.05 Design Criteria for Tier 2 and Tier 3 Stream Crossings
New Tier 2 Crossings;
Replacement Tier 2 Crossings that have a history of flooding;
New & Replacement Tier 3 Crossings

Please describe how the project meets the following criteria:

(a) The crossing shall be designed in accordance with the NH Stream Crossing Guidelines.

A stream crossing assessment was completed for Bishop Brook at the crossing of the NH Route 145 bridge in September of 2013. The new bridge will comply with the required design elements that resulted from the assessment for compliance with the NHDES Stream Crossing Rules include: a structure that is at least 38 feet long, a span-structure or 3-sided culvert, simulation of a natural stream channel, bed forms and streambed characteristics necessary to maintain comparable water depths and velocities through the structure, vegetated banks, accommodate 100 year flood and sediment transport, and preservation of natural alignment and gradient. The new bridge span will increase from the existing 36 feet to 50 feet in length and will be an open structure.

(b) The design shall include bed forms and stream bed characteristics necessary to cause water depths and velocities within the crossing at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the crossing.

The current bridge span does not constrict the stream through the structure and neither will the replacement bridge span. The proposed bridge replacement will neither restrict the flow from the current condition, nor create additional flow through the structure. The stream bed forms and stream bed characteristics will mimic the existing and will perpetuate flows that are comparable to those found in the natural channel upstream and downstream of the crossing.

(c) There shall be vegetated banks upstream and downstream of the crossing.

Stone stabilization will be necessary in areas with steep slopes to prevent erosion and protect the new bridge. Humus will be intermixed with the stone to promote vegetation above the water level, except underneath the structure. The stone fill surface shall have all voids filled with humus to provide for a vegetative growth. Humus will be spread over the surface and worked into the voids. In areas where rip-rap is not needed for stabilization, vegetation will be restored on the stream banks upstream and downstream of the crossing.

(d) The natural alignment and gradient of the stream channel shall be preserved so as to accommodate natural flow regimes and the functioning of the natural floodplain.

The new bridge will not change the natural alignment and gradient of the stream channel. The bridge replacement will neither restrict the flow from the current condition, nor create additional flow through the structure. Therefore, there is no potential for the proposed project to cause or increase flooding, erosion or sedimentation.

The rip rap will be keyed in to the channel but will not represent a new restriction to the channel. Flow will continue through the channel as it does so currently and the natural floodplain function will not be disrupted.

(e) The 100-year flood frequency shall be accommodated to ensure that there is (1) no increase in flood stages on abutting properties and (2) flow and sediment transport characteristics will not be affected in a manner that could adversely affect channel stability.

Based on existing FEMA mapping, the project is neither adjacent to or within FEMA-mapped regulatory floodways or 100-year floodplains. The work as proposed will not present any new obstructions to floodways or result in an increase in an established base flood elevation. There is no potential for the proposed project to cause or increase flooding as the proposed bridge opening will neither restrict flow nor create additional flow through the site. As such, the proposed action will perpetuate flow through the channel as it does so currently and the natural floodplain function will not be disrupted. The rip rap will reduce opportunities for erosion and sedimentation and the stream's sediment transport characteristics will not be affected in a manner that could adversely affect channel stability.

(f) A natural stream channel shall be simulated through the structure.

In general, a natural stream channel shall be simulated through the structure. The stream bed is dominated by gravel and cobble. The stone that will be keyed in to ensure stability will not significantly alter the natural stream channel. There are a considerable number of boulders upstream and downstream of the crossing.

(g) Sediment transport competence shall not be altered.

The proposed bridge opening will neither restrict flow nor create additional flow through the site. As such, the proposed action will perpetuate flow through the channel as it currently exists. Sediment transport will not be restricted or increased by the project activities. Stone stabilization will reduce the potential for erosion at the bridge.

A Tier 2 stream crossing shall be a span structure, pipe arch embedded with stream simulation, open-bottom culvert with stream simulation, or closed-bottom culvert embedded with stream simulation.

A Tier 3 stream crossing shall be a span structure or an open-bottom culvert with stream simulation.

This Tier 3 stream crossing will be a span structure.

If any of the above criteria cannot be met, approval for an alternative design must be requested and a technical report (Env-Wt 904.09) must be included with the application package.

**Bureau of Environment
Stream Crossing Assessment Report**

Project: Stewartstown #16312

Tier: 3

Assessment completed by: BOE

Date assessment completed: 9/20/2013

Rosgen Stream Classification at Crossing: B

Rosgen Stream Classification at Reference: E

Watershed Size (acres): 2,617 acres (4.09 square miles)

Average Bankfull Width at Crossing: 23'

Average Bankfull Width at Reference Reach: 30.66'

Environmental consideration resulting in Tier 3 classification? Yes No (NHB WAS NOT CONDUCTED)

If yes, what is the consideration?

Can it be mitigated down to watershed-based tier? Yes No

If yes, how?

Special considerations based on Rosgen Stream Type (from the NH Stream Crossing Guidelines):

Based on our field review of the crossing, the data of the stream at the crossing fits the description of a Type B stream. The data collected along the reach segment of the assessment presents more characteristics of a Type E stream.

Type B streams display moderate sinuosity, slope, width/depth ratios, and entrenchment. This generally stable stream type commonly consists of riffles and rapids and occasional scour pools. Type B streams are often found in forested areas with flood plain vegetation moderately influencing channel stability. Streambank erosion is typically considered low and sensitivity to disturbance is often low to moderate. Fish habitat in this channel type is often attributed to scour pools developed by large woody material.

Stream crossings commonly occur over B and C type channels in New Hampshire because they tend to occur in valleys that are conducive to road building and development. From a stream crossing perspective, B type streams are a transition in design issues between A and C type streams. Approaches to crossing a B type stream vary with the size of the flood plain. At one end of the spectrum are B type streams with lower entrenchment ratios (1.4). The relatively narrow flood-prone area may be accommodated with a single opening. At the other end of the spectrum are the B type streams with entrenchment ratios of up to 2.1. These streams behave more like C type streams, with lower slopes and wider flood plains. The flood-prone area in relation to the bankfull width may be too wide for a single opening and should be either spanned or accommodated with flood plain drainage structures. In either case, an analysis of bedload capacity will ensure that the structure design will not impact sediment transport capacity through the stream reach.

Type E channels are relatively stable, sinuous channels with very wide flood plains. The stream banks and flood plains are usually well vegetated, often with wetland plant species. Entrenchment ratios can be as high as 100 in broad, unconfined valleys. This high entrenchment ratio is difficult to accommodate with a single stream crossing structure. The least impacting approach to crossing an E type stream would be a bridge or piered structure that spans the flood-prone area. However, the costs associated with this approach may be prohibitive, and thus it is recommended that crossings not be located on Type E channels.

Two important considerations when designing a crossing of an E type stream are preserving the width/depth ratio of the stream channel and maintaining access to flood plains. Type E channels are stable, but vulnerable to disturbance, and can rapidly change into different channel types if stream channel dimensions are altered. It is highly recommended that crossings of Type E channels be at a minimum width of 1.2 times bankfull width plus 2 feet and that flood plain culverts at bankfull elevation be used to avoid constricting flood flows through the main channel. If the stream channel must be rebuilt within a structure, it is important to maintain the natural width/depth ratio to avoid destabilizing the stream.

The design elements checked below are required by the NHDES Stream Crossing Rules for the subject stream crossing. If the project cannot incorporate these design elements, the permit application must include a Technical Report for an alternative design pursuant to Env-Wt 904.09. Please contact the Bureau of Environment for further guidance.

Required design elements:

- Structure size: 1.2X Bankfull Width + 2' = 38'
- Span-structure or 3-sided culvert (not a closed structure)
- Embedded culvert or pipe arch
- Simulation of a natural stream channel through the structure (This would be based in part on the attached longitudinal profile, average bankfull dimensions of the reference reach, and existing substrate.)
- Bed forms and streambed characteristics necessary to maintain comparable water depths and velocities through the structure as occur upstream and downstream.
- Vegetated bank on both sides of the watercourse
- Accommodate 100-year flood and sediment transport
- Preservation of natural alignment and gradient of stream channel.

Notes: A 38' span structure or 3-sided culvert with channel simulation through the structure is the recommended based on the stream crossing guidelines. If this is not practicable as defined in Env-Wt 101.69 you can apply for a permit under the alternative design rules. You may begin to prepare an application for a structure of this size or contact the Bureau of Environment to move forward with an alternative design.



Request for Stream Crossing Assessment

APPLICANT BUREAU/DISTRICT: Bridge Design

PATROL SECTION:

CONTACT NAME: Christine Perron

DATE: 9/12/2013

PROJECT NAME: Stewartstown

STATE #: 16312

BRIDGE #: 121/114

FED #: X-A001(240)

ADVERTISING DATE: 2015

CONSTRUCTION DATE: 2016

PROJECT DESCRIPTION: Bridge replacement

CROSSING LOCATION (Route and Town): NH Route 145 STREAM NAME: Bishop Brook

LAT/LONG AND/OR NORTHING AND EASTING: 71°26'30.2425"W 44°58'14.2234"N

CROSSING CONDITIONS:

IS THERE A HISTORY OF FLOODING AT THE CROSSING? Yes: No:

EXISTING PIPE TYPE, SIZE (length, width, diameter), AND CONDITION: IB-C (23"Wx42"L)

REQUIRED ATTACHMENTS:

TOPO MAP INDICATING ACCURATE CROSSING LOCATION (1:24,000 scale)

PHOTOS OF CROSSING SHOWING INLET/OUTLET, UPSTREAM/DOWNSTREAM, & ROADWAY APPROACHES:
V:\Towns\Stewartstown\12606\BridgeDesign

NOTES/COMMENTS:

ENVIRONMENTAL INFORMATION (To be completed by BOE to determine Tier Classification)

- 1. IS THE PROJECT LOCATED WITHIN ¼ MILE OF A NH DESIGNATED RIVER? Yes No
- 2. IS THE PROJECT LOCATED WITHIN A 100 yr FLOODPLAIN OR FLUVIAL EROSION HAZARD ZONE? Yes No
- 3. IS THE PROJECT LOCATED WITHIN A PRIME WETLAND/ 100 ft PRIME WETLAND BUFFER? Yes No
- 4. KNOWN WATER QUALITY IMPAIRMENTS LISTED IN 904.04(a)(3)? Yes No (If Yes List): _____
- 5. KNOWN NHB RECORD(S) IN A JURISDICTIONAL AREA? Yes No (If Yes Attach Report)

WATERSHED SIZE IN ACRES: 4.09 sq. ml.

