Bedford, X-A004(254), 13692C
NH Route 101 over Pulpit Brook
Categorical Exclusion

State of New Hampshire
Department of Transportation

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Table of Contents

Page

INTRODUCTION 1

EXISTING CONDITIONS 1

BRIDGE 1
ROADWAY 1

STATEMENT OF PURPOSE AND NEED 2

PROPOSED ACTION 2

ALTERNATIVES TO THE PROPOSED ACTION 3

ALTERNATIVE 1 - NO BUILD 3
ALTERNATIVE 2 – REHABILITATION 3
ALTERNATIVE 3 - ACCELERATED BRIDGE CONSTRUCTION 4

EVALUATION OF ENVIRONMENTAL EFFECTS 4

SAFETY / TRANSPORTATION PATTERNS 5
AIR QUALITY 6
NOISE 7
CONTAMINATION/HAZARDOUS MATERIALS 7
RECREATION / CONSERVATION LANDS 8
FARMLANDS 9
UTILITIES 10
ENVIRONMENTAL JUSTICE 10
WATER QUALITY 10
Existing Drainage Patterns 12
Proposed Drainage Patterns / Stormwater Treatment 12
WETLANDS / SURFACE WATERS 14
FLOODPLAINS / FLOODWAYS 15
WILDLIFE / FISHERIES / ENDANGERED SPECIES / NATURAL COMMUNITIES 16
INVASIVE PLANTS 17
CULTURAL RESOURCES 17

SECTION 4(F) 18

COORDINATION AND PUBLIC PARTICIPATION 19

CONSTRUCTION IMPACTS 20

SUMMARY OF ENVIRONMENTAL COMMITMENTS 21

Exhibits

Exhibit A - Project Location Map
Exhibit B - Preliminary Design Plans
Exhibit C - OneStop and PFAS Maps
Exhibit D - Conserved Lands
Exhibit E – Easement Plans
Exhibit F - Amherst Town Officials Correspondence and Meeting Minutes
Exhibit G - LCIP Correspondence
Exhibit H - LWCF Correspondence
Exhibit I - LCHIP Correspondence
Exhibit J - Farmland Soils Map and Conversion Impact Rating Form
Exhibit K – Environmental Justice Analysis
Exhibit L- Pre-hearing Drainage and BMP Review Plan
Exhibit M – Wetland Impact Plans
Exhibit N - Natural Resource Coordination Meeting Notes
Exhibit O - FEMA Floodplain Map
Exhibit P - OEP Floodplain Coordinator Correspondence
Exhibit Q - Wildlife Action Plan Ranked Habitat Map
Exhibit R - NHFG Fisheries Correspondence
Exhibit S - NH Natural Heritage Bureau Report NHB 19-1721
Exhibit T - NHFG Non-Game Correspondence
Exhibit U - USFWS IPaC Species Letter
Exhibit V - Northern Long-Eared Bat Concurrence Letter
Exhibit W - Section 106 Effects Memo

Introduction

The New Hampshire Department of Transportation (NHDOT) proposes to replace a structurally deficient stream crossing structure on New Hampshire Route 101 over Pulpit Brook in Bedford, New Hampshire (Exhibit A – Project Location Map). Originally built in the early 1950's, Bridge No. 090/065 consists of buried, twin 60" RCP culverts. The original structure was modified in 2011 when the upstream headwall was reconstructed with cast-in-place concrete. This bridge is currently on the NHDOT red list due to settling and separating of culvert sections, and signs of tipping failure on the downstream headwall.

The proposed project will maintain the existing 40'-0" wide roadway on the current alignment but add a 12'-0" left turn lane for Twin Brook Lane and correct the current structure deficiencies to create safe, reliable passage of NH Route 101 over Pulpit Brook. Both rehabilitation and replacement options were evaluated based on factors such as: temporary traffic control methodology (including cyclist accommodations), feasibility of construction, construction duration, construction cost, hydraulic capacity, roadway considerations, cultural resource considerations, right of way impacts, environmental impacts and utility relocation requirements.

Rehabilitation of the existing culverts was considered but ruled out since the current hydraulic capacity is insufficient to pass even a 50-year storm event and results in NH Route 101 being overtopped with water. Two 48'-0" clear span replacement alternatives were identified as the preferred options for meeting the hydraulic requirements, stream crossing guidelines and other project goals.

Existing Conditions

Bridge

Originally built in the early 1950's, the NH Route 101 Bridge over Pulpit Brook (Bridge 090/065) consists of buried, twin 60" reinforced concrete pipe (RCP) culverts approximately 70 feet long. The culvert sections currently have separation gaps of up to 12 inches with penetration of 3 to 4 feet. The upstream stone headwall was reconstructed in 2011 with a cast-in-place concrete headwall. Dry laid stone forms the short wing walls. The downstream headwall and wing walls are mortared stone. There are signs of tipping failure at the downstream headwall, with several stones now in the channel. The existing culverts do not have the hydraulic capacity to pass the 50-year storm event, and modeling indicates that Route 101 would be overtopped by 0.8 feet in a 50 year storm, and the 100-year storm event would overtop the road by 1.0 foot. The bridge surface width is 40 feet, and there is built up asphalt "curbing" on the northwest side only.

Roadway

This section of NH Route 101 is a two lane rural principal arterial. The roadway is approximately 40 feet wide, providing two 12 foot travel lanes and two 8 foot shoulders. The posted speed limit is 50 mph. NH Route 101 crosses over Pulpit Brook on a horizontal curve with a radius of 5,730 feet. Heading northeast, the profile grade of NH Route 101 is a compound vertical sag curve. The

roadway is transitioning from being superelevated southwest of the bridge to a normal crown section northeast of the bridge. Approximately 485 feet southwest of the bridge is a stop controlled "T" intersection with Twin Brook Lane, a private dead end road accessing 12 residences.

Roadside slopes are generally 4 horizontal to 1 vertical southwest of the bridge. On both approaches to the bridge, the slopes steepen to 2:1 and are protected by steel W-beam guardrail with metal posts and synthetic offset blocks. Guardrail extends past the project limits to northeast of the bridge. All of the guardrail terminal units are tangential end treatments. Regular W-beam guardrail is carried across the bridge. The existing guardrail is in good condition.

NH Route 101 is a main east-west corridor for the southern part of New Hampshire. In 2019, an Annual Daily Traffic (ADT) of 20,100 vehicles per day was recorded at the Bedford/Amherst town line, which is within the project limits.

Statement of Purpose and Need

Purpose:

The purpose of the Bedford 13692C Project is to provide a safe, cost effective, low maintenance, hydraulically adequate two-way crossing for NH Route 101 vehicular traffic over Pulpit Brook while minimizing impacts to environmental and cultural resources, the traveling public and abutting properties during construction.

Need:

The current twin 60" RCP culvert bridge is on the New Hampshire DOT Red List due to its poor condition primarily due to settling and separating of the culvert sections and failing downstream headwall. This bridge serves one of Southern New Hampshire's critical east/west routes, carrying approximately 20,100 vehicles per day according to 2019 traffic counts at the Bedford-Amherst Town line.

Hydraulic modeling with HEC-RAS indicates that under existing conditions the FEMA 50- and 100-year storm events overtop the low point of Route 101 with maximum inundation depths of about 0.8 and 1.0 feet, respectively.

Proposed Action

The Proposed Action is to replace Bridge 090/065, a c.1952 twin concrete pipe culvert, with a 48-foot clear span precast concrete butted box-beam bridge with composite concrete overlay. The project includes roadway approach work on Route 101 that extends approximately 1,200 feet southwest and approximately 850 feet northeast of the bridge (see Sheet 1, Exhibit B –Preliminary Design Plans). The project would construct two 12-foot travel lanes with 8-foot shoulders, and would add a 12-foot left turn lane at Twin Brook Lane for westbound Route 101 traffic for a total roadway width at the new bridge of 52 feet. The project would raise the centerline of construction by approximately 6 inches to accommodate a reclaiming of the existing pavement. Guardrail would be installed (see Sheets 6, 7 & 8, Exhibit B).

The Proposed action involves conventional bridge construction with a temporary two lane bypass enabling the construction of the new structure in several phases. Pre-Phase 1 would construct a temporary on-site bypass. This bypass would require a temporary earthen retaining system within the vicinity of the Pulpit Brook culverts, temporary concrete barriers, and temporary culvert extensions to the south of the existing culvert and would be approximately 38 feet wide between top of temporary embankment slopes. The temporary bypass would begin just prior to Sta. 203+75 near the Twin Brook Lane intersection and rejoin existing Route 101 near Sta. 215+20 (see Sheets 28 and 29, Exhibit B). Access to Twin Brook Lane would be maintained throughout construction. Phase 1 would construct the northern portion of the new bridge and roadway approaches including some of the proposed drainage and treatment features), replacing the twin culverts with a clear span precast bridge. Phase 2 would shift the two lanes of traffic onto the newly constructed road and bridge, remove the temporary bypass and restore the temporarily impacted areas while the remaining southern portions of the new bridge and roadway are constructed.

Permanent slope and drainage easements of approximately 63,030 square feet will be required to the east and west of Pulpit Brook on both sides of Route 101 to accommodate vegetated treatment swales, and the proposed safety improvements, including the modified vertical roadway alignment and widening for the new left turn lane into Twin Brook Lane. Temporary easements of approximately 23,414 square feet for bridge construction will also be required. A portion of the temporary and permanent easements (3,621 square feet) would be located on conservation land.

The Proposed Action would take approximately 14-15 months to construct including one winter shutdown. Approximately 3,454 square feet of permanent wetland impact would be necessary to accommodate the fill slopes associated with drainage and road safety improvements and recreate the streambed. However 3,000 square feet of this impact will become functional streambed where the culverts are currently located, thereby enhancing aquatic habitat connectivity and reducing flood risk. The 3,898 square feet of temporary vegetated wetland impacts would be restored after construction by removing fill, regrading, and seeding and planting with appropriate native wetland species. The Proposed Action would employ a temporary bypass and therefore would not require a traffic detour, thereby limiting impacts to the traveling public and local residents.

Alternatives to the Proposed Action

Several alternative permanent designs and construction options were evaluated.

Alternative 1 - No Build

The No Build Alternative would result in no change to the bridge. No changes to traffic due to construction or impacts to the environment would result. No environmental impacts would occur. However, the no Build alternative will not correct the structural concerns, including culvert span separations, which placed the bridge on the Red List, or address hydraulic deficiencies that could result in flooding of the road in a 50-year storm. It was determined that this option is not a viable long-term option due to these safety concerns.

Alternative 2 – Rehabilitation

Rehabilitation of the bridge without reconstruction would not address the hydraulic deficiencies associated with the existing culverts, and was also not considered a viable option.

Alternative 3 - Accelerated Bridge Construction

Alternative 3 is an accelerated bridge construction (ABC) system with a temporary full shutdown of Route 101 in the vicinity of the bridge. The construction duration would be about one month. For three weeks, traffic would be detoured approximately 34 miles via state routes 101A and the F.E. Everett Turnpike (a toll road) during the bridge closure. Temporary wetland impacts associated with the bypass would be avoided, and permanent impacts would be similar to the Proposed Action. This option was less expensive than the Proposed Action, but would result in an unacceptably high impact to traveling public and local residents.

Alternative 4 – Bridge Replacement – Without Turning Lane

Alternative 4 is similar to the Proposed Action but without the addition of a left turn lane into Twin Brook Lane. The construction duration would be approximately 12 months. A temporary bypass would be located adjacent to the bridge. Temporary and permanent wetland impacts would be less than the Proposed Action, as the construction area and ROW requirements would be narrower. This alternative would not improve safety conditions for vehicles turning left into Twin Brook Lane.

Alternate Temporary Lane Widths

Early investigations considered a temporary roadway width of 26’-0”; however the Department concluded that a 32’-0” temporary roadway width was preferred in order to provide greater lane and shoulder widths to accommodate cyclists that are known to use Route 101 and to provide a greater margin of safety along this busy stretch of roadway during construction.

Evaluation of Environmental Effects

The effects of the proposed action relative to the following social, economic, natural and cultural resources and issues have been reviewed. Resources and issues that are not discussed in the body of the report were investigated; however, no impacts were evident. As such, these resources and issues are omitted from discussion in this environmental document. The resources and issues deemed applicable for this project are indicated in **bold** type in the table below.

Table 1. Resource Issues relevant to Bridge 090/065 carrying NH Route 101 over Pulpit Brook.

Social/ Economic		Natural	Cultural
Safety **Transportation Patterns** **Air Quality** **Noise** Displacements **Contamination / Hazardous Materials** Neighborhoods Business Impacts Land Acquisition Land Use Tax Base **Recreation** **Conservation Lands** **Construction Impacts**	**Farmlands** Community Services Energy Needs **Utilities** **Environmental Justice**	**Water Quality** **Wetlands** **Surface Waters** Groundwater **Floodplains/Floodways** **Wildlife/Fisheries** **Endangered Species** Natural Communities Shoreland Protection Wild & Scenic Rivers NH Designated Rivers Forest Lands Coastal Zone **Invasive Plants**	**Historical** **Archaeological** Stonewalls Aesthetics

Safety / Transportation Patterns

NHDOT classifies NH Route 101 in the vicinity of the proposed action as a Tier 2 Statewide Corridor, Principal Artery carrying approximately 20,100 vehicles per day, according to 2019 traffic counts at the Bedford-Amherst Town line which is within the project limits. NH Route 101 is currently a two lane highway and major travel corridor that connects the seacoast to western New Hampshire, with connections to NH Route 114, I-293, US 3, I-93 and I-95. During the February 13, 2018 public hearing for the project, local residents expressed safety concerns associated with the Twin Brook Lane intersection, and asked for consideration of a left turn lane for the west-bound traffic. The project was redesigned to include this feature, improving safety along this section of highway.