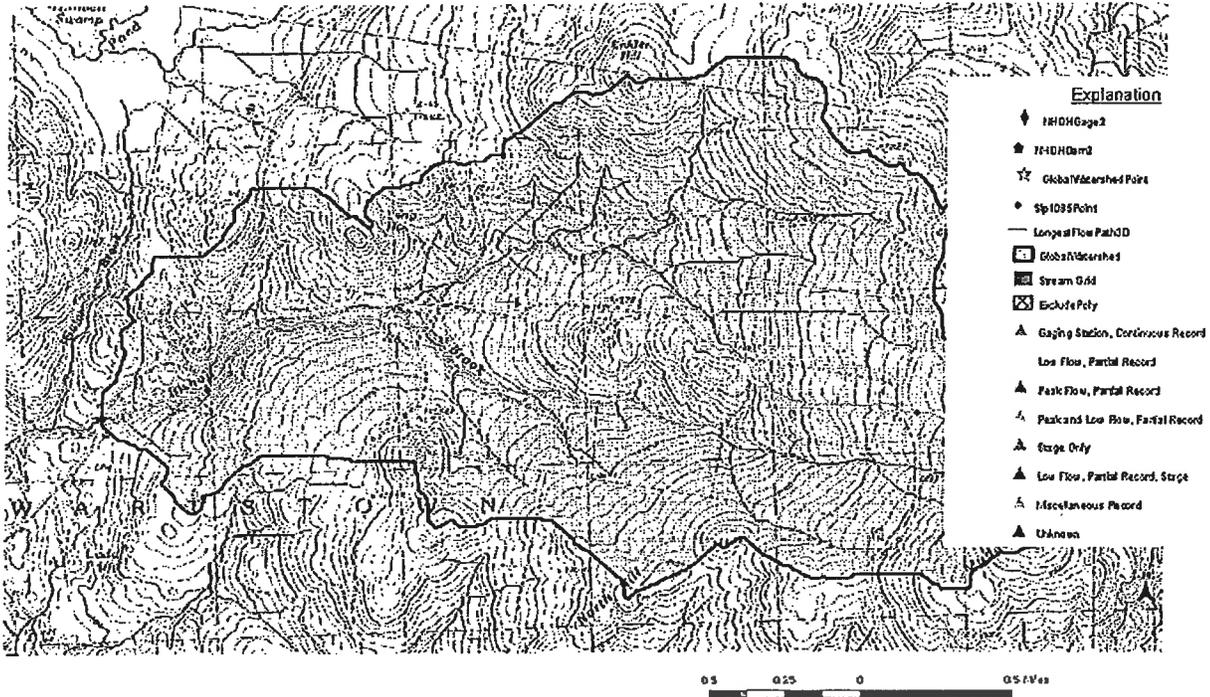
CROSSING TIER: 3

If 2, 4, or 5 is YES, does applicable Agency have concerns with project? Yes No

| FOR BOE USE ONLY | | |
|-------------------|------------------------|----------------|
| Request received: | Anticipated Review: | Actual Review: |
| CAD/D Entry: | Returned to applicant: | |



StreamStats Print Page



10/17/2013 7:20:28 AM



New Hampshire StreamStats

Streamstats Ungaged Site Report

Date: Thu Oct 17 2013 07:19:11 Mountain Daylight Time
 Site Location: New_Hampshire
 NAD27 Latitude: 44.9706 (44 58 14)
 NAD27 Longitude: -71.4421 (-71 26 32)
 NAD83 Latitude: 44.9706 (44 58 14)
 NAD83 Longitude: -71.4417 (-71 26 30)
 Drainage Area: 4.09 mi²

| Peak Flows Region Grid Basin Characteristics | | | |
|---|--------|---------------------------------|------|
| 100% Peak Flow Statewide SIR2008 5206 (4.09 mi ²) | | | |
| Parameter | Value | Regression Equation Valid Range | |
| | | Min | Max |
| Drainage Area (square miles) | 4.09 | 0.7 | 1290 |
| Mean April Precipitation (Inches) | 3.119 | 2.79 | 6.23 |
| Percent Wetlands (dimensionless) | 0.0569 | 0 | 21.8 |
| Stream Slope 10 and 85 Method (feet per mi) | 301 | 5.43 | 543 |

| LowFlows Region Grid Basin Characteristics | | | |
|---|----------|---------------------------------|------|
| 100% Low Flow Statewide (4.09 mi ²) | | | |
| Parameter | Value | Regression Equation Valid Range | |
| | | Min | Max |
| Drainage Area (square miles) | 4.09 | 3.26 | 689 |
| Mean Basin Slope from 30m DEM (percent) | 11.905 | 3.19 | 38.1 |
| Maximum Basin Elevation (feet) | 2595.799 | 260 | 6290 |
| Percent Coniferous Forest (percent) | 28.5542 | 3.07 | 56.2 |
| Jan to Mar Basin Centroid Precip (Inches) | 6.89 | 5.79 | 15.1 |
| Mean Annual Temperature (degrees F) | 37.917 | 36 | 48.7 |
| Jun to Oct Mean Basinwide Temp (degrees F) | 55.256 | 52.9 | 64.4 |
| Jun to Oct Gage Precipitation (Inches) | 21.1 | 16.5 | 23.1 |
| Percent Mixed Forest (percent) | 34.4808 | 6.21 | 46.1 |
| Mar to May Gage Precipitation (Inches) | 8.1 | 6.83 | 11.5 |

| Peak Flows Region Grid Streamflow Statistics | | | | | |
|--|---------------------------|----------------------------|----------------------------|--------------------------------|---------|
| Statistic | Flow (ft ³ /s) | Prediction Error (percent) | Equivalent years of record | 90-Percent Prediction Interval | |
| | | | | Minimum | Maximum |
| PK2 | 177 | 30 | 3.2 | 108 | 291 |
| PK5 | 284 | 31 | 4.7 | 171 | 473 |
| PK10 | 374 | 32 | 6.2 | 220 | 635 |
| PK25 | 494 | 34 | 8 | 281 | 871 |
| PK50 | 593 | 36 | 9 | 326 | 1080 |
| PK100 | 709 | 39 | 9.8 | 377 | 1330 |
| PK500 | 988 | 44 | 11 | 482 | 2020 |

| LowFlows Region Grid Streamflow Statistics | | | | | |
|--|---------------------------|----------------------------|----------------------------|--------------------------------|---------|
| Statistic | Flow (ft ³ /s) | Prediction Error (percent) | Equivalent years of record | 90-Percent Prediction Interval | |
| | | | | Minimum | Maximum |
| D60 | 3.21 | 18 | | 2.34 | 4.28 |
| D70 | 2.61 | 21 | | 1.8 | 3.65 |
| D80 | 1.93 | 28 | | 1.16 | 3 |
| D90 | 1.31 | 38 | | 0.66 | 2.33 |

| | | | | |
|------------|------|----|------|------|
| D95 | 0.98 | 44 | 0.44 | 1.88 |
| D98 | 0.73 | 54 | 0.27 | 1.59 |
| M7D2Y | 0.95 | 56 | 0.33 | 2.06 |
| D60SPR | 9.08 | 12 | 7.33 | 11.1 |
| D60SUM | 2.01 | 37 | 1.04 | 3.52 |
| D60WIN | 2.11 | 21 | 1.44 | 2.97 |
| D70SPR | 7.12 | 11 | 5.85 | 8.58 |
| D70SUM | 1.6 | 40 | 0.78 | 2.91 |
| D70WIN | 1.76 | 21 | 1.21 | 2.46 |
| D80SPR | 5.3 | 12 | 4.26 | 6.49 |
| D80SUM | 1.32 | 45 | 0.59 | 2.55 |
| D80WIN | 1.54 | 18 | 1.11 | 2.08 |
| D90SPR | 3.7 | 14 | 2.91 | 4.62 |
| D90SUM | 0.96 | 51 | 0.39 | 2 |
| D90WIN | 1.19 | 19 | 0.84 | 1.63 |
| D95SPR | 2.7 | 15 | 2.08 | 3.43 |
| D95SUM | 0.75 | 57 | 0.27 | 1.66 |
| D95WIN | 0.95 | 21 | 0.65 | 1.34 |
| D98SPR | 1.89 | 18 | 1.38 | 2.53 |
| D98SUM | 0.65 | 61 | 0.21 | 1.5 |
| D98WIN | 0.8 | 27 | 0.49 | 1.24 |
| M7D10Y | 0.5 | 79 | 0.11 | 1.35 |
| D60FALL | 4.19 | 23 | 2.78 | 6.05 |
| D70FALL | 3.29 | 26 | 2.08 | 4.92 |
| D80FALL | 2.59 | 28 | 1.58 | 3.96 |
| D90FALL | 1.75 | 32 | 0.99 | 2.82 |
| D95FALL | 1.19 | 38 | 0.6 | 2.09 |
| D98FALL | 0.79 | 51 | 0.32 | 1.6 |
| M7D2Y_FAL | 2.52 | 23 | 1.66 | 3.63 |
| M7D2Y_SPR | 2.36 | 15 | 1.8 | 3.04 |
| M7D2Y_SUM | 0.96 | 56 | 0.34 | 2.08 |
| M7D2Y_WIN | 1.6 | 17 | 1.16 | 2.12 |
| M7D10Y_FAL | 1.17 | 37 | 0.6 | 2.01 |
| M7D10Y_SPR | 1.27 | 16 | 0.93 | 1.68 |
| M7D10Y_SUM | 0.51 | 79 | 0.12 | 1.34 |
| M7D10Y_WIN | 0.88 | 22 | 0.59 | 1.25 |

NHDOT STREAM CROSSING ASSESSMENT WORKSHEET

Project Stewartstown
#16312

Location of Crossing Bishop Brook

Date of field assessment 9/20/2013

Stream Parameters at Crossing

Existing Crossing (type and size): 36' wide @ abutments

Watershed size 4.09 sq mi

CMP RCP HDPE Arch/Squash Pipe Closed Box Open Box Bridge Other _____

General Information to be collected at the Crossing:

GPS Wetland Delineation: YES NO

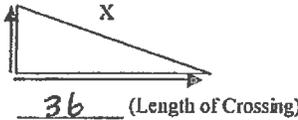
Riparian Zone (surrounding or on the banks): Trees/shrubs

Extent of vegetation (circle): absent, low density, moderate density, high density

Type of dominant vegetation (circle): graminoid, herbaceous, shrub/sapling, tree

5.0 → 4.1

Slope at crossing: 0.025 (Rise in Elev.) 0.9



Dominant Species:
Grape vine
Cedars
Lady fern
Pines
Apple tree
Poplar

$0.9/36 = 0.025$

Outlet Data:

Depth of water at invert if not perched: 0.5 (example):

Perched at outlet? YES NO (If yes, Distance from invert to the waters surface: N/A) (example):

Tailwater Controls present at crossing? YES NO

Pool Configuration: width N/A length: N/A Max pool depth at outlet: N/A

Location (distance from outlet): N/A Materials: N/A

Dominant Channel Material (visual assessment): sand silt gravel cobble boulder bedrock

Pebble Count: YES NO (Collect Data on Pg. 2)

Photo of Outlet Structure

Photo of Downstream Conditions

Outlet Cross Section (Use Pg. 3 to collect Data)

Inlet Data:

Depth of water at inlet: 0.9 (example):

Dominant Channel Material (visual assessment): sand silt gravel cobble boulder bedrock

Pebble Count: YES NO (Collect Data on Pg. 2)

Photo of Inlet Structure

Photo of Upstream Conditions

Inlet Cross Section (Use Pg. 4 to collect Data)

NHDOT STREAM CROSSING ASSESSMENT WORKSHEET

Project Stewartstown
#16312

Location of Crossing Bishop Brook

Date of field assessment 9/20/2013

Outlet Cross Section:

Starting bank (left/right) Right

| Dist. from bank (ft.) | Dbf |
|-----------------------|-----|
| 1 | 2.4 |
| 2 | 2.1 |
| 3 | 1.9 |
| 4 | 2.0 |
| 5 | 2.4 |
| 6 | 2.7 |
| 7 | 2.9 |
| 8 | 2.5 |
| 9 | 2.3 |
| 10 | 2.1 |
| 11 | 1.9 |
| 12 | 1.6 |
| 13 | 1.5 |
| 14 | 1.2 |
| 15 | 1.1 |
| 16 | 1.3 |
| 17 | 1.4 |
| 18 | 1.9 |
| 19 | 2.0 |
| 20 | 1.6 |
| 21 | 1.6 |
| 22 | 1.8 |
| 23 | 1.7 |
| 24 | |
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Avg Dbf= 1.90
 Max water depth= 1.2
 Ctr of structure@: 15'
 Wbf= 23'
 Flood Prone Width= 36'

NHDOT STREAM CROSSING ASSESSMENT WORKSHEET

Project Stewartstown
#16312

Location of Crossing Bishop Brook

Date of field assessment 9/20/2013

Inlet Cross Section:

Back to

Starting bank (left/~~right~~)

| Dist. from bank (ft.) | Dbf |
|-----------------------|-----|
| 1 | 1.4 |
| 2 | 1.2 |
| 3 | 1.4 |
| 4 | 2.7 |
| 5 | 2.8 |
| 6 | 3.1 |
| 7 | 2.8 |
| 8 | 2.7 |
| 9 | 2.8 |
| 10 | 2.9 |
| 11 | 3.1 |
| 12 | 3.1 |
| 13 | 3.0 |
| 14 | 2.9 |
| 15 | 2.8 |
| 16 | 1.7 |
| 17 | 1.7 |
| 18 | 1.8 |
| 19 | 2.0 |
| 20 | 1.8 |
| 21 | 1.8 |
| 22 | 1.2 |
| 23 | |
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Avg Dbf= 2.29
 Max water depth= 1.2
 Ctr of structure@: 9'
 Wbf= 23'
 Flood Prone Width= 53'

NHDOT STREAM CROSSING ASSESSMENT WORKSHEET

Project Stearns town
#16312

Location of Crossing Bishop Brook

Date of field assessment 9/20/2013

Reference Reach 1:

Starting bank (left/right)

| Dist. from bank (ft.) | Dbf |
|-----------------------|-----|
| 1 | 1.7 |
| 2 | 1.8 |
| 3 | 2.3 |
| 4 | 2.5 |
| 5 | 2.5 |
| 6 | 2.2 |
| 7 | 2.2 |
| 8 | 2.1 |
| 9 | 2.2 |
| 10 | 2.2 |
| 11 | 2.2 |
| 12 | 2.6 |
| 13 | 2.4 |
| 14 | 2.6 |
| 15 | 2.4 |
| 16 | 2.5 |
| 17 | 2.4 |
| 18 | 2.5 |
| 19 | 2.4 |
| 20 | 2.2 |
| 21 | 2.2 |
| 22 | 2.3 |
| 23 | 2.2 |
| 24 | 1.9 |
| 25 | 1.8 |
| 26 | 1.7 |
| 27 | 1.5 |
| 28 | 1.3 |
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Avg Dbf= 2.17
 Max water depth= 0.7
 Ctr of structure@: N/A
 Wbf = 28'
 Flood Prone Width= 52'

NHDOT STREAM CROSSING ASSESSMENT WORKSHEET

Project Stewartstown
#16312

Location of Crossing Bishop Brook

Date of field assessment 9/20/2013

Reference Reach 2:

Back to

Starting bank (left/right)

| Dist. from bank (ft.) | Dbf |
|-----------------------|-----|
| 1 | 1.2 |
| 2 | 1.7 |
| 3 | 2.2 |
| 4 | 2.8 |
| 5 | 3.1 |
| 6 | 3.3 |
| 7 | 3.7 |
| 8 | 3.7 |
| 9 | 3.7 |
| 10 | 3.7 |
| 11 | 3.8 |
| 12 | 3.5 |
| 13 | 3.6 |
| 14 | 3.5 |
| 15 | 3.5 |
| 16 | 3.6 |
| 17 | 3.4 |
| 18 | 3.1 |
| 19 | 3.3 |
| 20 | 3.8 |
| 21 | 3.3 |
| 22 | 2.8 |
| 23 | 2.8 |
| 24 | 2.7 |
| 25 | 2.7 |
| 26 | 2.6 |
| 27 | 3.1 |
| 28 | 3.4 |
| 29 | 3.0 |
| 30 | 3.1 |
| 31 | 3.2 |
| 32 | 2.2 |

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|----|-----|
| 33 | 1.7 |
| 34 | 1.4 |
| 35 | 1.3 |
| 36 | 1.5 |
| 37 | 1.2 |
| 38 | 0.9 |
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Avg Dbf= 2.79
 Max water depth= 1.0
 Ctr of structure@: N/A
 Wbf = 38'
 Flood Prone Width= 86'

NHDOT STREAM CROSSING ASSESSMENT WORKSHEET

Project Stewartstown
#16312

Location of Crossing Bishop Brook

Date of field assessment 9/20/2013

Reference Reach 3:

Starting bank (left/right)

back to

| Dist. from bank (ft.) | Dbf |
|-----------------------|-----|
| 1 | 2.3 |
| 2 | 2.6 |
| 3 | 2.6 |
| 4 | 2.5 |
| 5 | 1.0 |
| 6 | 2.2 |
| 7 | 3.0 |
| 8 | 3.5 |
| 9 | 3.3 |
| 10 | 3.2 |
| 11 | 3.2 |
| 12 | 3.3 |
| 13 | 3.2 |
| 14 | 3.1 |
| 15 | 3.2 |
| 16 | 3.7 |
| 17 | 3.8 |
| 18 | 3.5 |
| 19 | 3.4 |
| 20 | 3.3 |
| 21 | 3.8 |
| 22 | 3.7 |
| 23 | 3.6 |
| 24 | 3.6 |
| 25 | 3.3 |
| 26 | 2.8 |
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Avg Dbf= 3.11
 Max water depth= 1.2
 Ctr of structure@: N/A
 Wbf= 26'
 Flood Prone Width= 70'

NHDOT STREAM CROSSING ASSESSMENT WORKSHEET

Project Stewartstown
#16312

Location of Crossing Bishop Brook

Date of field assessment 9/20/2013

Longitudinal Profile for Reference Reach (length = 7-10 times bankfull width)

Starting at Reference 1 going towards Reference 2:

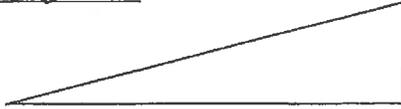
Shooting a pop level from at a height of: 5 ft.

Reading on survey rod at Ref 2: 2.3 ft.

A Difference of: 2.7 ft.

Distance between Ref 1 and Ref 2: 56' ft.

Slope at crossing: 0.05



Depth of Water at Thalweg: 0.8

(Features: Riffle, Run, Pool, Step, Glide)

Features between Ref 1 and 2: Riffle @ 1-50 ft
Step @ 50-56 ft
 _____ @ _____ ft
 _____ @ _____ ft
 _____ @ _____ ft
 _____ @ _____ ft

From Reference 2 going towards Reference 3:

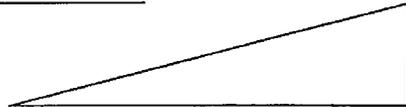
Shooting a pop level from at a height of: _____ ft.

Reading on survey rod at Ref 2: _____ ft.

A Difference of: _____ ft.

Distance between Ref 1 and Ref 2: _____ ft.

Slope at crossing: _____



* UNobtainable *
Trees
in
way

Depth of Water at Thalweg: _____

(Features: Riffle, Run, Pool, Step, Glide)

Features between Ref 1 and 2: _____ @ _____ ft
 _____ @ _____ ft

NHDOT STREAM CROSSING ASSESSMENT WORKSHEET

Project Stewartstown
#16812

Location of Crossing Bishop Brook

Date of field assessment 9/20/2013

Office Calculations for (At Crossing Data):

Entrenchment Ratio: $W_{fpa}/W_{bf} =$ 1.93

Width/Depth Ratio: $W_{bf}/\text{Average Depth} =$ 10.98

Sinuosity: stream length/valley length = N/A

Channel Slope: 0.025

Channel Material: Gravel, cobble

Rosgen Classification: B

Office Calculations for (Reference Reach Data):

Entrenchment Ratio: $W_{fpa}/W_{bf} =$ 2.26

Width/Depth Ratio: $W_{bf}/\text{Average Depth} =$ 11.39

Sinuosity: stream length/valley length = N/A

Channel Slope: unobtainable

Channel Material: Gravel, bedrock, cobble

Rosgen Classification: E

Memo



NH NATURAL HERITAGE BUREAU NHB DATACHECK RESULTS LETTER

To: Rebecca Martin, NH DOT
7 Hazen Drive
PO Box 483
Concord, NH 03302

From: Amy Lamb, NH Natural Heritage Bureau
Date: 4/25/2016 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB16-1219

Town: Stewartstown
Location: NH Route 145 bridge over Bishop Brook

Description: Update to NHB File ID: NHB15-1170, DOT Project 16312: This project will address Bridge 121/114, an I-Beam Concrete bridge that carries NH Route 145 over Bishop Brook. The bridge is 23' wide and 42' long. The bridge is currently on the Department's Red List. The proposed project includes bridge replacement of NH Route 145 over Bishop Brook. Work includes removal of the entire existing bridge structure and construction of a new bridge. Roadway work will also be included for the bridge approaches along the same alignment. The new bridge will be a 50 foot bridge span.

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

Comments: This project was previously reviewed as NHB15-1170. If additional impacts not previously discussed are to be included, please contact me.

Plant species

| Case's ladies'-tresses (<i>Spiranthes casei</i>)* | State ¹ | Federal | Notes |
|---|--------------------|---------|--|
| Loesel's wide-lipped orchid (<i>Liparis loeselii</i>) | E | -- | Threats to this species include habitat alteration and nutrient pollution. |
| | T | -- | This inconspicuous orchid occurs in a variety of wet, sunny habitats. Threats include succession (reforestation), habitat destruction (e.g., changes in local hydrology), and herbivory (including grazing by deer). |

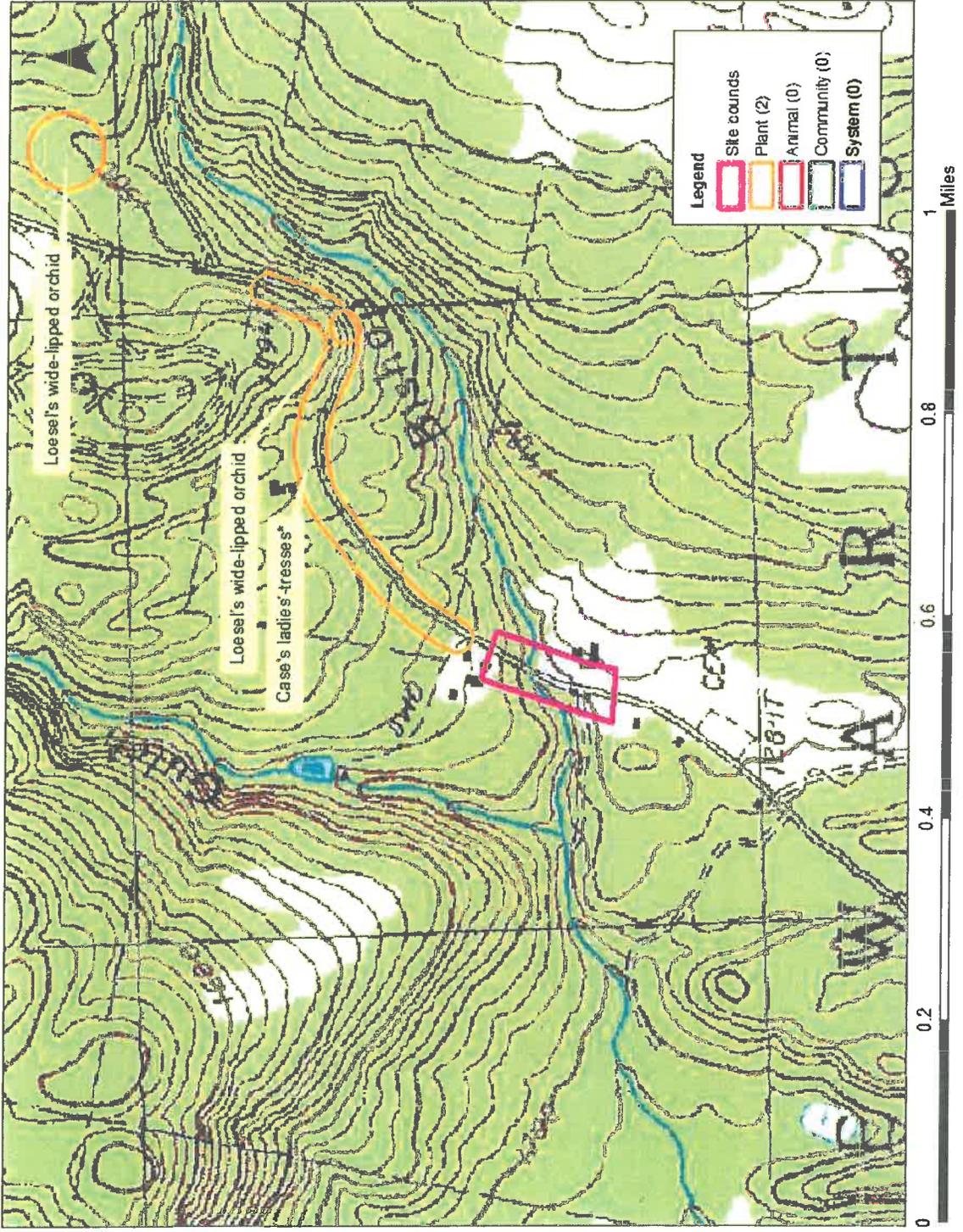
¹Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20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

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

NHB16-1219



New Hampshire Natural Heritage Bureau - Plant Record

Case's ladies'-tresses (*Spiranthes casei*)

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: Historical records only - current condition unknown.
 Comments on Rank:

Detailed Description: 1989: About 40 flowering plants, 40 or more non-flowering plants.

General Area: 1989: Roadside.

General Comments:

Management 1989: Improper roadside mowing threatens these plants.