Two-phased construction is currently proposed. Phase 1 would construct the northern portion of the proposed bridge and roadway, and require a two-way temporary on-site bypass south of the exiting crossing. This bypass would begin just prior to Sta. 203+75 near the Twin Brook Lane intersection and rejoin existing Route 101 near Sta. 215+20. Phase 2 would shift the two-way traffic onto the portion of the bridge and roadway constructed in Phase 1, remove the temporary bypass and construct the remaining southern portions of the bridge and roadway. Two lanes of traffic will be provided at all times during these two major phases of construction. There will be brief periods of alternating one-way traffic (controlled by flaggers) during paving operations when the beginning and ends of the temporary bypass are tied into the existing Route 101. Similarly, there will be brief periods of alternating one-way traffic when the roadway approaches are reclaimed and reconstructed at the end of Phase 1.

The anticipated construction schedule is approximately 14-15 months including a winter shutdown. It would require 10-11 months of actual construction time to get the temporary bypass installed, the new bridge and roadway constructed in phases, and the temporary bridge removed. The temporary

bypass area would then be restored. Assuming an April 2021 advertisement date, the construction and restoration work would be completed by October 2022.

Air Quality

Pursuant to the Clean Air Act Amendments (CAAA) of 1990, this project was examined for potential impacts to local and regional air quality. The proposed project is located within the former Boston-Manchester-Portsmouth (SE), NH Ozone maintenance area. As of July 20, 2013, all of New Hampshire has been designated as unclassifiable/attainment for the 2008 8-Hour Ozone National Ambient Air Quality Standard (NAAQS) and as of April 6, 2015, the 1997 8-Hour Ozone NAAQS is revoked for transportation conformity purposes in this area. The South Coast Air Quality Mgmt. District v. EPA ("South Coast II,") court decision on February 16, 2018 upheld the revocation of the 1997 8-Hour Ozone NAAQS. The project is located within an area of the state that is in attainment for the remaining NAAQS criteria pollutants (CO, Pb, NO_2, SO_2, PM_{10} and $PM_{2.5}$). The proposed effort is not considered a "Regionally Significant Project" as defined in the final Transportation Conformity rules (40 CFR 93.101) or in those rules adopted by the New Hampshire Department of Environmental Services (NHDES) in accordance with the interagency consultation provisions required by 40 CFR 93.105.

The Bedford 13692C project is consistent in design concept and scope to that which has been individually listed in the 2019 - 2022 NHDOT Statewide Transportation Improvement Program (STIP) approved April 24, 2019 (page 4). This project proposes to replace a two-lane bridge with a three-lane bridge with only minor changes to the roadway alignment, and will not permanently affect the existing traffic patterns within the project area other than the addition of a left turn lane onto Twin Brook Lane. As a result, this project is not anticipated to result in any increased emission impacts. Additionally, when completed, the project is not expected to result in any meaningful changes in traffic volumes, vehicle mix, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative or contribute to violations of the NAAQS. Consequently, this project is exempt from the conformity requirements of the CAAA.

For the above noted reasons, the Federal Highway Administration (FHWA) has determined that this project will generate minimal air quality impacts for CAAA criteria pollutants and has not been linked with any special mobile source air toxics (MSAT) concerns. Consequently, this effort is exempt from analysis for MSAT. Moreover, Environmental Protection Agency (EPA) regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends, conducted by the FHWA using the EPA's MOVES2014 model, forecasts a combined reduction of over 90 percent in the total annual emission rate for the priority MSAT from 2010 to 2050, while vehicle-miles of travel are projected to increase by over 45 percent (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). This will both reduce the MSAT background level as well as the possibility of even minor MSAT emissions from this project. Though exempt from the conformity requirements of the CAAA, the National Environmental Policy Act (NEPA) requires consideration of the project's impact on air quality. Of the NAAQS pollutants of concern in New Hampshire, only CO can generally be addressed at the project level. The proposed project does not involve any substantial changes to the existing traffic patterns on Route 101. Computer analyses of other projects (such as Portsmouth, 13455, Manchester, 10622A and Londonderry, 12704) have consistently yielded maximum CO concentrations well below the one-hour NAAQS of 35 ppm and the eight-hour criteria of 9 ppm. As these projects were found

not to have a detrimental impact on air quality, and for the reasons stated above, it can be concluded that this project will also not have an adverse impact on air quality. As a result, no further air quality review is warranted.

Noise

The NH Department of Transportation's *Policy and Procedural Guidelines for the Assessment and Abatement of Highway Traffic Noise for Type I Highway Projects* (Noise Policy) provides guidelines for assessing noise impacts and determining the need, feasibility, and reasonableness of noise abatement measures for proposed Type I highway construction and improvement projects. A Type I highway project is defined by the Federal Highway Administration and the NH Department of Transportation as a project which involves the construction of a new highway, the addition of through traffic lanes or one that involves substantial alterations to either the vertical or horizontal alignment of the existing roadway.

Although this project involves slight widening (approximately 14 feet maximum) of the roadway for a short distance to accommodate a new turning lane, and minor vertical alignment changes, this would not be considered a "substantial" alteration to the horizontal alignment of the existing roadway as it does not halve the distance between the existing roadway and the closest receptor (approximately 300 feet from the existing roadway). Similarly, although this project may have slight changes to the vertical profile of the existing roadway these alterations are not anticipated to be considered "substantial" as they are not anticipated to result in increased line-of-sight exposure between the roadway and any nearby receptors. The installation of the proposed turn lane would not be considered a through traffic lane.

As this project does not involve the construction of a new highway, the addition of through traffic lanes or substantial alterations to the vertical or horizontal alignment of the existing roadway, the subject project is not a Type I highway project. Since this project is not a Type I highway project a noise impact assessment is not necessary.

The proposed project is not expected to result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in noise impacts. As a result, this project is not expected to cause a noticeable change in noise levels once construction is completed.

Construction activities will temporarily increase noise due to the use of heavy equipment, however these noise levels are expected to return to normal after the project has been completed. For the reasons stated above, this project is not expected to adversely affect noise levels at any of the adjacent receptors.

Contamination/Hazardous Materials

Per New Hampshire Code of Administrative Rules Env-Or 602.07, "Contamination means the presence of any regulated contaminant, as defined herein, other than naturally occurring substances at naturally occurring or background levels, in soil, groundwater, soil gas, air, sediment, surface water, construction/excavation debris, or any other material at a concentration that has the potential to adversely affect human health or the environment."

A review of the New Hampshire Department of Environmental Services (NHDES) GIS OneStop database reveals that there is an animal shelter approximately 1,000 feet northeast of the bridge and a winery approximately 2,200 feet southwest of the bridge that are registered as discharge sites for nondomestic wastewater (Exhibit C – OneStop and PFAS Maps). This is not expected to affect the project.

Based upon the findings of the review there are no active hazardous waste generators, NHDES registered aboveground or underground storage tanks, asbestos disposal sites, automobile salvage yards, presence of Per- and Polyfluoroalkyl Substances (PFAs), or active NHDES remediation sites within 1,000 feet of the project site. Prior to the start of construction, the project will be reviewed with the Department's Contamination Program to ensure that site conditions have not changed.

The use and/or storage of potentially hazardous materials such as fuels, lubricants, antifreeze, paints, sealants, solvents, etc. should be conducted in compliance with applicable local, state, and federal regulations.

Limited Reuse Soils

Statewide analytical data collected by NHDOT, as well as nationwide information, indicates that roadside soils commonly contain metals at concentrations above naturally occurring background conditions, and Polycyclic Aromatic Hydrocarbons (PAHs) exceeding acceptable reuse concentrations. These "Limited Reuse Soils" (LRS) excavated from within the operational right-of-way shall be addressed in accordance with applicable NHDES rules and/or waivers. Roadside soils currently managed as LRS by the Department include all topsoil within the limits of the existing right-of-way, regardless of its depth, and any ground or pulverized asphaltic materials. In those instances where there is no measurable topsoil, LRS will be measured from the top of the ground to a depth of six inches.

Excavation of Limited Reuse Soils (LRS) within the existing ROW will be necessary for project construction. It is expected that these soils will be used on site during construction activities and therefore offsite disposal will not be necessary. Soils that are anticipated to meet the definition of LRS will be subject to management through a Soils Management Plan (SMP) approved by the Department.

Recreation / Conservation Lands

The Bragdon farm, which straddles the town line between Amherst and Bedford, abuts the road right of way to the north and south. Bragdon Farm (including the portion within Bedford) is owned in fee by the Town of Amherst. The site formerly had an operating ski hill on the north parcel with a rope tow until the early 1970's. The site is now used for recreation such as cross country skiing, sledding, and also has hiking trails. The portion of Bragdon Farm south of Route 101 in Amherst is currently a popular sledding hill, accessed via a tunnel under the road (which is outside of the Project area). Other conservation land near the project includes a 5-acre parcel downstream of the crossing owned by the Town of Bedford -the "DeNicola Land." (Exhibit D – Conserved Lands)

A vegetated stormwater treatment swale will be located immediately adjacent to and within a small portion of the north parcel of the Bragdon Farm property. This facility will require permanent slope and drainage easements of approximately 7,990 square feet on the parcel (Exhibit E – Easement

Plans). In addition, a temporary easement of approximately 3,621 square feet for work on the north side of the road on the Bragdon Farm will be needed during construction to remove the existing culvert and regrade the upstream channel area for the new longer span bridge. In all cases, the work will be immediately adjacent to the current ROW, and will be the minimum necessary to construct the project and meet stormwater requirements. The permanent impact is not expected to affect the conservation or recreational values of the Bragdon Farm property as only 0.24 % of the property is affected, and the impacts are not located near trails or other recreational uses, and will not hinder property access. The Town of Amherst's Conservation Commission has concluded that these impacts will not be a concern and has stated their support for the project (Exhibit F - Amherst Town Officials Correspondence and Meeting Minutes).

The Conservation Land Stewardship (CLS) Program is responsible for monitoring and protecting the conservation values of conservation easement lands in which the State of New Hampshire has invested through the Land Conservation Investment Program (LCIP). The CLS Program is located within the Strategic Initiatives (formerly NH Office of Energy & Planning). The proposed project has been reviewed by the CLS Program Coordinator who responded that there are no LCIP properties in the project area (Exhibit G - LCIP Correspondence).

The Land and Water Conservation Fund (LWCF) is a program established by Congress in 1964 to create parks and open spaces; protect wilderness, wetlands and refuges; preserve wildlife habitat; and enhance recreational opportunities. Any alteration or conversion of LWCF properties necessitates a 6(f) conversion of property. Based upon a review of their LWCF files, the Department of Natural and Cultural Resources (DNCR) has advised that there are no LWCF parcels in the project area (Exhibit H - LWCF Correspondence).

The New Hampshire Land and Community Heritage Investment Program (LCHIP) is an independent state authority that makes matching grants to communities and non-profits to conserve and preserve natural, cultural and historic resources. An inquiry was made to the Land and Community Heritage program coordinator who responded that LCHIP has not assisted in the protection of any natural, cultural or historic resources in the project area (Exhibit I - LCHIP Correspondence).

Farmlands

The US Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) administers the Farmland Protection Policy Act (FPPA), which provides guidelines to federal agencies involved in proposed projects that may convert farmland to non-agricultural uses. The purpose of the FPPA is "to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses..." The NRCS is responsible for making determinations, based on criteria established in the FPPA, as to whether proposed projects contain Important Farmland Soils, which includes soils designated as prime, unique, statewide, or locally important farmland soils.

The Web Soil Survey (Exhibit J - Farmland Soils Map and Conversion Impact Rating Form) shows that soils associated with the Bragdon Farm that are present within the project corridor include Canton Fine Sandy loam, which is associated with farmlands of statewide importance. There are also Woodbridge fine sandy loam soils and Canton fine sandy loam, (very stony) soils which are both associated with farmlands of local importance. There are no prime farmlands within the project

corridor, and the project is not expected to disturb actively farmed land. A Farmland Conversion Impact Rating form was completed and submitted to NRCS for their assessment of project impacts to farmland soils. The proposed conversions were determined to be consistent with the FPPA and FHWA's policies. The NRCS coordination documents are found in Exhibit J.

Utilities

The utilities within the project site are limited to overhead utility lines running parallel to Route 101 and are located on the upstream side of the bridge, approximately 35 feet from centerline of Route 101. The lines currently cross the center of the road approximately 100 feet southwest from the centerline of existing structure and include electric, telephone, and cable.

Based on the temporary bypass and proposed highway/bridge work it appears that most of the aerial utilities within the project limits can be left in place during construction. The guy pole located near station 205+20 falls within the limits of a proposed treatment swale and will require minor relocation. There is a possibility that during construction, as DOT coordinates with these utility companies, some temporary relocation is ultimately decided upon and some overhanging branches may require trimming. In the bridge area this might include keeping the poles in the same location but using cantilevered arms to get the lines a little further north, or using spacer cable to reduce the width of the current 3 phase wires.

Environmental Justice

Executive Orders 12898 and 13166, signed in 1994 and 2000 respectively, require that an Environmental Justice evaluation to be conducted for all transportation projects that are undertaken, funded or approved by the Federal Highway Administration (FHWA) to avoid, minimize or mitigate disproportionately high and adverse human health and environmental effects and social and economic efforts on minority populations and low income populations.

The NHDOT Labor Compliance Office used US Census Bureau, American Community Survey (ACS) 2012-2016 data to provide an EJ Population analysis for the project (see Exhibit K - Environmental Justice Analysis). The analysis includes a table of protected groups that might be impacted by the project, and their population percentage relative to the surrounding area. The identified groups are the elderly population, the minority population and low-income household population. The analysis indicates that the impacted area within 1 mile of the project has a lower percentage of these traditionally underserved groups. Nonetheless, outreach recommendations are provided for the coordination of public meetings/hearings under Title VI and in support of developing a context sensitive solution to facilitate public comment from underrepresented groups.