Comments:

Location

Survey Site Name: Rte. 145, Stewartstown
 Managed By:

County: Coos

Town(s): Stewartstown

Size: 9.4 acres

Elevation: 1440 feet

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

Directions: North of Stewartstown Hollow on Rte. 145.

Dates documented

First reported: 1989-09

Last reported: 1989-09

New Hampshire Natural Heritage Bureau - Plant Record

Loesel's wide-lipped orchid (*Liparis loeselii*)

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: Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank: Full population size unknown, but documented from two areas, one a largely natural fen (sjc).

Detailed Description: 2009: Area 2: 8 stems, 4 with immature seed pods. 1994: Area 1: less than 1% cover in one of two [20 x 20 m] plots. 1990, 1988, 1982: Area 1: no details.
General Area: 2009: Area 2: 2009: Shaley dry slope - scrubby roadside. Associated species include *Solidago* sp. (goldenrod), low *Betula* sp. (birch), shrubby *Salix* sp. (willow), *Hieracium* sp. (hawkweed), *Artemisia stelleriana* (dusty miller), lichens, and *Picea mariana* (black spruce). 1988: Area 1: An open, sloping calcareous peatland.
General Comments: 2009: Area 2: observed late in the season (9/17), possibly more plants to be found earlier in the summer.

Management

Comments:

Location

Survey Site Name: Rte. 145 Fen
Managed By:

County: Coos
Town(s): Stewartstown
Size: 3.3 acres

Elevation: 1500 feet

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

Directions: 2009: Area 2: From Colebrook take the right fork onto Rte. 145 at Howard's Restaurant. Pass Beaver Brook Falls, go through Stewartstown Hollow, and park where Creampoke Rd. comes in on the right. Walk south on Rte. 145 to a right-hand curve in the road. On the right is a scrubby, open, dry shale mound. Look for the plants here on the lower slopes. Three plants were across from telephone pole 182, and 5 plants were across from pole 183. 1982: Area 1: park at the intersection of Rte. 145 and Poke [Creampoke?] Rd. about 1 mile north of Ladd Pond. The fen is on the east side of Rte. 145 a short ways up the road.

Dates documented

First reported: 1982-09-11

Last reported: 2009-09-17

Rebecca A. Martin

From: Lamb, Amy <Amy.Lamb@dred.nh.gov>
Sent: Monday, November 16, 2015 9:42 AM
To: Rebecca A. Martin
Subject: RE: Stewartstown 16312 Rare Plant Survey

Hi Rebecca,

Based on your description of the additional work areas not included in the survey, the west side of the roadway is either overgrown with shrubs or is maintained lawn, and the east side of the roadway has a dense, shady canopy. Since these habitat types do not support either orchid species, NHB has no further concerns about the project.

And yes, the orchid you saw is broad-leaved helleborine.

Thank you,
Amy

Amy Lamb
Ecological Information Specialist
(603) 271-2215 ext. 323

NH Natural Heritage Bureau
DRED - Forests & Lands
172 Pembroke Rd
Concord, NH 03301

From: Rebecca A. Martin [mailto:RMartin@dot.state.nh.us]
Sent: Monday, November 16, 2015 8:51 AM
To: Lamb, Amy
Subject: RE: Stewartstown 16312 Rare Plant Survey

Hello Amy,

You are correct, the "T" line does show proposed ground disturbance and this area does seem to include a very small area north of the bridge that I did not include in my rare plant survey on both sides of the roadway. However, neither the impact area west of the survey or east of the survey seem to be appropriate habitat.

Losesel's wide-lipped orchid habitat includes man-made or disturbed areas, wetlands, lakes, ponds, meadows, fields, and shores of rivers and lakes. From what I was reading the hydric soils and openness to allow sunlight are important.

Case's ladies-tresses habitat includes man-made or disturbed areas, meadows, fields, and ridges or ledges. It also needs open habitats.

On the east side (IMGP5276) of the roadway the canopy cover is quite dense, which would not provide suitable openness for either species.

On the west side of the roadway (IMGP5271) (near the wood shed) the slope is very brushy, which made it difficult to walk in this area. The yard is mowed/maintained, so I do not believe this would provide suitable habitat either. You can

see in the google earth image (16312_northern_project_impacts) that the small area that was outside of my survey is either too densely vegetated or is a maintained yard space.

I have walked in this area that may be impacted (not while surveying for these plants) and the only orchid I noted was the one that I believe to be broad-leaved helleborine (photo attached).

Would you like to see any additional photos? I have some non-growing season pictures that I can share?

Thank you,

Rebecca Martin
Environmental Manager
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03302
(603)271-6781
rmartin@dot.state.nh.us

From: Lamb, Amy [<mailto:Amy.Lamb@dred.nh.gov>]
Sent: Friday, October 30, 2015 12:39 PM
To: Rebecca A. Martin
Subject: RE: Stewartstown 16312 Rare Plant Survey

Hi Rebecca,

Thanks for touching base and sending the updated work plan. It looks like the impacts ("T" shape") are a bit beyond the roadway compared to the survey area at the north end of the project – 20' or so on each side? It's hard to tell viewing the plan on a computer. Given your knowledge of the character of these areas, is there anywhere that is in this impact area (non-surveyed) that is either open, disturbed, dry or damp areas where either of the two orchids could occur?

Amy Lamb
Ecological Information Specialist
(603) 271-2215 ext. 323

NH Natural Heritage Bureau
DRED - Forests & Lands
172 Pembroke Rd
Concord, NH 03301

From: Rebecca A. Martin [<mailto:RMartin@dot.state.nh.us>]
Sent: Wednesday, October 28, 2015 8:06 AM
To: Lamb, Amy
Subject: RE: Stewartstown 16312 Rare Plant Survey

Hello Amy,

Thank you for your comments at the Natural Resource meeting. I compared the new plans and the photos from my rare plant survey and I do not believe I missed any of the new areas of impact for the project that would be in Case's Ladies'-tresses habitat. If you look on the plan in the upper right hand corner you will see the house marked 1 ½ story wood that is outside the area of expected impact. If you look in the aerial photo of my survey effort (attached), you will see that I surveyed in front of the house.



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 COMMERCIAL STREET, SUITE 300
CONCORD, NH 3301
PHONE: (603)223-2541 FAX: (603)223-0104
URL: www.fws.gov/newengland

Consultation Code: 05E1NE00-2015-SLI-0479

May 28, 2015

Event Code: 05E1NE00-2015-E-00794

Project Name: 16312 Stewartstown Bridge Replacement

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). 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: 16312 Stewartstown Bridge Replacement

Official Species List

Provided by:

New England Ecological Services Field Office

70 COMMERCIAL STREET, SUITE 300

CONCORD, NH 3301

(603) 223-2541

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

Consultation Code: 05E1NE00-2015-SLI-0479

Event Code: 05E1NE00-2015-E-00794

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Name: 16312 Stewartstown Bridge Replacement

Project Description: The proposed project involves replacement of the bridge on NH Route 145 over Bishop Brook in Stewartstown, NH. The entire structure of Bridge 121/114 will be replaced as part of this project, due to the fact that the bridge is on the State's Red List. There will be 360 feet of road reconstruction, clearing needed to complete the project will be in close proximity to the bridge and roadway, and there will be some wetland impacts and impacts to Bishop Brook associated with the project.

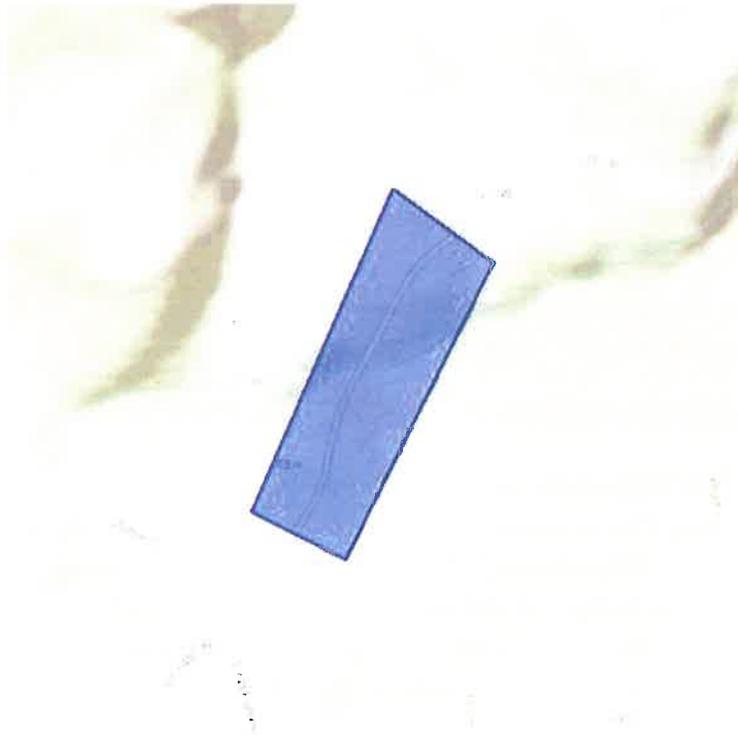
Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your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



United States Department of Interior
Fish and Wildlife Service

Project name: 16312 Stewartstown Bridge Replacement

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-71.4410662651062 44.97319306408933, -71.43904924392699 44.97213045685472, -71.4419674873352 44.96789501240019, -71.44389867782593 44.96857816975743, -71.4410662651062 44.97319306408933)))

Project Counties: Coos, NH



United States Department of Interior
Fish and Wildlife Service

Project name: 16312 Stewartstown Bridge Replacement

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.

| Mammals | Status | Has Critical Habitat | Condition(s) |
|---|------------|----------------------|--------------|
| Canada Lynx (<i>Lynx canadensis</i>) Population: (Contiguous U.S. DPS) | Threatened | Final designated | |
| Northern long-eared Bat (<i>Myotis septentrionalis</i>) | Threatened | | |



United States Department of Interior
Fish and Wildlife Service

Project name: 16312 Stewartstown Bridge Replacement

Critical habitats that lie within your project area

There are no critical habitats within your project area.

**Federal Highway Administration (FHWA) and Federal Railroad Administration (FRA)
Range-wide Programmatic Informal Consultation for
Indiana Bat and Northern Long-eared Bat**

Project Submittal Form for FHWA, FRA, and Transportation Agencies
Updated June 23, 2015

In order to use the programmatic informal consultation to fulfill Endangered Species Act consultation requirements, transportation agencies must use this form to submit project-level information for all may affect, not likely to adversely affect (NLAA) determinations to the appropriate U.S. Fish and Wildlife Service (Service) field office prior to project commencement. For more information, see the Standard Operating Procedure for Site Specific Project(s) Submission in the User's Guide.

In submitting this form, the transportation agency ensures that the proposed project(s) adhere to the criteria of the range-wide programmatic informal BA. Upon submittal of this form, the appropriate Service field office may review the site-specific information provided and request additional information. If the applying transportation agency is not notified within 14 calendar days of emailing the Project Submittal Form to the Service field office, it may proceed under the range-wide programmatic informal consultation.

Further instructions on completing the form can be found by hovering your cursor over each text box.

1. Date: 10/29/2015

2. Lead Agency: FHWA

This refers to the Federal governmental lead action agency initiating consultation; select FHWA or FRA as appropriate

3. Requesting Agency: NH DOT

a. Name: Rebecca Martin

b. Title: Environmental Manager

c. Phone: (603)271-6781

d. Email: rmartin@dot.state.nh.us

4. Consultation Code¹: 05E1NE00-2015-SLI-0479

5. Project Name(s): 16312 Stewartstown Bridge Replacement

¹ Available through IPaC System Official Species List: <https://ecos.fws.gov/ipac/>

6. Project Description:

Please attach additional documentation or explanatory text if necessary

The proposed project involves replacement of the bridge on NH Route 145 over Bishop Brook in Stewartstown, NH. The entire structure of Bridge 121/114 will be replaced as part of this project, due to the fact that the bridge is on the State's Red List with the deck in poor condition and the substructure in serious condition. The new bridge span is proposed to be 80 feet long. There will be road reconstruction to the north and the south of the bridge. The clearing needed to complete the project will be in close proximity to the bridge and roadway. A survey for bat activity on the bridge was completed, and no signs of bat utilization were found.

There will be some wetland impacts and impacts to Bishop Brook associated with the project and all appropriate erosion control measures will be incorporated and maintained throughout construction of the project. A water quality treatment detention area will be installed in the field on the south east corner of the project area and a culvert located to the south of the bridge will be replaced as part of the project.