Water Quality

The applicable regulations and policies governing the protection of water quality for NHDOT projects include the federal Clean Water Act of 1972 and the New Hampshire Alteration of Terrain Regulations at RSA 485-A. Compliance with the Construction General Permit (CGP) of the National Pollutant Discharge Elimination System requires the Contractor to submit a Notice of Intent (NOI) prior to construction activities. This process requires querying the 303(d) list for impaired waters,

and identifying co-occurring permits like municipal separate storm sewer system general permit (MS4).

Federal law requires each state to submit a report (typically called the "303(d) list"), so named because it is a requirement of Section 303(d) of the Clean Water Act. The 303(d) list includes surface waters where "Designated Uses" are impaired or threatened by pollutants. Designated Uses as determined under New Hampshire law for freshwater wetlands are: Aquatic Life, Fish Consumption, Drinking Water Supply after Adequate Treatment, Primary and Secondary Contact Recreation, and Wildlife. Pulpit Brook is listed as impaired for Fish Consumption by mercury, as is true for all surface waters in New Hampshire.

The NPDES program requires that municipalities or other entities that operate MS4s obtain a permit for stormwater and allowable non-stormwater discharges from MS4s. Owners and operators in 61 New Hampshire municipalities, including Bedford and Amherst, as well as certain state and federal agencies, including NHDOT, are required to apply for coverage under the MS4 permit program. The MS4 permit program commenced on May 1, 2003 with issuance of the 2003 NH small MS4 general permit. Draft updated general permits were developed by EPA in 2008 and 2013, with a final updated general permit issued in January 2017. The 2017 New Hampshire small MS4 general permit became effective July 1, 2018 (EPA, 2017c) and remains valid for a period of five years, expiring at midnight on June 30, 2023.

The 2017 NH Small MS4 general permit (EPA, 2017), under which stormwater discharges from the Project will be authorized, requires permitted entities to reduce pollutants to the "Maximum Extent Practicable" as detailed in Part 2.3 of the MS4 permit. Part 2.3.6 of the MS4 permit details the requirements for stormwater management in new development and redevelopment areas. New development and redevelopment projects addressed in Part 2.3.6 include any project that disturbs one or more acres and discharges into the MS4. The MS4 permit has stormwater treatment requirements designed to reduce or minimize the effects of land-disturbing projects on water quality as detailed in Part 2.3.6. These permit requirements include the use of stormwater BMPs with specific stormwater retention volumes, treatment volumes, or specific pollutant removal criteria to reduce pollutant loads from runoff (EPA, 2017). New development sites are required to provide retention of stormwater runoff equivalent to the Water Quality Volume[1] for the new development site or are required to have BMPs designed to remove at least 90 percent of TSS and 60 percent of TP from the average annual pollutant load generated by the total post-construction impervious surface and are required to have long-term maintenance practices for stormwater BMPs (EPA, 2017). Redevelopment sites have similar requirements but are also permitted to use BMP treatment of stormwater runoff equivalent to the Water Quality Volume or use BMPs designed to remove at least 80 percent of TSS and 50 percent of TP from the average annual pollutant load generated by the total post-construction impervious surface to satisfy condition 1 of Part 2.3.6(a)ii.(e) (EPA, 2017c). Redevelopment sites are also permitted to use offsite stormwater mitigation within the same USGS HUC10 or smaller watershed to satisfy condition 1 of Part 2.3.6(a)ii.(e) (EPA, 2017c).

[1] Water Quality Volume = 1 inch of rainfall x total area draining to a stormwater structure x [0.05 + (0.9 x % imperviousness of drainage area)]. From NH Administrative Rule Env-Wq 1504.10.

All Federal permits require Water Quality Certification by the State. However, most General Permits (CGP, MS4, ACOE PGP) are completed when the General Permit is issued. There are occasions when individual Federal permits are issued and require individual Water Quality Certification. If required by a project, the Water Quality Program Manager will work with the Environmental Manager and design team to obtain the necessary Water Quality Certificate. This project is expected to meet the General Permit criteria.

The NH Alteration of Terrain program (AoT) regulates activities that "significantly alter the characteristics of the terrain" during construction and over the life of the facility. Construction activities are regulated by limiting the amount and duration of unstabilized earth that is exposed during construction. The NHDOT has obtained a permit exemption from the requirements to obtain a permit from the AOT program. However, an MOA between NHDES and NHDOT specifies that all construction projects are to incorporate best management practices for erosion control and stormwater management that have been determined equivalent to the AoT regulations. Post construction activities are regulated by limiting the amount of untreated/uncontrolled runoff from impervious cover.

Existing Drainage Patterns

The bridge has built up asphalt "curbing" on the northwest side only. There is an asphalt drainage swale on the low end of this run of curb. There are no other curbing or stormwater facilities currently within the project limits.

Proposed Drainage Patterns / Stormwater Treatment

The existing asphalt drainage swale will be removed. Standard vertical granite transition curbing will be installed on the roadway approaches in front of the proposed bridge approach rail units to meet the new bridge curb. Additional bituminous curbing is proposed in several areas to collect the stormwater and convey it through closed drainage systems to one of three proposed treatment areas; one to the northwest of the bridge (Treatment Area No. 1); one southwest of the bridge (Treatment Area No. 2), and one southeast of the bridge (Treatment Area No. 3) (see Sheets 6, 7 and 8 in Exhibit B – Preliminary Design Plans and Exhibit L – Prehearing Drainage and BMP Review Plan).

The proposed stormwater management is designed to comply with the National Pollutant Discharge Elimination System (NPDES) 2017 New Hampshire (NH) Small Municipal Separate Storm Sewer System (MS4) General Permit.

The project is considered a highway reconstruction project and will follow the guidelines of Part 2.3.6.e of the 2017 NH Small MS4 General Permit for post-construction stormwater runoff from redeveloped sites.

BMPs must be designed in accordance with the specifications in the Alteration of Terrain (AoT) Program Administration Rules (Env-Wq 1500).

The permit requires Best Management Practices (BMP) be designed to:

a) retain or treat the Water Quality Volume (WQV) per Env-Wq 1504.10 and be designed to remove pollutants per Env-Wq 1507.03 or;

b) remove 80% of the average annual load of Total Suspended Solids (TSS) generated from the total post-construction impervious area and 50% of the average annual load of Total Phosphorous (TP) generated from the total post-construction impervious surface.

The permit requires the project to implement a long-term maintenance practice per Env-Wq 1507.08.

The preliminary stormwater management system provides collection and treatment for approximately 1.895 acres (78.2%) of the total proposed 2.421-acre paved area. The proposed treatment includes curbing to channel impervious area runoff into a closed drainage system and three (3) stormwater BMPs located along NH Rt. 101 both north and south of the project area. The BMPs are vegetated treatment swales designed to meet the size parameters per Env-Wq 1508.08. The vegetated treatment swales are sized for the maximum water quality flow, the 10-year 24-hour storm event, and the 10-minute hydraulic residence time. Stone berm level spreaders are proposed at the termination of the vegetated treatment swales to provide a spread over-land discharge flow. The proposed treatment areas and BMPs are described below.

Proposed Treatment Area No. 1

Area No. 1 is 1.205 acres and includes 0.932 impervious acres of NH RT. 101 from Sta. 195+80 to 205+43. BMP No. 1, a vegetated swale, will treat runoff originating from this area. Runoff will be directed to BMP No. 1 by means of the following proposed items: bituminous curbing, catch basins, and drainage pipes. Where curbing is not present, runoff will flow overland and down the roadside slope before entering BMP No. 1.The majority of BMP No. 1 is located on the north side of NH RT. 101 within the ROW adjacent to and on a property owned by the Town of Amherst. Approximately 7,990 square feet of drainage and permanent slope easements will be required on this property.

Proposed Treatment Area No. 2

Area No. 2 is 0.792 acres and includes 0.656 impervious acres of NH RT. 101 from Sta. 205+91 to 212+21. BMP No. 2, a vegetated swale, will treat runoff originating from this area. Runoff will be directed to BMP No. 2 by means of the following proposed items: bituminous curbing, catch basins, and drainage pipes. BMP No. 2 is located on the south side of NH RT. 101 on property owned by Steven P. and Jamie A. Spittle. A 22,243 square foot drainage easement will be required on this property.

Proposed Treatment Area No. 3

Area No. 3 is 0.954 acres and includes 0.531 impervious acres of NH RT. 101 from Sta. 211+00 to 217+80. BMP No. 3, a vegetated swale, will treat runoff originating from this area. Runoff will be directed to BMP No. 3 by means of the following proposed items: bituminous curbing, catch basins, and drainage pipes. BMP No. 3 is located on the south side of NH RT. 101 along property currently owned by Steven P. and Jamie A. Spittle and Hampshire Ventures, Inc. A 32,797 square foot drainage easement will be required on these properties.

Untreated Areas

For the NH Rt. 101 area, approximately 0.444-acre of the total proposed 2.338-acre paved area is untreated due to topographical conditions, existing wetlands, and existing guardrail end terminals where no curbing is provided. In a portion of the drainage area, topographic conditions and right-of-

way impacts do not allow the design to provide the minimum treatment swale 100-ft length in reference to Env-Wq 1508.08 Stormwater Treatment Practices.

For Twin Brook Lane, the total 0.083-acre paved area is untreated due to topographical conditions and existing wetlands.

Consideration was given to capturing additional runoff by extending the guardrail and bituminous curb that connects to the northwest corner of the bridge (eastbound side). However, because of the grades, this runoff cannot be directed to Treatment Area No. 1 nor a possible additional treatment swale just west of Twin Brook Lane. The only other option would be to add this runoff to Treatment Area No. 2. However, this treatment swale is constrained by its proximity to a leach field and wetlands along Pulpit Brook. Obtaining the required hydraulic residence time of 10 minutes or more would not be possible without a severe encroachment upon the residential property. Consequently, this option is not being pursued.

Extending the project limits in order to collect additional runoff from impervious areas was evaluated but rejected as it would increase the overall percentage of impervious area being treated by only 4%.

Wetlands / Surface Waters

Bridge 090/065 carries NH Route 101 over Pulpit Brook, a second order stream with a 5.29 square mile watershed which flows into Baboosic Brook about 0.6 miles downstream. At the project location, the river has a gravel, cobble, and organic material substrate and banks vegetated with a mixture of deciduous and evergreen trees including American elm, red maple, Eastern hemlock, and white pine. Upstream of the bridge the stream broadens to an emergent and scrub-shrub marsh with a smaller channel feeding into Pulpit Brook from the southwest side of the bridge. On the downstream side a forested wetland parallels Route 101 to the east. The former Route 101 crosses Pulpit Brook approximately 50 yards downstream of the bridge, and the fill that created the bridge approaches is still in place.

Jurisdictional wetlands were delineated in the field in November 2016 and then extended along the new project limits in November 2018 by NH Certified Wetland Scientists (see sheets 5 through 8 in Exhibit B – Preliminary Design Plans). Palustrine emergent and forested wetlands extend along the toe of slope next to the road approximately 500 feet on either side of the road. In the southwest quadrant there are two vernal pools between the old roadbed and NH Route 101.

The permanent road widening and stormwater treatment elements will require removal of existing trees and new fill in and adjacent to wetlands. The area of permanent wetland impact is estimated to be approximately 3,454 sf. (see Exhibit M – Wetland Impact Plans). The temporary bypass will also require fill in wetlands for approximately one year (including a winter shutdown). The area of temporary fill in wetlands is estimated to be 3,898 sf. Temporary fill will be placed on geotextiles to facilitate its removal after the bypass is no longer needed. After temporary fill is removed, the exposed wetland soil surface will be tilled or scarified if needed to alleviate compaction and regraded to previous contours. If wetland soil was removed and temporarily stockpiled prior to bypass construction, this material will be replaced. Native wetland seed mix and woody wetland shrubs and trees will be planted in the restored wetland.

The permanent improvements to the bridge and approach zones will have wetland edge effect impacts, and would also impact the 100-foot vernal pool envelope (VPE) of the two vernal pools located south of Route 101, which is considered an indirect or secondary impact. An analysis of the effect of the additional VPE development on vernal pool quality ranking, following the USACE 2016 Mitigation Guidance indicates that these medium value pools would not drop to low value.

Proposed impacts to Pulpit Brook and the adjacent wetlands and vernal pools resulting from the bridge replacement and temporary bypass would require a Standard Dredge and Fill permit from the NHDES Wetlands Bureau. All impacts would fall under the USACE Programmatic General Permit, which requires preparation of USACE's Secondary Impacts checklist. Based on the direct and indirect impact quantities, mitigation would not be required. NHDES and USACE regulatory personnel concurred that mitigation would not be necessary during a Natural Resource meeting and follow up phone conversation (Exhibit N - Natural Resource Coordination Meeting Notes).

The NHDES Stream Crossing Rules (Env-Wt 900, to be adopted December 15, 2019) require new and replacement stream crossings to be designed in a manner which minimizes adverse impacts to stream channel stability, flood stages, and aquatic and terrestrial wildlife passage. The drainage area at the project site is greater than one square mile; therefore, the crossing is considered a "Tier 3" crossing under Env-Wt 904.05 and the project would be classified as a "major impact" project under Env-Wt 407.03(a) and Env-Wt 903.01(g)(3)(b). The information collected for the hydraulic study included sufficient baseline stream data to insure stream simulation for the new bridge. Therefore, this stream crossing would be considered self-mitigating. The 22-foot wide bankfull channel will be spanned with a 48-foot clear span bridge with a 4-foot 8-inch level wildlife corridor at floodplain height along each abutment. Additionally, because Pulpit Brook is a second order stream, it will also be subject to the NHDES Shoreland Water Quality Protection Act rules (to be adopted December 15, 2019), as such a Shoreland Permit will be required.

Floodplains / Floodways

Bridge 090/065 lies within the FEMA mapped floodplain of Pulpit Brook, with a base flood elevation of 237 feet NAVD88. The Town of Bedford has adopted a Floodplain Development Ordinance (FDO) under Article X of the most recent version of the Bedford Zoning Ordinance dated March 14, 2017. The FDO applies to all Special Flood Hazard Areas (SFHA's) identified on the effective FEMA Flood Insurance Rate Map (FIRM) #33011C0364D (Exhibit O - FEMA Floodplain Map). The project site is located within a Regulatory Floodway and a Zone AE Floodplain. Although the FDO is not applicable to State projects, NHDOT has evaluated the proposed Bridge for compliance with FEMA regulations and will address the requirements to the extent practicable. Section 275-80.C.(1) of the FDO states: "Along watercourses with a designated Regulatory Floodway, no encroachments, including fill, new construction, substantial improvements, and other development are allowed within the floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed encroachment would not result in any increase in flood levels within the community during the base flood discharge." A HEC-RAS hydraulic analysis was conducted by Headwaters Hydrology, PLLC which concluded that 100-year flood stages (a.k.a. base flood levels) would decrease for the proposed action; therefore, the design would comply with applicable federal floodplain management regulations and a FEMA Conditional Letter of Map Amendment (CLOMR) will not be needed.

However, as set forth in 44 CFR §65.3, the Town will be required to submit new technical data to FEMA describing physical changes in the Special Flood Hazard Area (SFHA) and their effect on flooding conditions. This data is to be submitted no later than six months after it becomes available (i.e. after completion of construction). The types of technical data required to be submitted are described in 44 CFR §65.6. The following data is required for physical changes affecting hydraulic conditions:

- A description of the physical changes (e.g. new bridge);
- As-built plans;
- New hydraulic analysis and flood profiles reflecting the physical changes; and
- Revised floodplain and floodway delineations [44 CFR §65.6(c)(2)].

The format for submitting this information to FEMA is a Letter of Map Revision (LOMR).

The New Hampshire Floodplain coordinator at the NH Office of Energy and Planning was contacted about the proposed project, who responded that because the hydraulic study undertaken for the project demonstrated that no increase in the Base Flood Elevation is anticipated no further coordination is required (Exhibit P - OEP Floodplain Coordinator Correspondence).

Wildlife / Fisheries / Endangered Species / Natural Communities

The New Hampshire Fish and Game Department has created maps for the State of New Hampshire that categorize available habitat based on a number of ecological integrity features. Upstream of the bridge, Pulpit Brook and surrounding wetlands are ranked as Tier 3 - Supporting Landscape. Downstream of bridge, the Pulpit Brook stream corridor is ranked as Tier 2 - Highest Ranked in the Biological Region by Ecological Condition. (Exhibit Q - Wildlife Action Plan Ranked Habitat Map). The Proposed action would improve aquatic habitat connectivity and increase the quantity of stream channel habitat, which should offset the adverse impacts resulting from the small permanent loss of wetland habitat adjacent to the stream.

An inquiry to the NHF&G Fisheries unit was made to determine what fisheries resources existed at the location, and what if seasonal restrictions, if any, might be imposed on the construction of the project. NHF&G responded that there were no specific time of year restrictions recommended for fisheries for this project, but that aquatic organism passage should be supported by a replacement crossing, if one were proposed. (Exhibit R - NHFG Fisheries Correspondence).

A datacheck with the New Hampshire Natural Heritage Bureau identified the state-endangered Blanding's turtle, a state endangered species, in the vicinity of the project (Exhibit S – NH Natural Heritage Bureau Report NHB19-1721). NHF&G provided written comments (Exhibit T - NHFG Nongame Correspondence) and attended Natural Resource Coordination meetings where the Proposed Action was described and provided guidance regarding Blanding's turtles. NHF&G recommended that the stream channel be natural materials without riprap barriers, and wildlife friendly organic erosion control materials be used, to avoid using measures with welded plastic or 'biodegradable plastic' netting or thread which can entangle snakes and other wildlife. NHF&G further recommended that the 4.5-foot floodplain shelves to be constructed on either side of the stream channel under the road be level for ease of wildlife passage. The NHDOT has committed to these measures.

Consultation with the US Fish and Wildlife Service (USFW) was initiated using the Information for Planning and Consultation (IPaC) website which indicated that the Northern Long-eared Bat (*Myotis septentrionalis*) has the potential to occur within the project area (Exhibit U - USFWS IPaC Species Letter). A Programmatic Consultation under the agreement between the U.S. Federal Highway Administration (FHWA) and USFWS was initiated using the IPaC website regulatory review. A search of the NH Natural Heritage Bureau data did not identify any known bat hibernacula within 0.5 miles of the project. The existing bridge, a pair of concrete culverts with permanent water flow, was examined for bat roosting habitat and a bridge inspection form documenting a lack of roost use was completed. There will be approximately 0.85 acres of tree clearing for project construction, which may take place within the active season for bats. The Programmatic Consultation resulted in a determination that the project may affect, is likely to adversely affect the Northern Long-eared Bat due to the cutting of suitable bat roosting habitat (trees) during the active season. Therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.) is required. However, also based on the answers provided in the determination key, this project may rely on the conclusion and Incidental Take Statement provided in the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat. The concurrence from the USFWS dated September 4, 2019 is attached (Exhibit V - Northern Long-eared Bat Concurrence Letter).

Invasive Plants

An invasive plant is a non-native plant that is able to persist and proliferate outside of cultivation, resulting in ecological and/or economic harm. Under the statutory authority of NH RSA 430:55 and NH RSA 487:16-a, the NH Department of Agriculture, Markets & Food and NHDES prohibit the spread of invasive plants listed on the NH Prohibited Species List. Invasive species including Honeysuckle (*Lonicera* spp.), Japanese Barberry (*Berberis thunbergii*), Multiflora Rose (*Rosa multiflora*), Oriental Bittersweet (*Celastrus orbiculatus*), and Purple Loosestrife (*Lythrum salicaria*) grow in the Route 101 ROW near the Pulpit Brook bridge and along the approaches. Locations of invasive plants in portions of the project area were GPS located and mapped. Depending on the ultimate project footprint, impacts may occur to invasive species. If invasive species cannot be avoided, the Contractor will be required to prepare an Invasive Species Control and Management Plan consistent with the NHDOT Best Management Practices for the Control of Invasive and Noxious Plant Species (2018).

Cultural Resources

NHDOT submitted a Request for Project Review (RPR) form to the New Hampshire Division of Historical Resources (NHDHR) on October 12, 2017. This project was assigned Review and Compliance # 9086. Follow up conversations with NHDOT occurred via email on October 31, 2017. A second file search was undertaken due to an extension of the Area of Potential Effect (APE) approximately 1,200 feet southwest for the bridge approach, and approximately 150 feet southeasterly from Twin Brook Lane northerly to the end of the project area to include the proposed on-site bypass. An addendum to the RPR was submitted to NHDHR in May 2019. The cultural resources coordination is summarized below.

The original RPR identified two structures 50 years or older in the project area, NHDOT Bridge 090/065 and the original bypassed bridge which is downstream of Bridge 090/065. NHDOT Bridge

090/065 meets the criteria of the Program Comment for Common Post-1945 Concrete & Steel Bridges, and is not eligible for listing in the National Register of Historic Places. A program comment form was completed for the bridge and approved by NHDOT, and the Determination of Eligibility (DOE) reflects the use of the program comment. Results of the HEC-RAS hydraulic models for both existing and proposed conditions indicate that the proposed bridge replacement will have no impact on hydraulics at the abandoned bridge located about 170 feet downstream from the highway.

The extended project area includes the driveway entrance to a garage building at 354 Route 101 in Amherst. The building is in the vicinity of the Bragdon Farm (a former dairy farm), which is noted as survey map #33 and #34 in the Area Form for the Town of Amherst. The garage building is not addressed in the Area Form. The association between the garage building and Bragdon Farm is unclear, though the garage does not appear to have a function associated with dairy farming (the Area Form notes that the Bragdon's took their milk elsewhere for processing). Recent development, including a winery and Twin Brook Lane development, are also located on former farmland. The former farm fields in the project area are owned by the Town of Amherst.

The proposed work at the property of the garage building (Sta. 195+50L to 199+00L) is currently limited to within the right-of-way, including milling, pavement overlay, and fill along the edge of the roadway. The proposed work would constitute a minimal change at this location.

NHDHR has concurred that the project would result in no impacts to above ground historic properties within the Area of Potential Effect and consultation for above ground historic properties has concluded. The Phase 1A archeological assessment of the preferred alternative project area conducted by IAC was negative, and a short-form report, recommending no Phase IB survey, was submitted to NHDHR in May 2019. NHDHR has concurred that the project would result in no impacts to below ground historic resources within the Area of Potential Effect and consultation for below ground historic resources has also concluded.

A finding of No Historic Properties Affected Memo was made by the NH Department of Transportation and NH Division of Historical Resources (Exhibit W - Section 106 Effects Memo).

Section 4(f)

Section 4(f) requires the consideration of the use of park and recreational lands, wildlife and waterfowl refuges, and historic sites in transportation project development. Public multi-use properties may also require 4(f) determinations. Only those portions designated as a recreation area, refuge or historic site are eligible for protection under Section 4(f). An examination of the management plan, if one exists, and coordination with the officials with jurisdiction is necessary to determine if Section 4(f) should apply to the resource. When a management plan doesn't exist, or is out-of-date, the FHWA should examine how the property is functioning and being managed to determine Section 4(f) applicability.

The 111-acre Bragdon Farm is a public multi-use property with both historical and recreational resources. As a finding of No Historic Properties Affected was made, under the 2018 Programmatic Agreement regarding Federal-Air Highway Program in New Hampshire, there is no Section 4(f) use on historic resources (Exhibit W - Section 106 Effects Memo). The project does not propose impacts

to the portions of the property used for recreational sledding or hiking. This parcel is not specifically conserved or managed as a wildlife refuge. Correspondence with the Town of Amherst, the owners and stewards of the Bragdon Farm conservation land, confirms that the necessary permanent drainage and slope easement and temporary construction will not interfere with recreational use or conservation value or management plans for the property, as long as the construction contractors coordinate with the Amherst Conservation Commission to insure that tractor access for haying activities is accommodated during construction (Exhibit F - Amherst Town Officials Correspondence and Meeting Minutes). This requirement will be included in the construction contract documents. Based on this assessment and input from the Town of Amherst, there are no recreational Section 4(f) uses associated with the impacts to the Bragdon Farm conservation land.

Coordination and Public Participation

Date	Meeting
May 18, 2016	Public Information Meeting
September 20, 2017	NHDOT Bureau of Environment, Natural Resource Agency Coordination Meeting
February 13, 2018	Public Informational Meeting
June 19, 2019	NHDOT Bureau of Environment, Natural Resource Agency Coordination Meeting
June 20, 2019	Public Information Meeting
September 13, 2019	Meeting with Town of Amherst officials
November 7, 2019	Design Public Hearing (planned)

Federal, State and local agencies and organizations were contacted requesting input on this project on the following dates:

AGENCY/ORGANIZATION	CONTACT	CORR. SENT	REPLY RECV'D
NH Land and Community Heritage Investment Program	Paula Bellemore pbellemore@lchip.org	6/20/2017	6/20/2017
NH Conservation Land Stewardship Program	Steve Walker Steve.Walker@nh.gov	6/20/2017	6/20/2017
Land and Water Conservation Fund Program Coordinator	Bill Gegas lwcf@dred.nh.gov	6/26/2019	8/12/2019
NH Fish and Game Department Nongame Endangered Wildlife Program	Kim Tuttle Kim.Tuttle@wildlife.nh.gov	9/18/2017	9/18/2017
NH Fish and Game Department Fisheries Unit	John Magee John.magee@wildlife.nh.gov	6/20/2017	7/10/2017
NH Office of Energy and Planning	Samara Ebinger Samara.eginger@osi.nh.gov	6/26/2019	7/15/2019
US Fish and Wildlife Service New England Field Office	Thomas Chapman	8/9/19	9/4/19
Bedford Conservation Commission	Beth Evarts, Chairwoman Via US mail	6/25/2019	

Town of Bedford Emergency Management	Joey Scollan, Director Via US mail	6/25/2019	
Town of Bedford Planning Department	Becky Hebert Planning Director	6/25/2019 9/18/19	9/18/19
Town of Bedford DPW	Michael McLaughlin Engineering Technician	6/25/2019	
Town of Bedford Public Works	Jeffrey Foote, Director/Road Agent	6/25/2019	
Bedford Town Council	Bill Duschatko, Chairman	6/25/2019	
Bedford Fire Department	Chief Scott Wiggin	6/25/2019	
Bedford Historical Society	Gwen Broder and Beverly Thomas, Co-Presidents	6/25/2019	
Town of Bedford	Rick Sawyer, Town Manager	6/25/2019	
Bedford Planning Board	John Levenstein, Chairman	6/25/2019	
Bedford Police Department	John Bryfonski, Police Chief	6/25/2019	
Amherst Conservation Commission	Rob Clemens, Chairman	6/25/2019	7/13/19, 9/13/19
Amherst Fire Department and Emergency Management	Matthew Conley, Chief	6/25/2019	
Amherst Historical Society	Neil Benner, President	6/25/2019	
Amherst Town Administrator	Dr. Dean Shankle	6/25/2019	9/13/19
Amherst Planning Board	Arnold Rosenblatt, Chairman	6/25/2019	
Town of Amherst Police Department	Mark Reams, Chief of Police	6/25/2019	
Town of Amherst Public Works	Eric Hahn, Director/Road Agent	6/25/2019	9/13/19
Amherst Board of Selectmen	Peter Lyon, Chairman	6/25/2019	
Town of Amherst Planning Department	Simon Corson, Town Planner	6/25/2019	

Construction Impacts

The construction of this project will result in temporary impacts to traffic patterns and access during construction. Two lanes of traffic will be provided at all times during the two major phases of construction. There will be brief periods of alternating one-way traffic (controlled by flaggers) during paving operations when the beginning and ends of the temporary bypass are tied into the existing Route 101. Similarly, there will be brief periods of alternating one-way traffic when the roadway approaches are reclaimed and reconstructed at the end of Phase 1. Access into Twin Brook Lane will remain during construction.