The clearing of trees greater than 3" diameter at breast height that might provide suitable NLEB habitat will be completed during the inactive season in accordance with the applicable TOY restriction, and so, the project is not likely to adversely affect NLEB.

7. Other species from Official Species List:

- ✓ No effect – project(s) are inside the range, but no suitable habitat – see additional information attached The Official Species list included the Canada Lynx, however, the Lynx is not expected to be present in the roadside habitat.
May Affect – see additional information provided for those species (either attached or forthcoming)

8. For Ibat/NLEB, if Applicable, Explain Your No Effect Determination

No effect – project(s) are outside the species' range (*form complete*)

No effect – project(s) are inside the range, but no suitable summer habitat (*form complete*)

No effect from maintenance, alteration, or demolition of bridge(s)/structure(s) – results of inspection surveys indicate no signs of bats. (*form complete*)

No effect – other (*see Section 2.2 of the User's Guide – form complete*)

Otherwise, please continue below.

9. Affected Resource/Habitat Type

✓ Trees

✓ Bridge

Other Non-Tree Roosting Structure (e.g., building)

Other (please explain):

10. For Tree Removal Projects:

- a. Please verify that no documented roosts or foraging habitat will be impacted and that project is within 100 feet of existing road surface: ✓
- b. Please verify that all tree removal will occur during the inactive season²: ✓
- c. Timing of clearing: Inactive season
- d. Amount of clearing: 8,000 to 10,000 square feet of clearing

11. For Bridge/Structure Work Projects:

- a. Proposed work: Bridge replacement
- b. Timing of work: Multi-season
- c. Evidence of bat activity on bridge/structure:
Survey on 8/4/15 -no evidence of bats utilizing the bridge.
- d. If applicable, verify that superstructure work will not bother roosting bats in any way: ✓
- e. If applicable, verify that bridge/structure work will occur only in the winter months:

² Coordinate with local Service field office for appropriate dates.

12. Please confirm the following:

Proposed project(s) adhere to the criteria of the range-wide programmatic informal BA (see Section 2.0). ✓

All applicable AMMs will be implemented, including³:

Tree Removal AMM 1: ✓

Tree Removal AMM 2: ✓

Tree Removal AMM 3: ✓

Tree Removal AMM 4: ✓

Bridge AMM 1:

Bridge AMM 2: ✓

Bridge AMM 3:

Bridge AMM 4:

Structure AMM 1:

Structure AMM 2:

Structure AMM 3:

Structure AMM 4:

Lighting AMM 1:

Lighting AMM 2:

Dust Control AMM 1:

Water Control AMM 1: ✓

Water Control AMM 2: ✓

Water Control AMM 3: ✓

Water Control AMM 4: ✓

Water Control AMM 5:

Water Control AMM 6:

Wetland/Stream Protection AMM 1:

Wetland/Stream Protection AMM 2: ✓

Wetland/Stream Protection AMM 3: ✓

Wetland/Stream Protection AMM 4: ✓

Wetland/Stream Protection AMM 5: ✓

Wetland/Stream Protection AMM 6:

³ See AMMs Fact Sheet (Appendix B) for more information on the following AMMs.

APPENDIX C: Bridge/Structure Inspection Form

Bridge Inspection Form

This form will be completed and submitted to the District Environmental Manager by the Contractor prior to conducting any work below the deck surface either from the underside, from activities above that bore down to the underside, or that could impact expansion joints, from deck removal on bridges, or from structure demolish. Each bridge/structure to be worked on must have a current bridge inspection. Any bridge/structure suspected of providing habitat for any species of bat will be removed from work schedules until such time that the DOT has obtained clearance from the US Fish and Wildlife Service, if required. Additional studies may be undertaken by the DOT to determine what species may be utilizing structures prior to allowing any work to proceed.

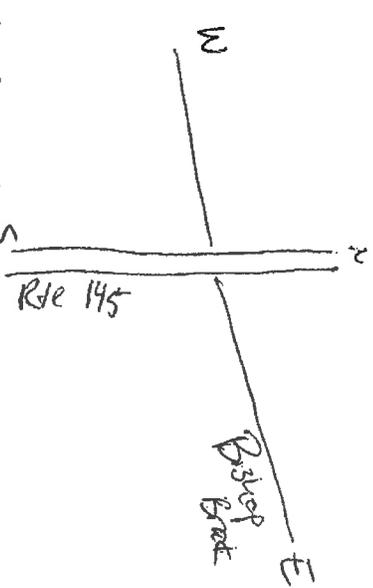
DOT Project # 16212 Water Body Bishop Brook Date/Time of Inspection 6/4/2015 10:45 AM

| Route: | County: | Federal Structure ID: | Bat Indicators | | | | Notes: (e.g. number & species of bats, if known) |
|--------|---------|-----------------------|---|--------|-------|-----------|--|
| | | | Check all that apply. Presence of one or more indicators is sufficient evidence that bats may be using the structure. | Visual | Sound | Droppings | |
| 145 | | | | | | | bridge is very deteriorated - many cracks and crevices in concrete. Rust has stained |
| | | | | | | | |

Areas Inspected (Check all that apply)

| Bridges | | Culverts/Other Structures | | | | Summary Info (circle all that apply) | | | |
|---|-------------------------------------|---|-------------------------------------|--|-----------|--------------------------------------|-----------|--|--|
| All vertical crevices sealed at the top and 0.5-1.25" wide & 24" deep | <input checked="" type="checkbox"/> | Crevices, rough surfaces or imperfections in concrete | <input checked="" type="checkbox"/> | Human disturbance or traffic under bridge/in culvert or at the structure | High | Low | None | | |
| All crevices >12" deep & not sealed | <input checked="" type="checkbox"/> | Spaces between walls, ceiling joints | <input checked="" type="checkbox"/> | Possible corridors for netting | None/poor | Marginal | excellent | | |
| All guardrails | <input checked="" type="checkbox"/> | Evidence of bats using bird nests, if present? | <input checked="" type="checkbox"/> | Evidence of bats using bird nests, if present? | Yes | No | | | |
| All expansion joints | <input checked="" type="checkbox"/> | | | | | | | | |

2 ~~many~~ bird nests were observed on bridge tresses - one in poor condition
 No evidence of bats - no guano on rip rap or staining out of crevices
 Look in cracks w/ flashlight - didn't see any evidence of bats



April 17, 2015

| | | | | | | | |
|---|---|--|--|--|--|--|--|
| Spaces between concrete end walls and the bridge deck | ✓ | | | | | | |
| Vertical surfaces on concrete I-beams | ✓ | | | | | | |

Inspection Conducted By: Rebecca North

Signature(s):



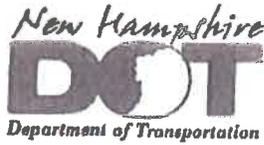
District Environmental Use Only:

Date Received by District Environmental Manager: _____

DOT Bat Inspection Form Instructions

1. Inventories must be completed prior to conducting any work below the deck surface on all bridges that meet the physical characteristics described in the Programmatic Informal Consultation, regardless of whether inventories have been conducted in the past. Due to the transitory nature of bat use, a negative result in one year does not guarantee that bats will not use that structure in subsequent years.
2. Contractors must complete this form no more than seven (7) business days prior to initiating work at each bridge/structure location. Legible copies of this document must be provided to the District Environmental Manager within two (2) business days of completing the inspection. Failure to submit this information will result in that structure being removed from the planned work schedule.
3. Any bridge/structure suspected of providing habitat for any species of bat will be removed from work schedules until such time that the DOT has obtained clearance from the USFWS, if required. Additional studies may be undertaken by the DOT to determine what species may be utilizing each structure identified as supporting bats prior to allowing any work to proceed.
4. Estimates of numbers of bats observed should be placed in the Notes column.
5. Any questions should be directed to the District Environmental Manager.

Notes: a lot of snails observed in Bishop brook
on North side abutment hole in concrete reveals original
stone abutment below - cave-like, looked inside w/ flashlight
no signs of bats observed.



Victoria F. Sheehan
Commissioner

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION



William Cass, P.E.
Assistant Commissioner

STEWARTSTOWN
X-A001(240)
16312
RPR5137

No Adverse Effect Memo

Pursuant to the meeting and discussions on May 14, 2015, and for the purpose of compliance with regulations of the National Historic Preservation Act and the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), the NH Division of Historical Resources (NHDHR) and the NH Division of the Federal Highway Administration (FHWA) have coordinated the identification and evaluation of historical and archaeological resources with plans to replace the NH Route 145 bridge (121/114) over Bishop Brook in the town of Stewartstown, New Hampshire:

Based on a review pursuant to 36 CFR 800.4, we determined that the Keaser-Flanders Farm and the Poore Family Homestead are eligible for the National Register of Historic Places. It was also determined that the bridge is not individually eligible. Applying the criteria of effect at 36 CFR 800.5, we mutually agreed that:

1. A drainage easement will be necessary on the Keaser-Flanders Farm;
2. The current owner of the Keaser-Flanders Farm understands the necessary construction impacts and prefers the construction timeline be as short as possible to avoid disruption on the farm; and
3. The Poore Family Homestead (parcel B4/49) will not be impacted as part of the project; and therefore

the project will not have an adverse effect on the eligible properties. No additional survey is required.

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

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

Patrick Buter
for Patrick Buter, Administrator
Federal Highway Administration
5/5/16
Date
Jill Edelm
Jill Edelmann
Cultural Resources Manager
5/10/2016
Date

Concurred with by the NH State Historic Preservation Officer:

Elizabeth H. Muzzey
for Elizabeth H. Muzzey
State Historic Preservation Officer
NH Division of Historical Resources
5-6-16
Date

c.c. Chris St. Louis, NHDHR Rebecca Martin, DOT
 Jamie Sikora, FHWA David Scott, DOT

S:\Environment\PROJECTS\STEWARTSTOWN\16312\Cultural\No Adverse Effect FHWA.docx



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.

| 1. Impaired Waters | Yes | No |
|--|-----------|----|
| 1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.* | | x |
| 2. Wetlands | Yes | No |
| 2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work? | x | |
| 2.2 Are there proposed impacts to SAS, 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, www.nhnaturalheritage.org , specifically the book Natural Community Systems of New Hampshire . | | 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.) A buffer will be restored. | | 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? | 12,354 sf | |
| 2.7 What is the size of the proposed impervious surface area? | 15,665 sf | |
| 2.8 What is the % of the impervious area (new and existing) to the overall project site? | 35% | |
| 3. Wildlife | 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.) Potential, but not confirmed | x | |
| 3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm . • Data Mapper: www.granit.unh.edu . • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html . | x | |
| 3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)? | | x |
| 3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development? | | x |
| 3.5 Are stream crossings designed in accordance with the PGP, GC 21? | x | |

| 4. Flooding/Floodplain Values | Yes | No |
|--|-----|-----|
| 4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream? | | x |
| 4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage? | | N/A |
| 5. Historic/Archaeological Resources | | |
| If a minor or major impact project, has a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) been sent to the NH Division of Historical Resources as required on Page 5 of the PGP?* | x | |

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

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

Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145

Wetland Permit Application Photos

South of bridge and east of Route 145- Locations A (Wetland 11: PEM1E), B (W 12: PEM1Ed) and CC (W 11: PEM1E)



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145
Wetland Permit Application Photos



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145

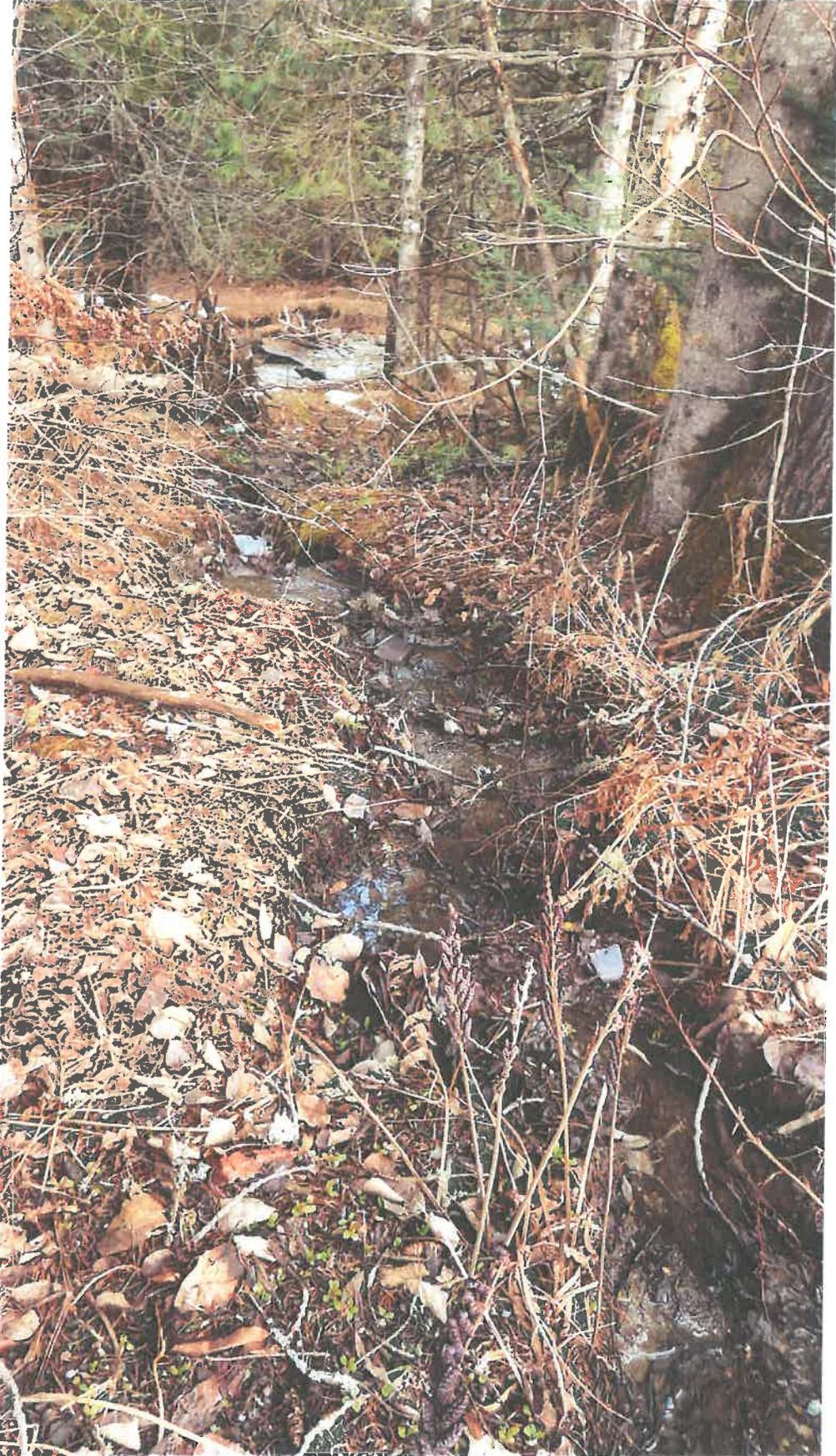
Wetland Permit Application Photos

Intermittent stream south of bridge and west of Route 145- Locations C (W 13: R4SB3 bank), D (W 14: Intermittent stream R4SB3), E (W 15: R4SB3 bank), F (W 13: R4SB3 bank), G (W 14: R4SB3), and H (W 15: R4SB3 bank)



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145

Wetland Permit Application Photos



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145

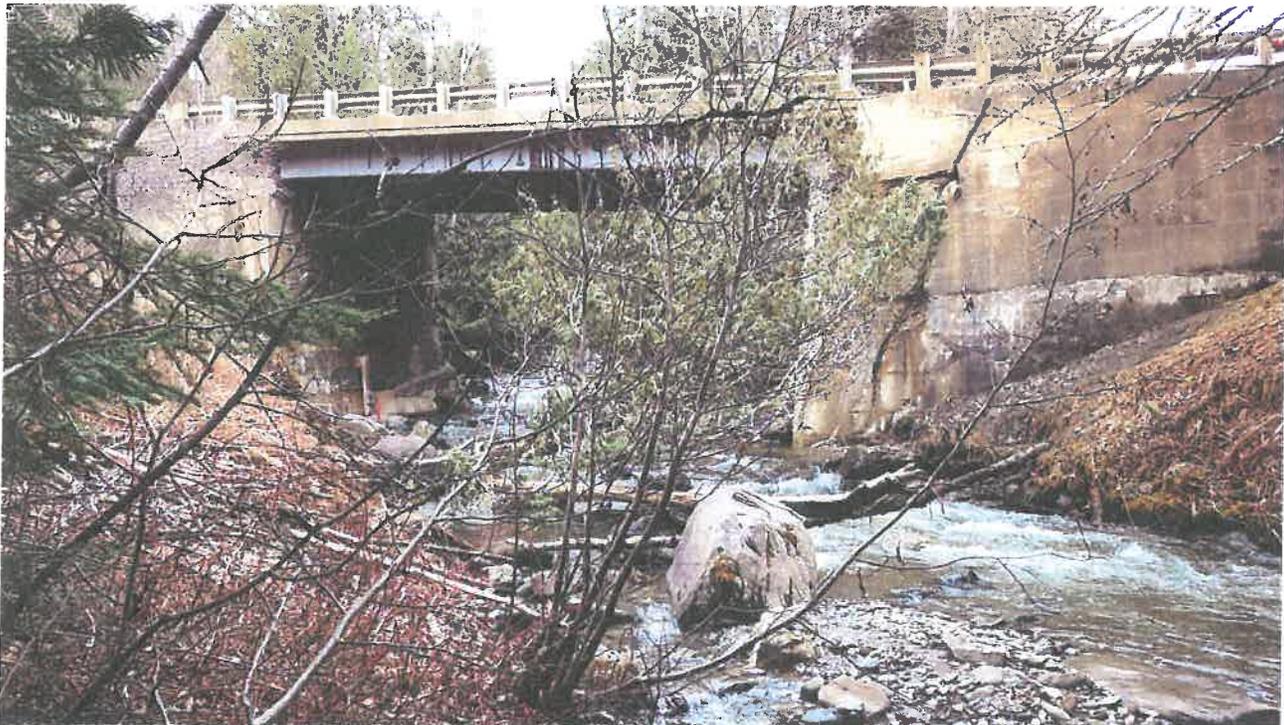
Wetland Permit Application Photos

Adjacent Bishop Brook- south of bridge and west of Route 145- I (W:2 R2UB1 bank), J (W:2 R2UB1 bank), K (W:1 R2UB1), L (W:3 R2UB1 bank)

Right side of photo is south side of bridge from further downstream:



Right side of brook/photo is the south side:



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145
Wetland Permit Application Photos
Right side of brook/photo is the south side:



Left side of photo/brook is the south side, right side is the north side:



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145

Wetland Permit Application Photos

Adjacent Bishop Brook- north of bridge and west of Route 145- L (W:3 R2UB1 bank), M (W:3 R2UB1 bank), N (W:1 R2UB1)



Right side of photo/brook is the north side L (W:3 R2UB1 bank), M (W:3 R2UB1 bank):



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145

Wetland Permit Application Photos

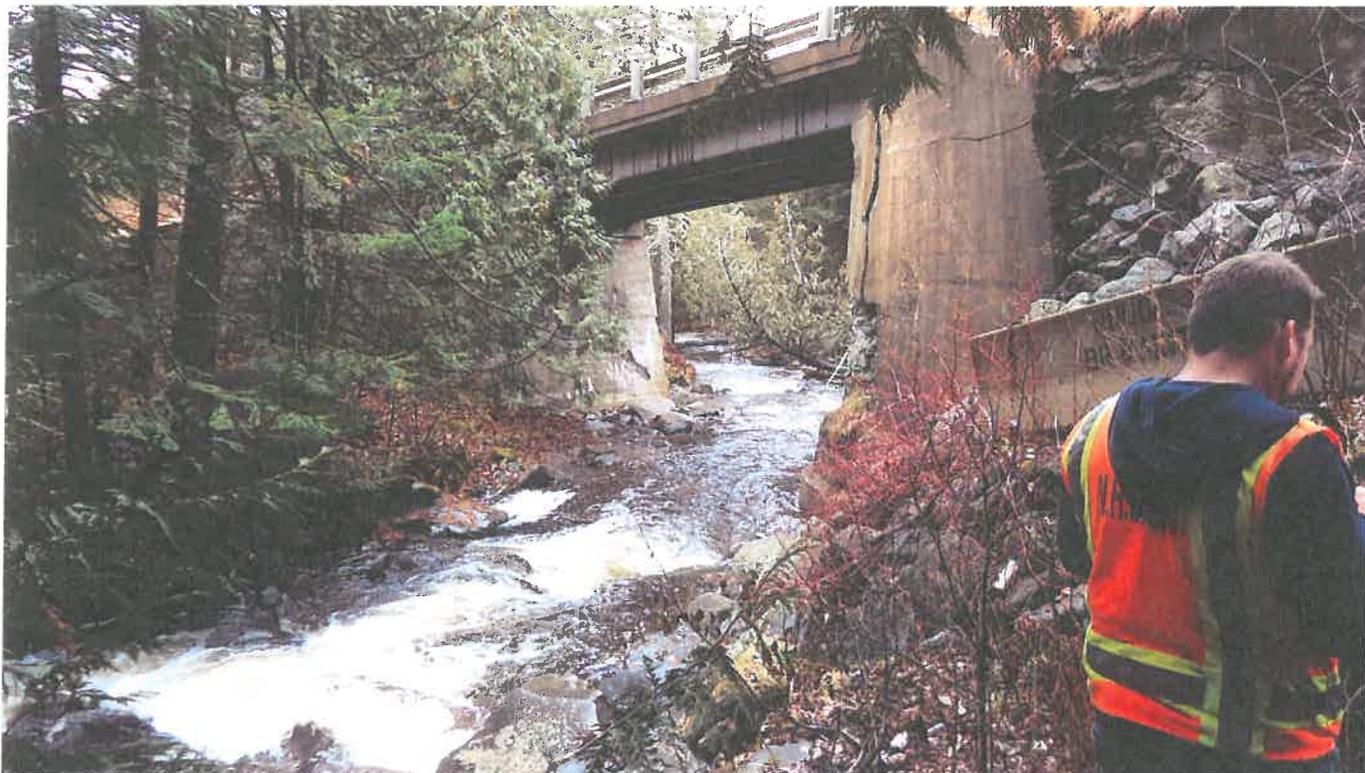
Right side of photo/Bishop Brook is the north side L (W:3 R2UB1 bank), M (W:3 R2UB1 bank):



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145
Wetland Permit Application Photos
N (W:1 R2UB1)



Adjacent Bishop Brook- east of Route 145- north of bridge on right side R (W:5 R2UB1 bank), S (W:5 R2UB1), south of bridge on left side P (W:4 R2UB1 Bank) and Q (W:4 R2UB1 Bank)



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145
Wetland Permit Application Photos
S (W:5 R2UB1)



Left side of photo north of bridge R (W:5 R2UB1 bank), S (W:5 R2UB1), right side south of bridge P (W:4 R2UB1 Bank) and Q (W:4 R2UB1 Bank)