The construction of this project is anticipated to cause temporary increases in noise and dust levels within the project area. All standard measures will be employed to ensure such increases are minimized to the extent practicable and are limited to the construction period.

Appropriate Best Management Practices, as outlined in NHDOT's "Best Management Practices for the Control of Roadside Invasive and Noxious Plants Species", will be utilized to avoid the spread of invasive plants within or outside of the project limits.

The project contractor will be required to prepare a Storm Water Pollution Prevention Plan (SWPPP), approved by the Department, prior to the commencement of construction activities.

Standard pollution prevention measures, as outlined in the *New Hampshire Stormwater Manual Vol. 3 – Erosion Control and Sediment Controls During Construction (December 2008),* will be employed to assure all negative impacts are avoided and/or minimized to the maximum extent practicable.

Environmental impacts will be associated with the construction of the temporary bypass, which will require temporary earthen berms, temporary culverts, and temporary fill in wetlands, and are adjacent to two vernal pools. These temporarily impacted wetland areas will be restored after construction is complete. Fill materials will be placed on geotextiles to identify the original grades once fill is removed. Restoration plans will be part of the design package. NHF&G has requested that the work zone be fenced to prevent turtles from attempting to lay eggs in the work area where adults, eggs or hatchlings could be harmed by equipment or earthwork. In addition, NHF&G requested that no welded plastic or 'biodegradable' erosion control netting that can entangle wildlife be used at the site.

Summary of Environmental Commitments

The following environmental commitments have been made for this project:

1. All appropriate permits from the NH Department of Environmental Services and US Army Corps of Engineers shall be obtained prior to the commencement of any work within jurisdictional wetlands and Pulpit Brook. All permit conditions issued for the project shall be adhered to. **(Design/Environment/Construction)**
2. This project requires coverage under the Environmental Protection Agency's National Pollutant Discharge Elimination System's Construction General Permit. Therefore, a Notice of Intent must be filed prior to the commencement of work. **(Construction/Environment)**
3. The contractor shall submit a Storm Water Pollution Prevention Plan (SWPPP) specific to this project. The SWPPP shall be approved by the Department and implemented and monitored as noted in coordination with the Department's Bureau of Construction. **(Construction)**
4. The stream bed under the new bridge will be provided with a natural substrate matching adjacent stream bed materials. **(Design/Construction)**
5. The floodplain bench adjacent to the stream channel under the bridge will be level to facilitate wildlife use. **(Design/Construction)**
6. Temporarily impacted areas must be restored after construction is complete. Fill materials in wetlands will be placed on geotextiles to identify the original grades once fill is removed.

Restoration plans will be part of the design package. **(Design/Construction)**

7. If abnormal field conditions are identified during construction that present unanticipated environmental concerns or would require deviations from any other environmental commitment, work shall be suspended in the immediate area and the Bureau of Environment shall be contacted to provide further guidance. **(Construction**)
8. Several invasive species are located within or adjacent to the project corridor. Depending on the ultimate project footprint, impacts may occur to invasive species. If invasive species cannot be avoided, the Contractor shall be required to prepare an Invasive Species Control and Management Plan prior to construction. All appropriate Best Management Practices, as described in the Department's publication *Best Management Practices for the Control of Invasive and Noxious Plant Species*, shall be summarized in the Management Plan that describe measures that will be taken to avoid spreading the plants to new sites. **(Construction/Environment)**
9. Precautions shall be employed to minimize noise, dust, and vibrations during the construction period, primarily for the abutting receptors located adjacent to the project area. **(Construction)**
10. Construction vehicles shall not be stored, serviced, washed or flushed in a location where leaks, spills, waste materials or cleaners would be introduced into wetlands or watercourses. **(Construction)**
11. Containment of lead-based paint, if present, shall be appropriately addressed in Contract documents. **(Construction)**
12. Recommendations in the Environmental Justice Analysis undertaken for this project shall be followed. (**ROW/Environment**)
13. Personnel working at the site shall be made aware of the potential to encounter protected Blanding's turtles especially during turtle nesting season which extends from late May through the end of June. The NHFG Turtle Flyer shall be shared with all operators, employees and contractors working on the project. If protected turtle species are found laying eggs in a work area, a Wetlands Systems Biologist or New Hampshire Fish and Game personnel shall be contacted for instructions. (**Construction/Environment**)
14. Wildlife friendly organic erosion control materials shall be used. The use of welded plastic or 'biodegradable' erosion control netting at the site shall be avoided. (**Construction/ Environment**)
15. The Contractors will coordinate their work with the Amherst Conservation Commission so that access to the Bragdon Farm field for their haying operation is maintained. (**Construction**)

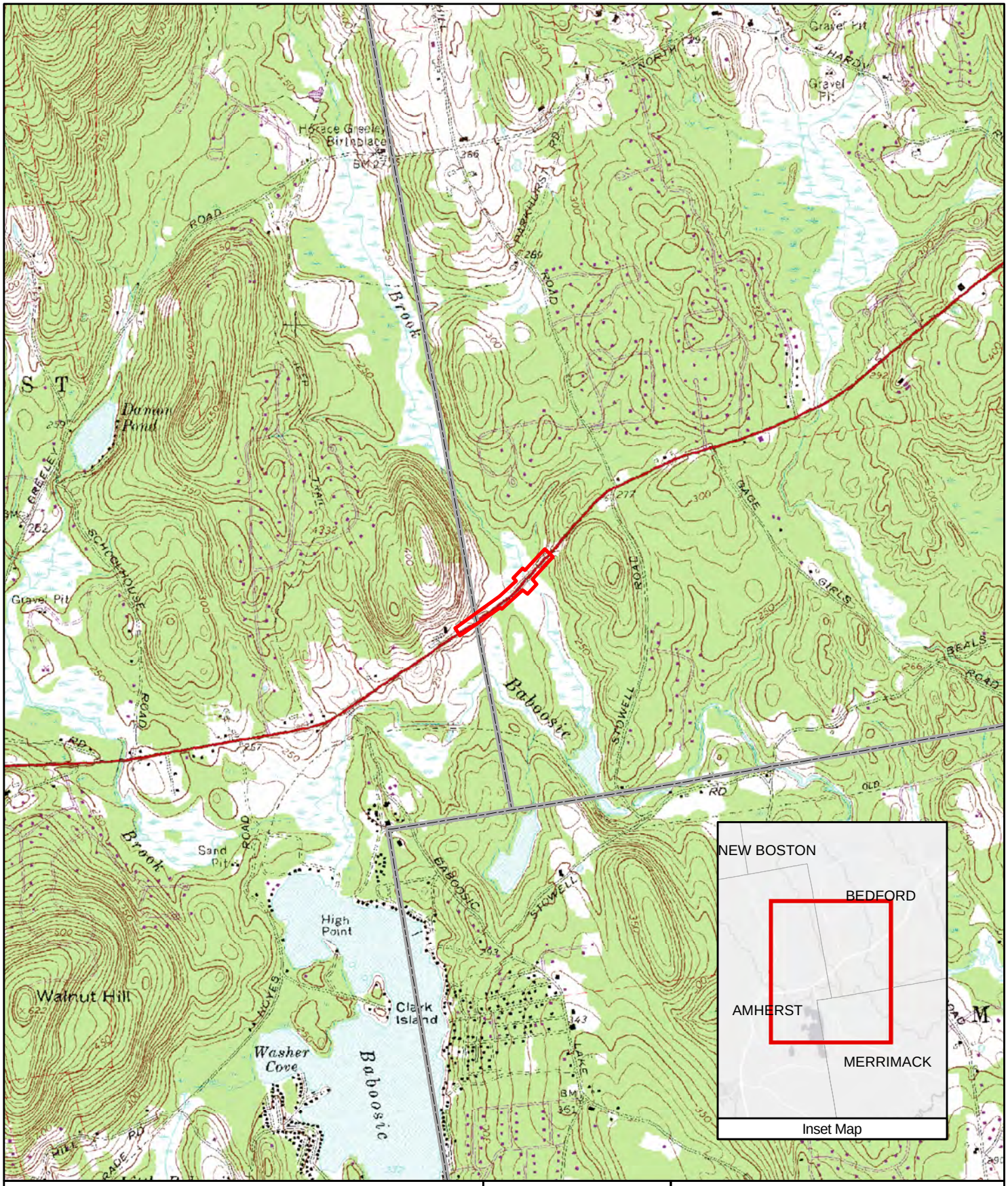
Northern Long-Eared Bat Environmental Commitments

1. The Northern Long-Eared Bat Flyer shall be shared with all operators, employees, and contractors working on the project. Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs. **(Construction/Environment)**
2. Temporary lighting (if used) shall be directed away from suitable habitat during the bats' active season. (**Construction)**
3. Modify all phases/aspects of the project (e.g., temporary work areas, alignments) to avoid tree removal. (Design/**Construction)**
4. Ensure tree removal is limited to that specified in project plans and ensure that

contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits). **(Construction/Environment)**

5. Inspection of the bridge/structure and guard rails for the presence of, or evidence of use by, bats shall be completed by NHDOT prior to any work on the bridge/structure if the start of construction will occur after July 18, 2021. The Contractor shall notify the Bureau of Environment no later than fourteen (14) business days prior to the start of work on the bridge/structure to provide adequate time for inspection. **(Construction/Environment)**
6. If bats are found to be present during inspection of the bridge, or if there is evidence of bat usage prior to or during construction, work at the bridge/structure and guard rails shall not commence or resume until after the Bureau of Environment has completed coordination with the US Fish and Wildlife Service to determine the appropriate follow up or mitigative actions. **(Construction/Environment)**
7. Parties finding a dead, injured or sick specimen of any endangered or threatened species must promptly notify the US Fish and Wildlife Service. **(Construction/Environment)**
8. Reinitiation of consultation must occur if new information reveals that the Project may affect listed species or critical habitat in a manner or to an extent not considered in the BO; the Project is subsequently modified in a manner that causes an effect to listed species or designated critical habitat not considered in the BO; or a new species is listed or critical habitat designated that the project may affect. **(Construction/Environment)**

EXHIBITS



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Project Location

Town Boundary

0 0.25 0.5 1 Miles

NORMANDEAU ASSOCIATES
Environmental Consultants

Date:
6/25/2019

NHDOT
BEDFORD 13692C
NH ROUTE 101 OVER PULPIT BROOK
Exhibit A

25 Nashua Road Bedford, NH 03110

Prepared For: LEC Project: 23741.003 Prepared By: JO

Path: J:\Projects\PulpitBrook\Locus_062519.mxd

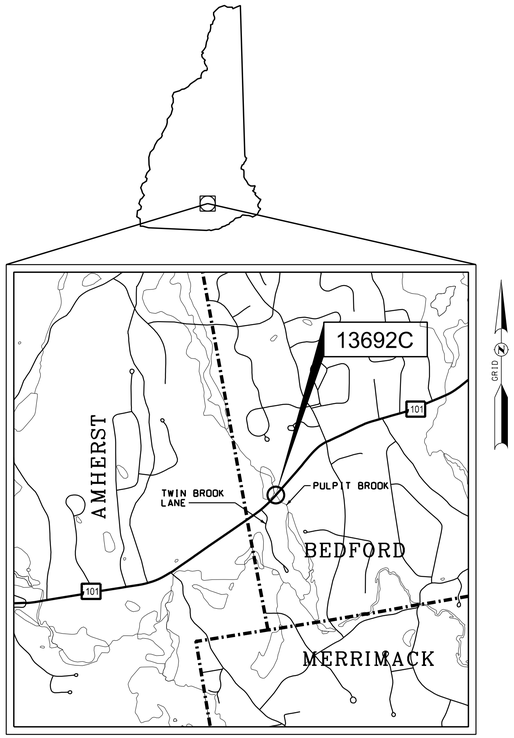
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

SLOPE AND DRAIN PLANS
NH ROUTE 101 OVER PULPIT BROOK
REPLACEMENT OF BRIDGE NO. 090/065

X-A004(254)
N.H. PROJECT NO. 13692C
NH ROUTE 101

DESIGN DATA

AVERAGE DAILY TRAFFIC 2017	19,727
AVERAGE DAILY TRAFFIC 2035	35,520
PERCENT OF TRUCKS	7%
DESIGN SPEED	50 MPH
LENGTH OF PROJECT	0.40 MILES



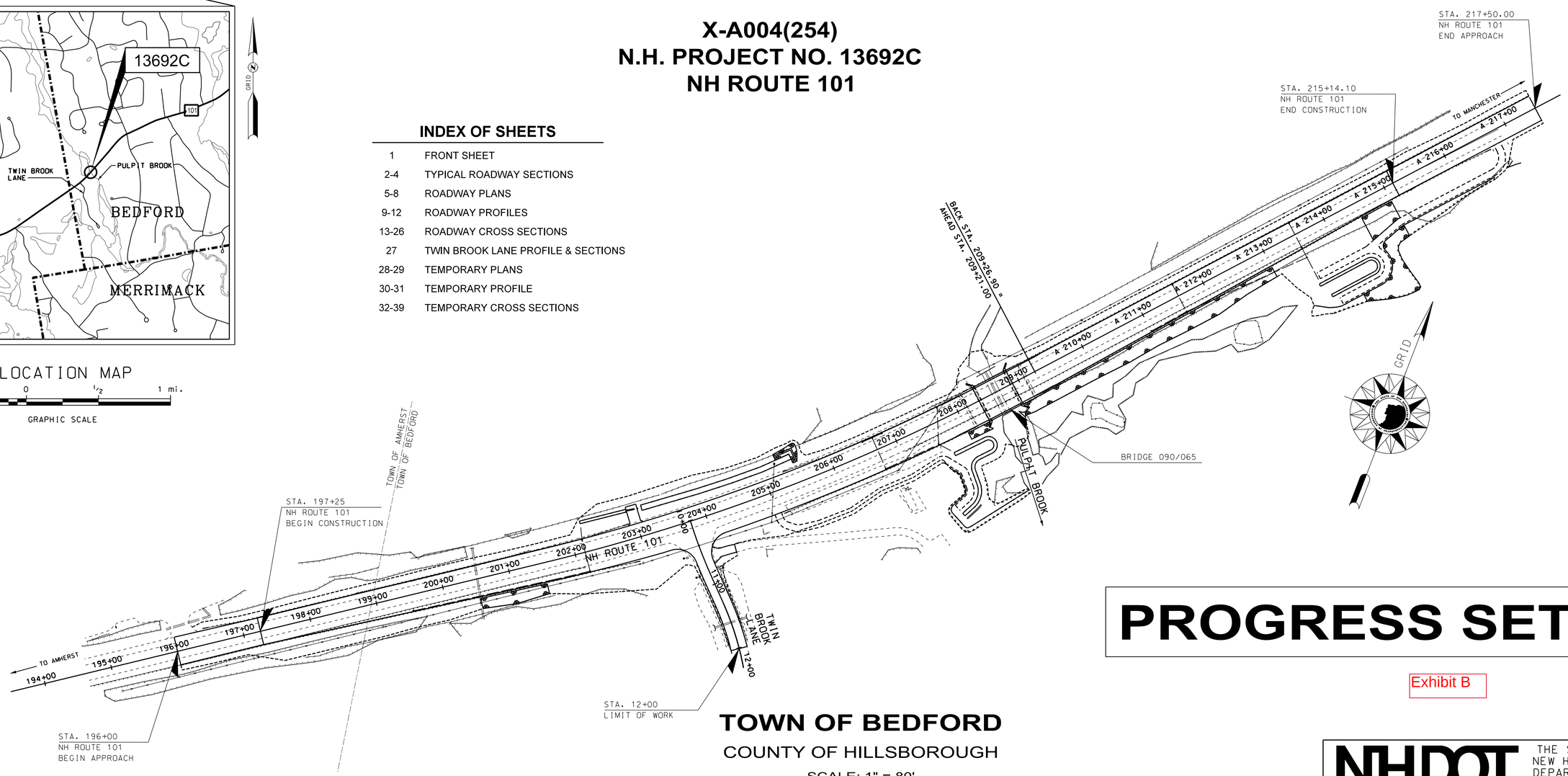
LOCATION MAP

1/2 1/4 0 1/2 1 mi.

GRAPHIC SCALE

INDEX OF SHEETS

1	FRONT SHEET
2-4	TYPICAL ROADWAY SECTIONS
5-8	ROADWAY PLANS
9-12	ROADWAY PROFILES
13-26	ROADWAY CROSS SECTIONS
27	TWIN BROOK LANE PROFILE & SECTIONS
28-29	TEMPORARY PLANS
30-31	TEMPORARY PROFILE
32-39	TEMPORARY CROSS SECTIONS



PROGRESS SET

Exhibit B

TOWN OF BEDFORD
COUNTY OF HILLSBOROUGH

SCALE: 1" = 80'

DRAWN BY DATE

CHECKED BY DATE

ROADWAY PLANS PREPARED BY

KLEINFELDER
Bright People. Right Solutions.

BY: TRAVIS J. WOLFEL

BRIDGE PLANS PREPARED BY

KLEINFELDER
Bright People. Right Solutions.

BY: THOMAS J. MARSHALL

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

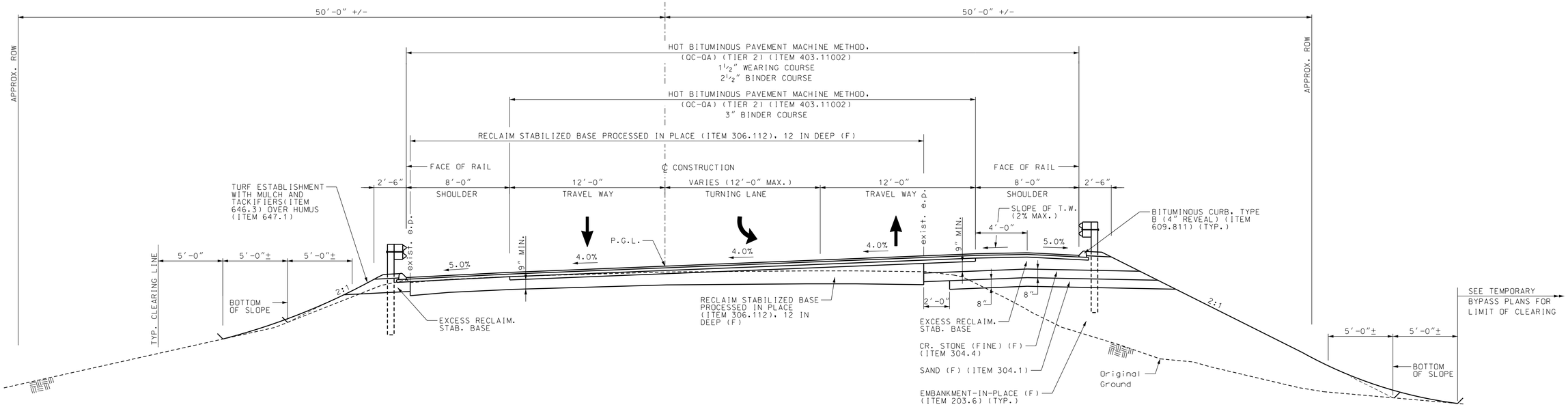
RECOMMENDED FOR APPROVAL:

DIRECTOR OF PROJECT DEVELOPMENT — DATE

APPROVED:

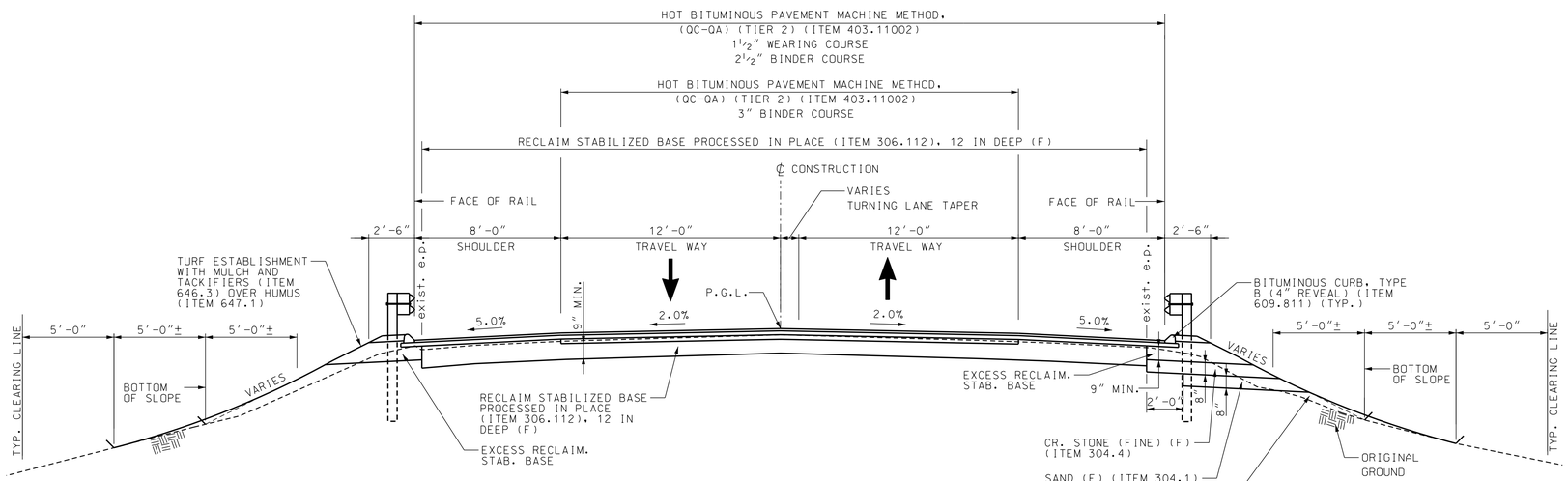
ASSISTANT COMMISSIONER AND CHIEF ENGINEER — DATE

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
X-A004(254)	13692C	1	39



NH ROUTE 101- SUPERELEVATED TYPICAL SECTION

SCALE: 1/4" = 1'-0"
STA. 200+09.40 TO STA. 210+74.10



NH ROUTE 101 - NORMAL CROWN TYPICAL SECTION

SCALE: 1/4" = 1'-0"
STA. 197+25.00 TO STA. 200+09.40
STA. 210+74.10 TO STA. 215+14.10

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3

NUMBER	DATE	STATION	STATION	DESCRIPTION

REVISIONS AFTER PROPOSAL

SDR PROCESSED	NAME1	DATE	DATE1		
NEW DESIGN	NAME2	DATE	DATE2		
SHEET CHECKED	NAME3	DATE	DATE3		
AS BUILT DETAILS		DATE			

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

NH ROUTE 101
TYPICAL ROADWAY SECTIONS
TOWN OF BEDFORD
COUNTY OF HILLSBOROUGH

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
14-15_13692 Typical Sections	13692C	2	39

N/F
FRED AND ALICE PAQUETTE

N/F
KAYLEEN M. STOWELL REVOCABLE TRUST

STA. 197+25.00
NH ROUTE 101
BEGIN CONSTRUCTION

STA. 196+00
NH ROUTE 101
BEGIN APPROACH

EXISTING R.O.W. (PER HCRD PLAN 26372)

EXISTING R.O.W. (PROJECT P-2052)

LIMIT FILL SLOPE ROUNDING (TYP.)

CLEARING LIMIT LINE (TYP.)

TOWN OF AMHERST
TOWN OF BEDFORD

net 4396 81-2
asph drive
stone rw
hardwoods
"no parking tow away zone"
12" rcp
4'h woven wire
bgr
C-1
C-6
CONSTRUCTION ℄
NH ROUTE 101
N55°23'51.8"E
195+00
196+00
197+00
198+00
199+00
200+00
9.1'
12.3'
10.7'
9.6'
8.0'
12.0'
"Twin Brook Ln" int sign
T/L Amherst/Bedford "no parking tow away zone"
15"rcp
EXISTING R.O.W.
net 82 psnh 5 225
psnh 5 226 83 bell
psnh 227 84 bell
125.0'
MILL & OVERLAY
STA. 197+25.00, 12.00' RT.
BEGIN 50:1 TAPER
MATCHLINE TO SHEET 6

N/F
TOWN OF AMHERST

PLAN

SCALE: 1" = 20'

20 0 20 40

SCALE IN FEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION
		STATION	

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	

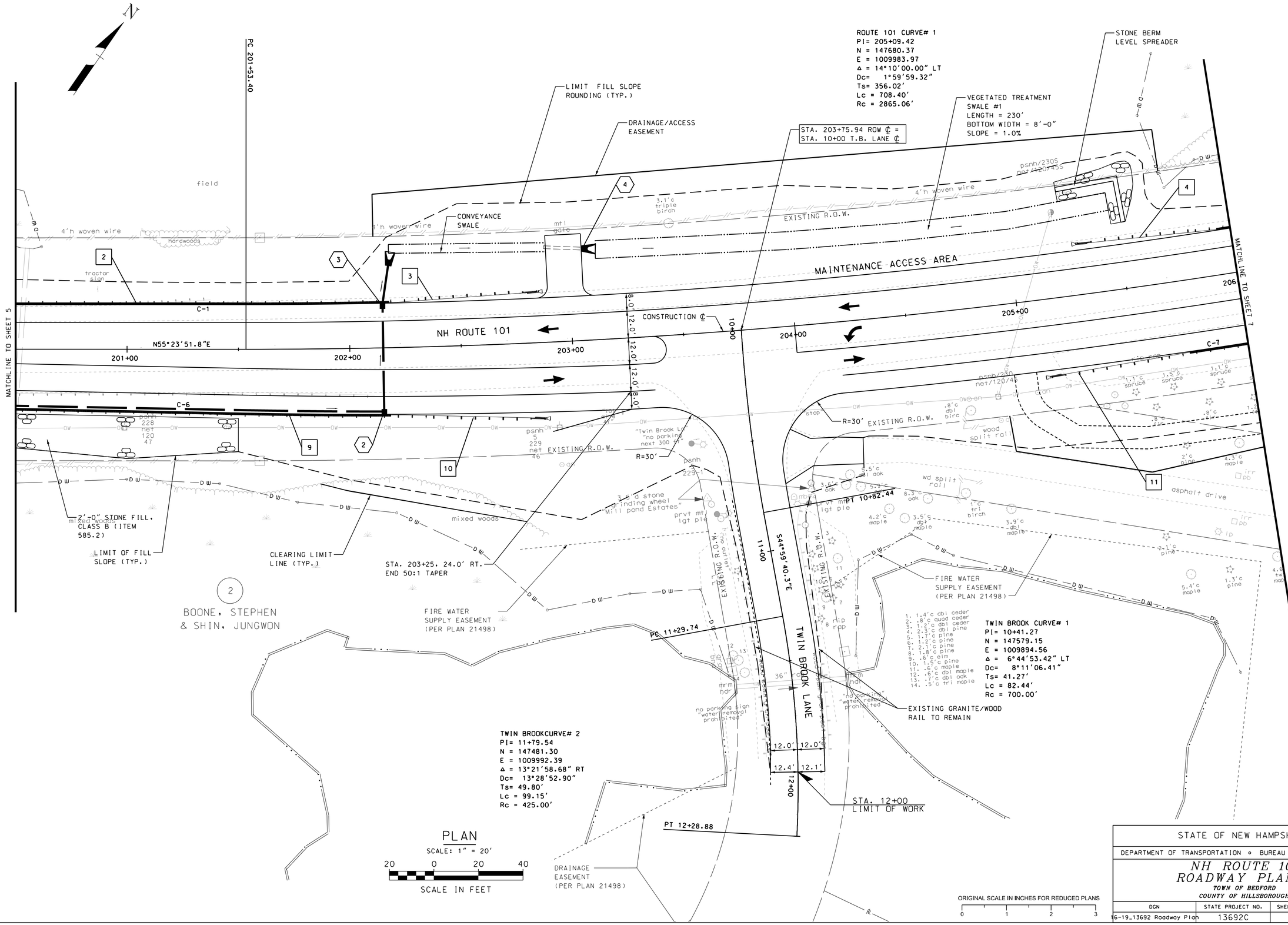
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

NH ROUTE 101
ROADWAY PLAN 1

TOWN OF BEDFORD
COUNTY OF HILLSBOROUGH

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16-19_13692 Roadway Plan	13692C	5	39



PLAN

SCALE: 1" = 20'

20 0 20 40

SCALE IN FEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

NH ROUTE 101
ROADWAY PLAN 2

TOWN OF BEDFORD
COUNTY OF HILLSBOROUGH

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16-19_13692 Roadway Plan	13692C	6	39

ROUTE 101 CURVE# 1
PI= 205+09.42
N = 147680.37
E = 1009983.97
Δ = 14°10'00.00" LT
Dc= 1°59'59.32"
Ts= 356.02'
Lc = 708.40'
Rc = 2865.06'

THIS PROPERTY IS SUBJECT TO CONSERVATION RESTRICTIONS HELD BY THE AMHERST LAND TRUST

1
TOWN OF AMHERST

PT 208+61.80

BACK STA. 209+26.90 =
AHEAD STA. 209+21.00

TEMPORARY CONSTRUCTION EASEMENT

(2) EXIST. 60" CULVERTS TO BE REMOVED

PULPIT BROOK

LIMIT FILL SLOPE ROUNDING (TYP.)