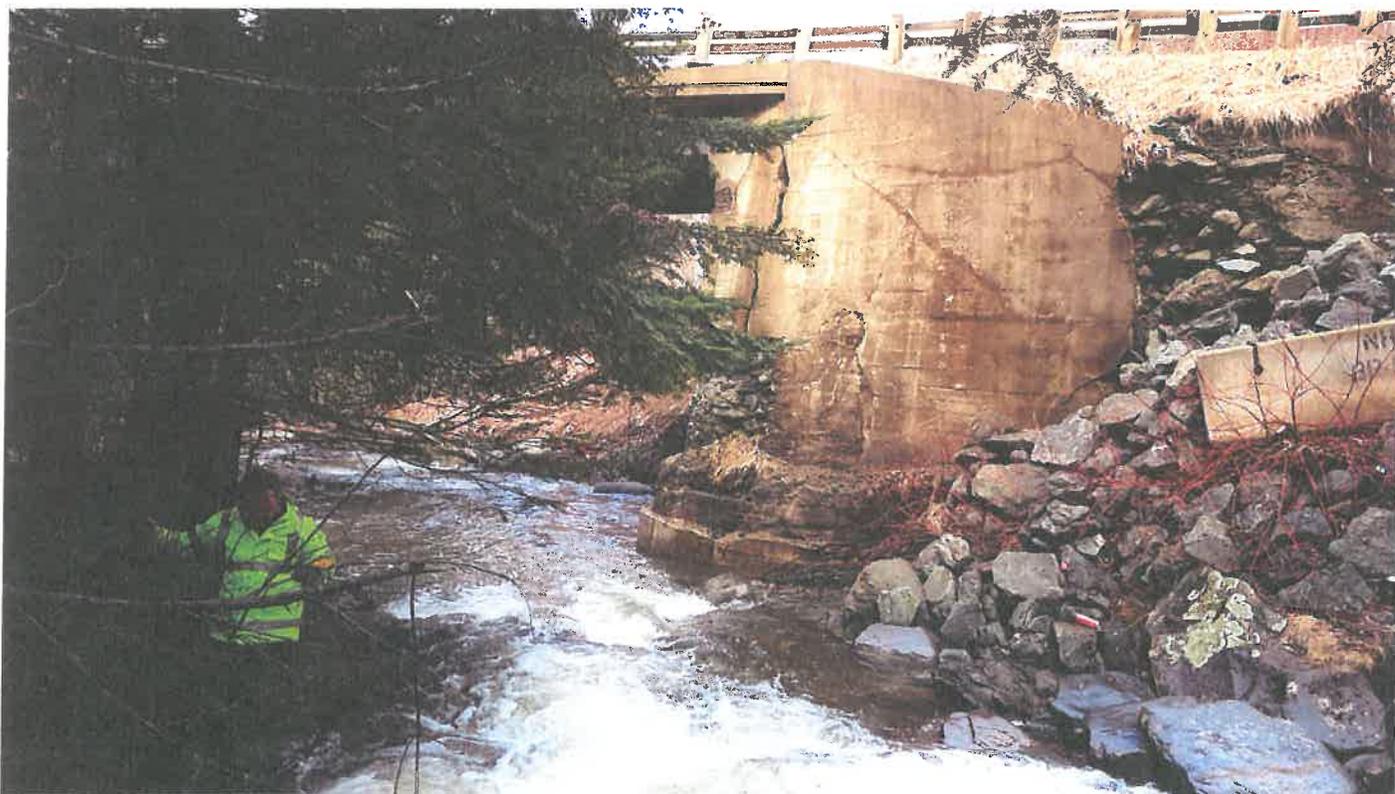
Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145

Wetland Permit Application Photos

Left side of photo north of bridge R (W:5 R2UB1 bank), right side south of bridge P (W:4 R2UB1 Bank) and Q (W:4 R2UB1 Bank)



Right side of photo north of bridge S (W:5 R2UB1)



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145
Wetland Permit Application Photos
Adjacent Bishop Brook- south of bridge and east of Route 145 P (W:4 R2UB1 Bank) and Q (W:4 R2UB1 Bank)

Right side of photo south of bridge/Bishop Brook



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145
Wetland Permit Application Photos
Under bridge on south side of Bishop Brook: O (W:1 R2UB1)



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145
Wetland Permit Application Photos
South side of Bishop Brook on right side of photo



North of bridge and east of Route 145 T (W:8 PFO1E),U (W:8 PFO1E), V (W:9 PFO1E)

Looking from road into wetland area V



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145
Wetland Permit Application Photos
Looking from slope toward V and Route 145



Looking from slope toward V and U, Route 145 in background



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145
Wetland Permit Application Photos



Looking from Route 145 into Area U



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145
Wetland Permit Application Photos
Looking toward Bishop Brook, Areas T and U on right side of photo



Looking away from Bishop Brook Bishop Brook, southern portion of Area T and U



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145

Wetland Permit Application Photos

North of bridge, wetland pocket uphill from Bishop Brook, and east of Route 145- W (W:9 PFO1E), X (W:9 PFO1E), Y (W:7 R4SB3), Z (W:9 PFO1E)



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145

Wetland Permit Application Photos

From east of wetland pocket looking south west at W, X, Y, Z

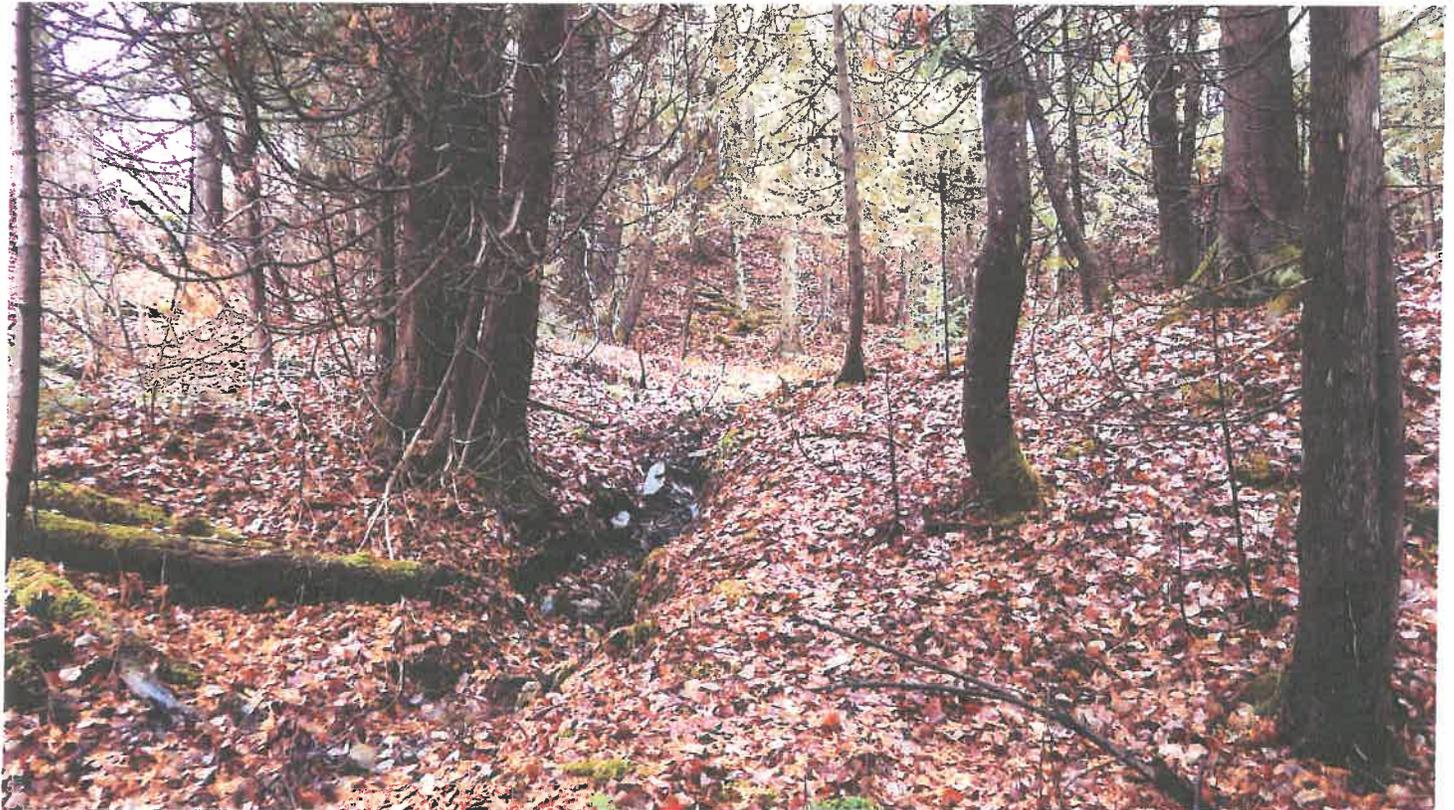


Intermittent stream north of bridge and east of Route 145- AA (W:7 R4SB3) (AA is on the left side of the photo, wetland pocket on the right)



Stewartstown 16312- Bridge Replacement- Bishop Brook- Route 145
Wetland Permit Application Photos
Intermittent stream north of bridge and east of Route 145- BB (W:7 R4SB3)

Looking up the hillside away from Bishop Brook:



Stewartstown 16312

The following documents the anticipated general construction sequence for the replacement of Br. No. 122/114, NH 145 over Bishop Brook. The bridge and roadway will be closed for the duration of the 2017 construction season (approximately 6 months assuming mid-April to mid-October).

Notes:

- The Erosion Control Plan provides a construction flow control plan. The Contractor shall submit a Stormwater Pollution Prevention Plan, for approval, with drawings and details showing materials to be used, proposed method of construction, and additional details as selected by the Contractor, not fully shown on the contract plans, to complete the work.
- Temporary water diversions and cofferdams shall meet the requirements of the NHDOT Standard Specification for Road and Bridge Construction.

Construction Sequence

1. Clear construction site. (Prior to April 15, 2017)
2. Install detour package. (April)
3. Install erosion and perimeter controls as indicated on the Erosion Control Plans and Stormwater Pollution Prevention Plans. (April)
4. Install a temporary water diversion (clean water bypass) in the channel of Bishop Brook. Dam inlet and outlet ends and place geotextile and clean material (stone) to create a temporary causeway across Bishop Brook. (Early May)
5. Install temporary dewatering basin within drainage easement (Approx. Sta. 108+50 RT to Sta. 109+50 RT). (Early May)
6. Remove existing deck, girders, abutment and wings. (Mid-May)
7. Construct north and south cofferdams to construct new abutments and abutment footings and new wingwalls and wingwall footings in the dry. (Late May to Early August)
8. Place stone fill around abutments and wings and key into channel as shown on plans. (Mid-August)
9. Remove north and south cofferdams. (Late August)
10. Remove dam at inlet and outlet. Remove temporary water diversion. Maintain access across channel. (Late August)
11. Place girders and deck. (Early September to Mid-October)
12. Construct treatment swale on southeast corner. (Mid-August to Early September)
13. Complete all required roadway work. (Mid-September to Mid-October)
14. Provide permanent slope stabilization. (Fall 2017)
15. Remove all erosion and perimeter controls. (Spring 2018)

PART WT 404 CRITERIA FOR SHORELINE STABILIZATION

The NH Route 145 over Bishop Brook bridge replacement project proposes the placement of stone fill within the jurisdictional areas of the N.H. Wetlands Board and the U.S. Army Corps of Engineers. Stone fill will be located at the abutment bank slopes of the proposed bridge.

Pursuant to PART Wt 404 Criteria for Shoreline Stabilization, the following addresses each codified section of the Administrative Rules:

Wt 404.01 Least Intrusive Method

The shoreline stabilization treatment proposed is the least intrusive construction method necessary to minimize the disruption to the existing shorelines. The stone treatment can be reasonably constructed utilizing general highway construction methods.

Wt 404.02 Diversion of Water

Proposed roadway drainage will allow stormwater run-off to be diverted. This will minimize erosion of the shoreline.

Wt 404.03 Vegetative Stabilization

Natural vegetation will be left undisturbed to the maximum extent possible. The only locations being disturbed are the areas required for bridge and roadway construction. All newly developed slopes and disturbed areas will have humus and seed applied for turf establishment except those areas being covered with rip-rap.

Wt 404.04 Rip-Rap

- (a) Stone fill as proposed is shown on the attached plans to protect the new embankments in front of the abutments and wingwalls and around the piers from erosion and scour. Stable embankments are necessary to maintain the structural integrity of the bridge during all instances of flood flows.
- (b) (1-5) The enclosed specifications for Rip-Rap Class VII (Item 583.7) and Stone Fill Class B, Intermixed with Humus (Item 585.22) provides the description of the material size, gradation, and construction requirements. Cross sections of the stone fill showing proposed thickness and other details, including Geotextile, Permanent Control Class 1, Non-Woven (Item 593.411) have been provided on the attached plans. Bedding for the stone fill will consist of natural ground excavated to the proposed underside of the stone fill or on newly constructed embankments consisting of suitable excavated material in conformance with Section 203 of the Specifications.
- (b) (6) Enclosed are plan sheets to sufficiently indicate the relationship of the project to fixed points of reference, abutting properties, and features of the natural shoreline.
- (b) (7) For reasons as explained in Section (a), stone fill is recommended for the limits shown on the attached plans.
- (c) N/A

- (d) Stone fill is proposed to extend down to and adequately keyed into the channel bottom to prevent possible undermining of the shore slope. This will involve extending the stone beyond the two foot limit as specified in the Criteria for Shoreline Stabilization, Wt 404.04.
- (e) Engineering plans are being provided as a part of the application for rip-rap in excess of 100 linear feet along the stream bank (approximately 117 linear feet of stone is proposed along the south stream bank and approximately 84 linear feet along the north stream bank). Since the project has not advertised final stamped plans are not available. It is not anticipated that the location of the rip-rap will change therefore the plans are stamped with the understanding that if the location of the rip-rap changes, DES will be notified accordingly.