SLOPE LINE PROJECT P-2052

MATCHLINE TO SHEET 6

MATCHLINE TO SHEET 8

NH ROUTE 101

N41°13'51.8"E

CONSTRUCTION ℄

℄ BRG. ABUT. A
STA. 208+37.06

℄ BRG. ABUT. B
STA. 208+87.56

MAINTENANCE ACCESS ROAD

EXISTING R.O.W.

VEGETATED TREATMENT SWALE #2
LENGTH = 200'
BOTTOM WIDTH = 5'-0"
SLOPE = 0.7%

APPROXIMATE FORMER LOCATION OF NH ROUTE 101 ROW

3
BASHARAT, RAI U.
& IQBAD, KOMAL

STONE BERM LEVEL SPREADER

DRAINAGE/ACCESS EASEMENT

CONVEYANCE SWALE (TO BROOK)

TEMPORARY CONSTRUCTION EASEMENT

LIMIT OF FILL SLOPE, TEMPORARY DIVERSION AND CLEARING LIMIT LINE

2'-0" STONE FILL, CLASS B (ITEM 585.2)

STA. 209+20.00, 24.00' RT.
BEGIN 50:1 TAPER

PLAN

SCALE: 1" = 20'

20 0 20 40
SCALE IN FEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
0 1 2 3

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION
		STATION	

SDR PROCESSED	NAME1	DATE	DATE1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3	DATE	DATE3
AS BUILT DETAILS		DATE			

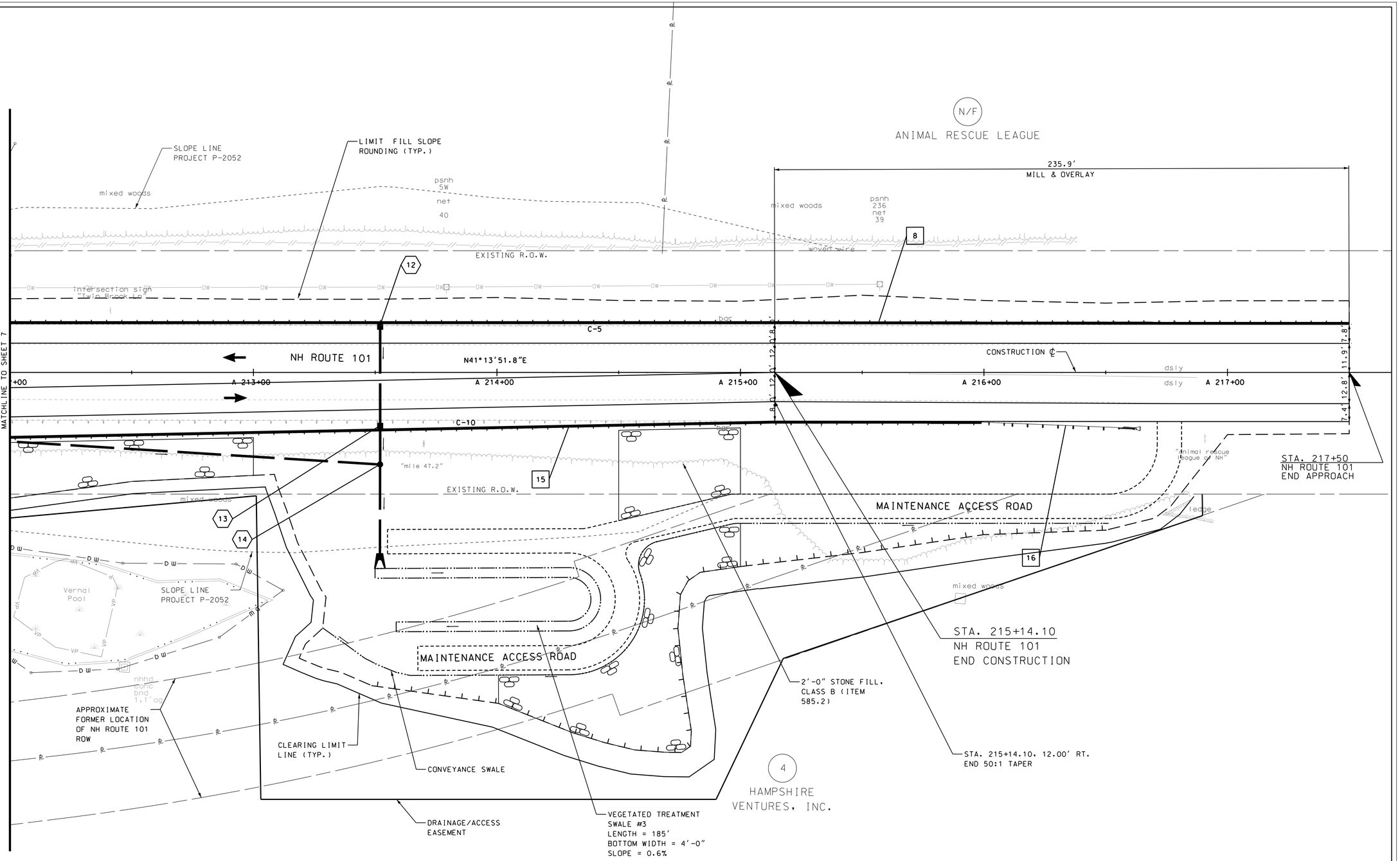
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

NH ROUTE 101
ROADWAY PLAN 3

TOWN OF BEDFORD
COUNTY OF HILLSBOROUGH

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16-19_13692 Roadway Plan	13692C	7	39



PLAN

SCALE: 1" = 20'

20 0 20 40

SCALE IN FEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

NH ROUTE 101
ROADWAY PLAN 4

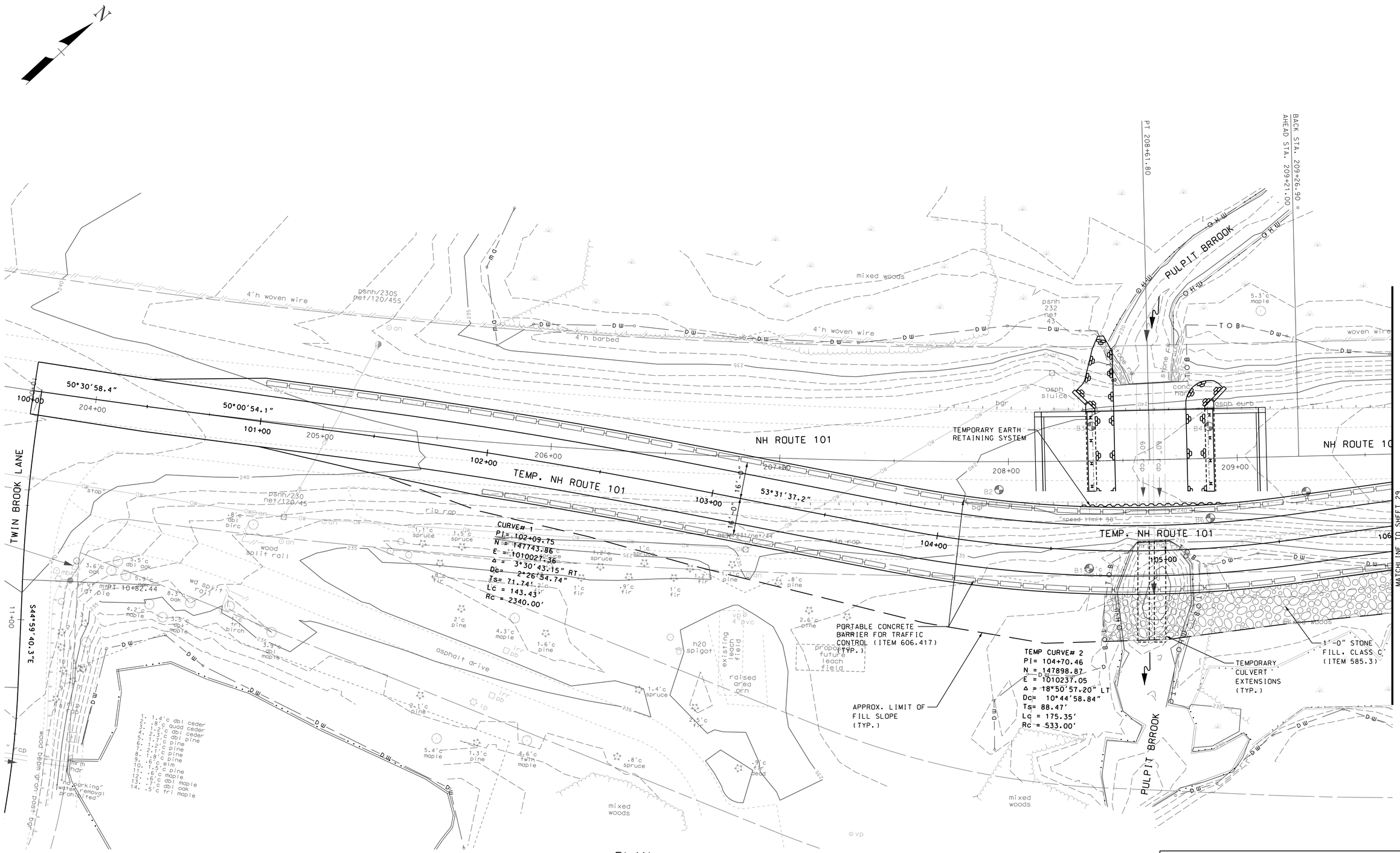
TOWN OF BEDFORD
COUNTY OF HILLSBOROUGH

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
16-19_13692 Roadway Plan	13692C	8	39

REVISIONS AFTER PROPOSAL

STATION	STATION	DATE	NUMBER	DESCRIPTION

SDR PROCESSED	NAME1	DATE	DATE1		
NEW DESIGN	NAME2	DATE	DATE2		
SHEET CHECKED	NAME3	DATE	DATE3		
AS BUILT DETAILS		DATE			



PLAN

SCALE: 1" = 20'

20 0 20 40

SCALE IN FEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

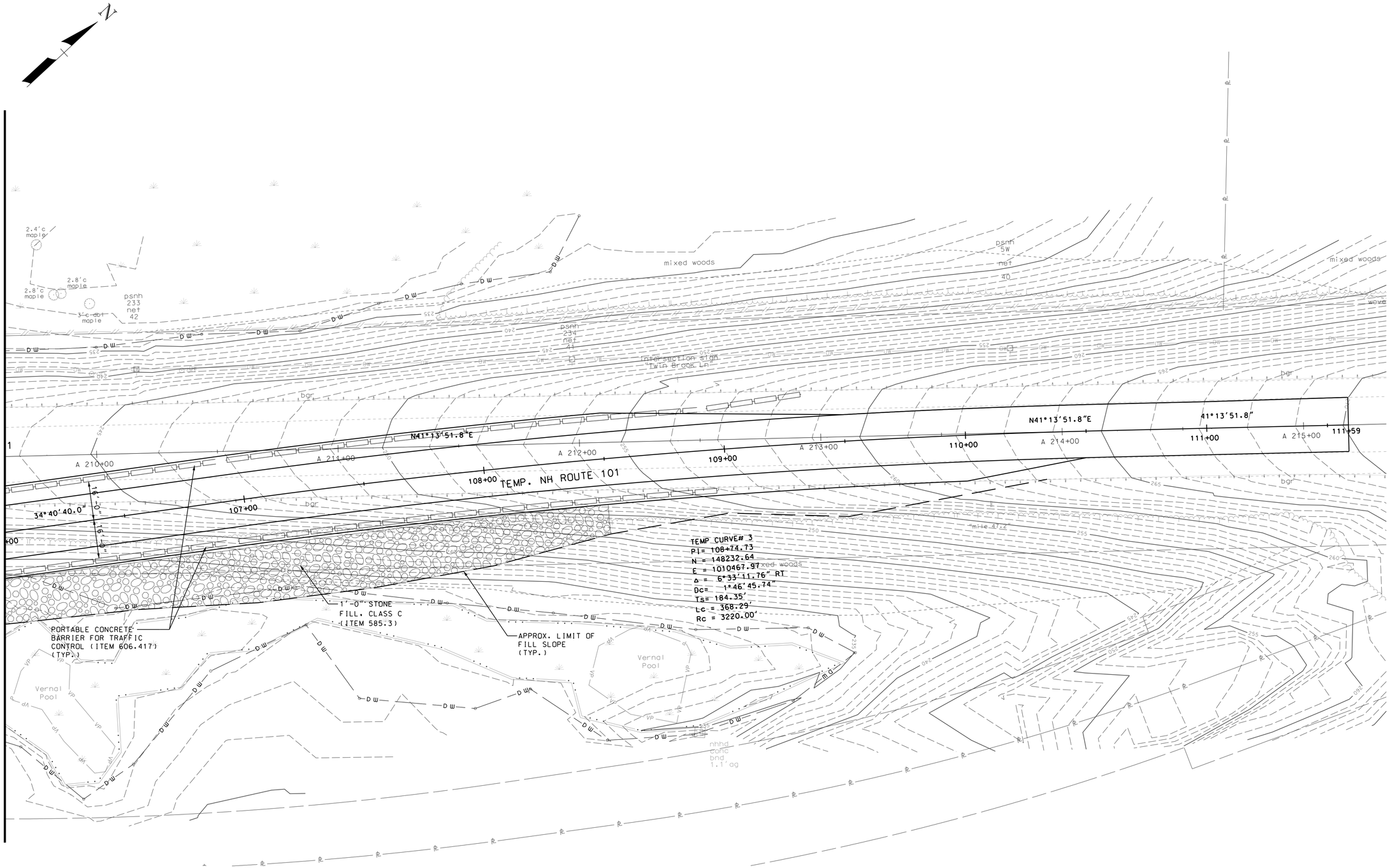
STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