SECTION 583 -- RIPRAP

Description

1.1 This work shall consist of furnishing and placing riprap as shown on the plans or ordered. Riprap is typically required for erosion protection of bridge structures in waterways, for active waterway channel slopes and bottoms, and for intermittent waterway channels where the Engineer determines riprap protection is required to resist expected high water flow velocities.

Materials

2.1 Riprap shall be quarry stone of approved quality, hard, durable, sub-angular to angular in shape, resistant to weathering and free from structural defects such as weak seams and cracks.

2.1.1 The suitable shape of the individual stones shall be angular, meeting the gradation in 2.1.1.2 to create interlocking riprap to provide stability of the slope or channel. Round, thin and platy, elongated or needle-like shapes shall not be used.

2.1.1.1 The suitable riprap stone shape is determined by the Length to Thickness ratio, where Length is the longest dimension and Thickness is the shortest dimension, measured in perpendicular axes to each other. The suitable riprap stone shape shall have a length to thickness ratio of no greater than 3.

2.1.1.2 The gradation requirements of the riprap classes in Table 583-1 are based on the stone size Width, the largest dimension perpendicular to the Length and Thickness, and the distribution of stone sizes by volume. The volume distribution requires that 15 percent of the stone in the mass shall be no larger than the volume shown in the table (< 15% column), and 15 percent of the stone in the mass shall be no smaller than the volume shown in the table (> 85% column). The remaining 70 percent of the stone in the mass shall have a volume between these requirements, averaging to the volume shown in the table (15% - 85% column). None of the stones in the mass shall exceed the maximum volume shown in the table (Maximum column).

Table 583-1

| Riprap Classes and Sizes | | | Percentage Distribution of Particle Sizes by Volume (cubic feet) | | | |
|--------------------------|-------------------|-------------------|--|-----------|-------|---------|
| Class | Nominal Size (in) | Maximum Size (in) | < 15% | 15% – 85% | > 85% | Maximum |
| I | 6 | 12 | 0.05 | 0.14 | 0.31 | 1.0 |
| III | 12 | 24 | 0.4 | 1.0 | 2.5 | 6.5 |
| V | 18 | 36 | 1.3 | 3.5 | 8.5 | 22 |
| VII | 24 | 48 | 3 | 8 | 19 | 53 |
| IX | 36 | 72 | 10 | 27 | 65 | 179 |

Note: Nominal Size and Maximum Size are based on the Width dimension of the stone. The riprap classes conform to the standard classes described in the FHWA HEC-23 publication.

2.1.2 The sources from which the stone is obtained shall be selected well in advance of the time when the material will be required in the field. The acceptability of the riprap stone shape and grading will be determined by the Engineer.

2.1.3 Control of the gradation will be completed by visual inspection approval by the Engineer of a stockpile at the quarry or other agreed site. Mechanical equipment as needed to assist in checking the stockpile gradation shall be provided by the Contractor. Stockpile replenishment will require re-approval.

2.2 Gravel blanket material shall conform to 209.2.1.2.

2.3 Geotextile shall conform to 593.2.

Construction Requirements

3.1 **Preparation of slopes.** Slopes that will be covered by riprap shall be free of brush, trees, stumps, and other organic material and shall be graded to a smooth surface. All soft material shall be removed to the depth shown on the plans or as directed and replaced with approved material per 203.3.6. It is the Contractor’s responsibility to protect embankments and excavated slopes from erosion during construction of the riprap covered slope.

3.2 **Gravel blanket construction.** When called for on the plans, the gravel blanket shall be placed on the prepared area to the specified thickness in one operation, using methods which will not cause segregation of particle sizes within the layer. The surface of the finished layer shall be even and free from mounds or windrows.

3.3 **Geotextile placement.** Geotextile shall be placed in accordance with 593.3.

3.4 **Riprap placement.** Riprap shall be constructed to the dimensions shown on the plans or as directed by the Engineer.

3.4.1 Placement of riprap shall be conducted as soon as possible after gravel blanket or geotextile placement.

3.4.2 Placement of the riprap shall be started at the toe (key trench) and progress up the slope. The key trench at the bottom of the riprap shall be constructed as shown on the plans. If bedrock is encountered at the key trench it shall be brought to the attention of the Engineer to determine if modification to the riprap installation is needed.

3.4.3 Riprap shall be placed over geotextile by methods that do no stretch, tear, puncture or reposition the fabric. Riprap smaller than 1.5 cu. ft. in volume shall be placed with drop heights of less than 3 ft. to the placement surface. Riprap greater than 1.5 cu. ft. in volume shall be placed with no free fall height.

3.4.4 Equipment such as a clamshell, orange-peel bucket, skip or hydraulic excavator shall be used to place the riprap so it is well distributed and there is no large accumulations of either the larger or smaller sizes of stone. Dump trucks or front-end loaders tracked or wheeled vehicles shall not be used since they can destroy the interlocking integrity of the stone when driven over previously placed riprap. Placing the riprap by end dumping on the slopes will cause segregation and will not be permitted.

3.4.5 The riprap shall be placed in a manner which produces a well-graded mass. The larger stones shall be well distributed and the entire mass of riprap shall conform approximately to the gradation specified. Hand placing or rearranging of individual stones by mechanical equipment may be required to the extent necessary to secure the uniformity of gradation and surface specified. Fill voids between larger stones with small stones to ensure interlocking between the riprap.

3.4.6 After the riprap is in place, it shall be compacted by impacting (ramming) the exposed surface to produce a tight, locked surface, not varying more than 6" from the elevations shown on the plans.

3.4.7 Riprap placed in water requires close observation and increased quality control to ensure the required thickness, gradation and coverage is achieved.

Method of Measurement

4.1 Riprap will be measured by the cubic yard.

4.1.1 If the Engineer determines that in-place measurement is impracticable, the quantity for payment will be determined by loose measure in the hauling vehicle on the basis that 1 cubic yard vehicle measure is equivalent to 0.7 cubic yard in place.

Basis of Payment

5.1 The accepted quantity of riprap will be paid for at the Contract unit price per cubic yard (cubic meter) complete in place.

5.1.1 Only when the stone is examined in accordance with 2.1 and examination proves the gradation to be acceptable will payment be made as provided in 109.04.

5.1.2 Gravel blanket material specified or ordered will be paid for under Section 209.

5.1.3 Geotextile specified or ordered will be paid for under Section 593.

5.1.4 The accepted quantity of excavation required for placing riprap and for placing any underlying gravel blanket will be paid for under the item of excavation being performed. Excavation above refers only to excavation of original ground or to material ordered removed not shown on the plans.

5.1.5 Free borrow will not be required to replace the accepted quantity of stone obtained from the excavation. However, when the plans do not call for borrow but the quantity of material removed from excavation for use under this item requires the Contractor to furnish borrow to complete the work, such borrow will be subsidiary.

5.1.6 Replacement slope material resulting from the requirements of 3.1 will be paid in accordance with 203.5.1.9.

Pay item and unit:

| | | |
|-------|-------------------|------------|
| 583.1 | Riprap, Class I | Cubic Yard |
| 583.3 | Riprap, Class III | Cubic Yard |
| 583.5 | Riprap, Class V | Cubic Yard |
| 583.7 | Riprap, Class VII | Cubic Yard |
| 583.9 | Riprap, Class IX | Cubic Yard |

SECTION 585 -- STONE FILL**Description**

1.1 This work shall consist of furnishing and placing a dense stone fill at the locations shown on the plans or ordered. Stone Fill is typically required for stability of embankment fill and soil cut slopes steeper than 2 horizontal to 1 vertical, although slopes at a flatter grade with water seepage or subject to submergence, such as in water quality treatment basins, could require stone fill. Stone fill is also used for erosion protection at pipe outlets, in drainage channels and for other drainage structures where expected water flows and velocities may require it.

Materials

2.1 Stone for stone fill shall be approved quarry stone, or broken rock of a hard, sound, and durable quality. The stones and spalls shall be so graded as to produce a dense fill with a minimum of voids.

2.1.1 Class A stone shall be irregular in shape with approximately 50 percent of the mass having a minimum volume of 12 ft³, approximately 30 percent of the mass ranging between 3 and 12 ft³, approximately 10 percent of the mass ranging between 1 and 3 ft³, and the remainder of the mass composed of spalls.

2.1.2 Class B stone shall be irregular in shape with approximately 50 percent of the mass having a minimum volume of 3 ft³, approximately 40 percent of the mass ranging between 1 and 3 ft³, and the remainder of the mass composed of spalls.

2.1.3 Class C stone shall consist of clean, durable fragments of ledge rock of uniform quality, reasonably free from thin or elongated pieces. The stone shall be made from rock which is free from topsoil and other organic material. The stone shall be graded as follows:

| Sieve Size | Percentage by Weight Passing |
|------------|------------------------------|
| 12 in | 100 |
| 4 in | 50 - 90 |
| 1-1/2 in | 0 - 30 |
| 3/4 in | 0 - 10 |

2.1.4 Class D stone shall conform to Table 520-3 - Coarse Aggregate, Standard Stone Size No. 467.

2.1.5 Spalls for filling voids shall be stones or broken rock ranging downward from a maximum size of 1 ft³.

2.2 Gravel blanket material shall conform to 209.2.1.2.

2.3 Geotextile shall conform to Section 593.

Construction Requirements

3.1 Stones and spalls for stone fill shall be deposited and graded to eliminate voids and obtain a dense mass throughout the course. The spalls shall be tamped into place using an equipment bucket or other approved method.

3.1.1 When stone fill is placed on a slope, the stones shall be deposited in such a manner as not to dislodge the underlying material unnecessarily.

3.1.2 When stone fill is placed on a geotextile, it shall be deposited in a manner to maintain the integrity of the geotextile.

3.2 When gravel blanket is shown or ordered, the gravel shall be placed in layers not exceeding 12" in depth unless otherwise ordered.

3.3 The completed surface shall approximate the lines and grades shown or ordered. When ordered, stone placed over 1 ft. outside or above such lines and grades shall be removed.

3.4 Stone fill (Bridge) shall be placed within the limits shown on the plans.

Method of Measurement

4.1 Stone fill will be measured by the cubic yard and in accordance with 109.01.

Basis of Payment

5.1 The accepted quantity of stone fill of the class specified will be paid for at the Contract unit price per cubic yard complete in place.

5.2 Gravel blanket material specified or ordered will be paid for under Section 209.

5.3 Geotextile specified or ordered will be paid for under Section 593.

SECTION 585

5.4 The accepted quantity of excavation required for placing stone fill and for placing any underlying gravel blanket will be paid for under the item of excavation being performed. Excavation herein refers only to excavation of original ground or to material ordered removed not shown on the plans.

5.5 Free borrow will not be required to replace the accepted quantity of stone obtained from the excavation. However, when the plans do not call for borrow, but the quantity of material removed from excavation for use under this item requires the Contractor to furnish borrow to complete the work, such borrow will be subsidiary.

Pay items and units:

| | | |
|--------|------------------------------|------------|
| 585.1 | Stone Fill, Class A | Cubic Yard |
| 585.2 | Stone Fill, Class B | Cubic Yard |
| 585.21 | Stone Fill, Class B (Bridge) | Cubic Yard |
| 585.3 | Stone Fill, Class C | Cubic Yard |
| 585.4 | Stone Fill, Class D | Cubic Yard |

SPECIAL PROVISION

AMENDMENT TO SECTION 585 -- STONE FILL

Item 585._2 - Stone Fill, Class _, Intermixed with Humus

Add to 3.1:

3.1.3 The stone fill surface shall have all voids filled with humus to provide for a vegetative growth. Humus shall be spread over the surface and worked into the voids.

Add to 4.1:

4.1.1 No measurements will be made for the volume of humus under 585.

Add to 5.1:

5.1.1 Humus used to provide a vegetative bed will be paid for as provided under Item 647.1.

Add to Pay Items and Units:

585._2 Stone Fill, Class _, Intermixed with Humus Cubic Yard (Cubic Meter)