NH ROUTE 101
TEMPORARY PLAN 1

TOWN OF BEDFORD
COUNTY OF HILLSBOROUGH

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
38-39_13692 Temp Plan	13692C	28	39



PLAN

SCALE: 1" = 20'

20 0 20 40

SCALE IN FEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

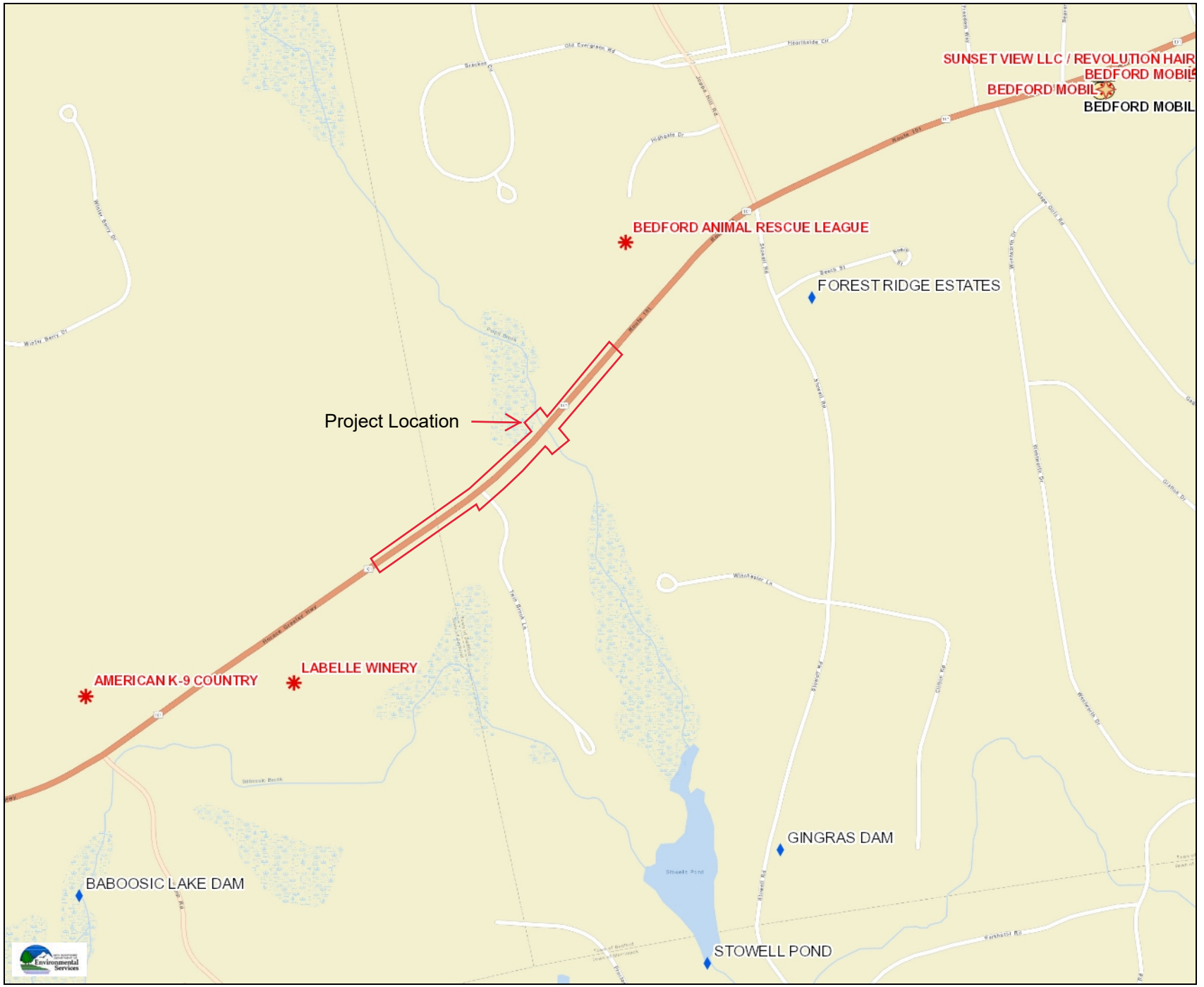
NH ROUTE 101 TEMPORARY PLAN 2

TOWN OF BEDFORD

COUNTY OF HILLSBOROUGH

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
38-39_13692 Temp Plan	13692C	29	39

Exhibit **C** - NHDES OneStop Map - Bedford 13692C



Legend

- Air Facility Systems Title V Permitted
- Aboveground Storage Tank
- Air Facility Systems State Permitted
- Automobile Salvage Yards
- Hazardous Waste Generato
- NPDES Outfalls
- Remediation Sites
- Solid Waste Facilities
- Underground Storage Tank
- Dam Inventory

Map Scale

1: 10,000

© NH DES, http://des.nh.gov

Map Generated: 9/19/2019

Notes

N

Project Location

0 0.25 0.5 1 Miles

NORMANDEAU ASSOCIATES
Environmental Consultants

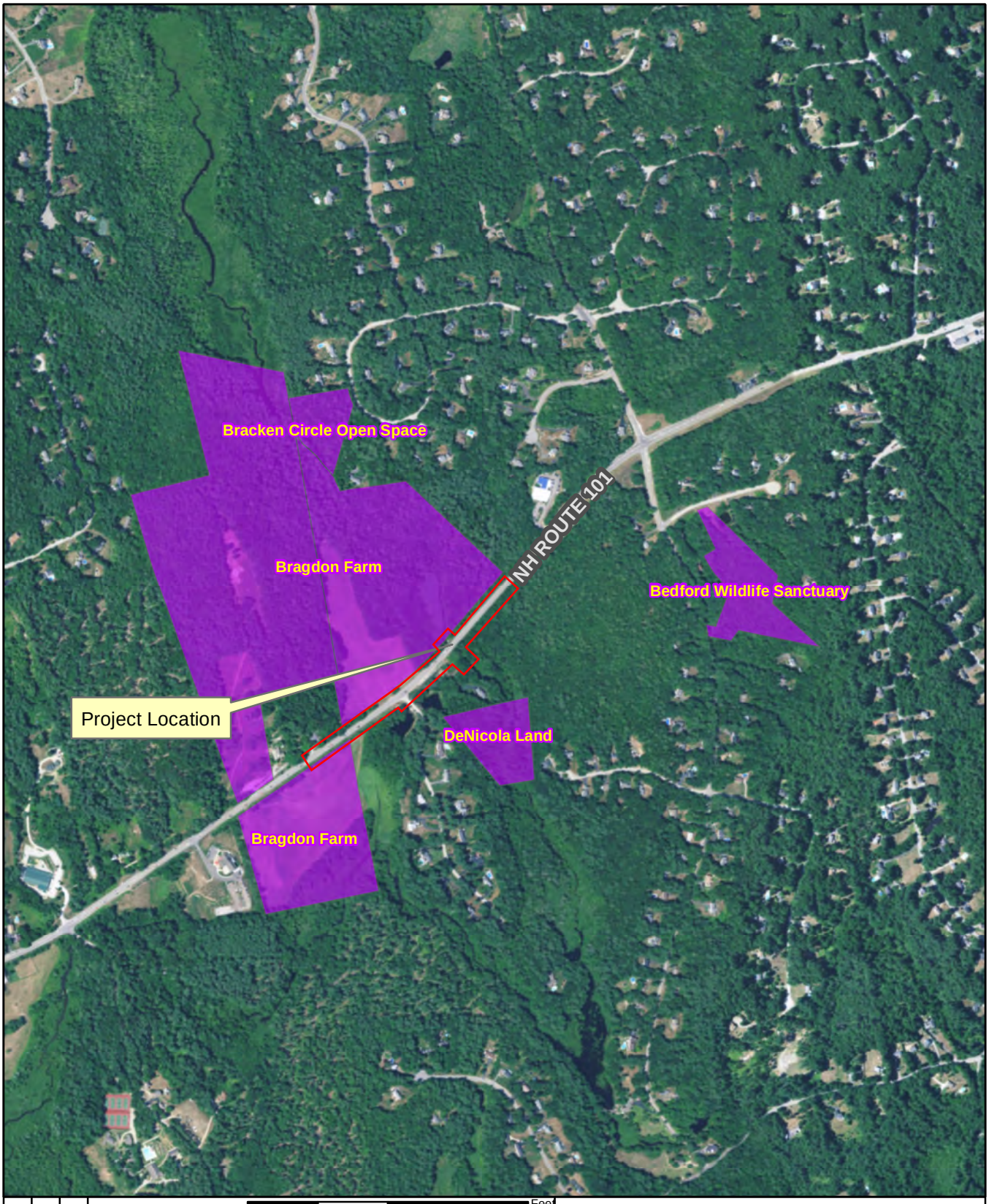
Date:
6/25/2019

NHDOT
BEDFORD 13692C
NH ROUTE 101 OVER PULPIT BROOK
Exhibit C - PFAS Map

25 Nashua Road Bedford, NH 03110

Prepared For: LEC Project: 23741.003 Prepared By: JO

Path: J:\Projects\PulpitBrook\Locus_062519.mxd



0 500 1,000 2,000 Feet

Project No: 23741.003

Drawn By: vchase

Date : 6/20/2017

NHDOT
BEDFORD 13692C
NH ROUTE 101 OVER PULPIT BROOK

EXHIBIT D - CONSERVED LANDS

SCALE: 1:12,000

NORMANDEAU ASSOCIATES
Environmental Consultants
25 Nashua Road Bedford, NH 03110
(603) 472-5191 www.normandeau.com

SEPTEMBER 2017

Exhibit E

ROUTE 101 CURVE# 1
PI= 205+09.42
N = 147680.37
E = 1009983.97
Δ = 14°10'00.00" LT
Dc= 1°59'59.32"
Ts= 356.02'
Lc = 708.40'
Rc = 2865.06'

STA. 203+75.94 ROW ℄ =
STA. 10+00 T.B. LANE ℄

LIMIT FILL SLOPE ROUNDING (TYP.)

7990 SF

CONVEYANCE SWALE

VEGETATED TREATMENT SWALE #1
LENGTH = 230'
BOTTOM WIDTH = 8'-0"
SLOPE = 1.0%

STONE BERM LEVEL SPREADER

MAINTENANCE ACCESS AREA

NH ROUTE 101

CONSTRUCTION ℄

N55°23'51.8"E

PC 201+53.40

MATCHLINE TO PREVIOUS

MATCHLINE TO NEXT

EXIST ROW

2'-0" STONE FILL, CLASS B (ITEM 585.2)

LIMIT OF FILL SLOPE (TYP.)

CLEARING LIMIT LINE (TYP.)

7121 SF

STA. 203+25, 24.0' RT.
END 50:1 TAPER

R=30'

PT 10+82.44

S44°59'40.3"E

TWIN BROOK LANE

PC 11+29.74

PT 12+28.88

TWIN BROOK CURVE# 1
PI= 10+41.27
N = 147579.15
E = 1009894.56
Δ = 6°44'53.42" LT
Dc= 8°11'06.41"
Ts= 41.27'
Lc = 82.44'
Rc = 700.00'

EXISTING GRANITE/WOOD RAIL TO REMAIN

TWIN BROOKCURVE# 2
PI= 11+79.54
N = 147481.30
E = 1009992.39
Δ = 13°21'58.68" RT
Dc= 13°28'52.90"
Ts= 49.80'
Lc = 99.15'
Rc = 425.00'

STA. 12+00
LIMIT OF WORK

1. 1.4'c dbl ceder
2. .8'c quad ceder
3. 1.2'c dbl ceder
4. 2.3'c dbl pine
5. 1.7'c pine
6. 1.2'c pine
7. 2.1'c pine
8. 1.8'c pine
9. .6'c elm
10. 1.5'c pine
11. .6'c maple
12. .6'c dbl maple
13. .7'c dbl oak
14. .5'c tri maple

PLAN

SCALE: 1" = 20'

20 0 20 40

SCALE IN FEET

LEGEND

= PERMANENT EASEMENT

= TEMPORARY EASEMENT

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

NH ROUTE 101
EASEMENT PLAN

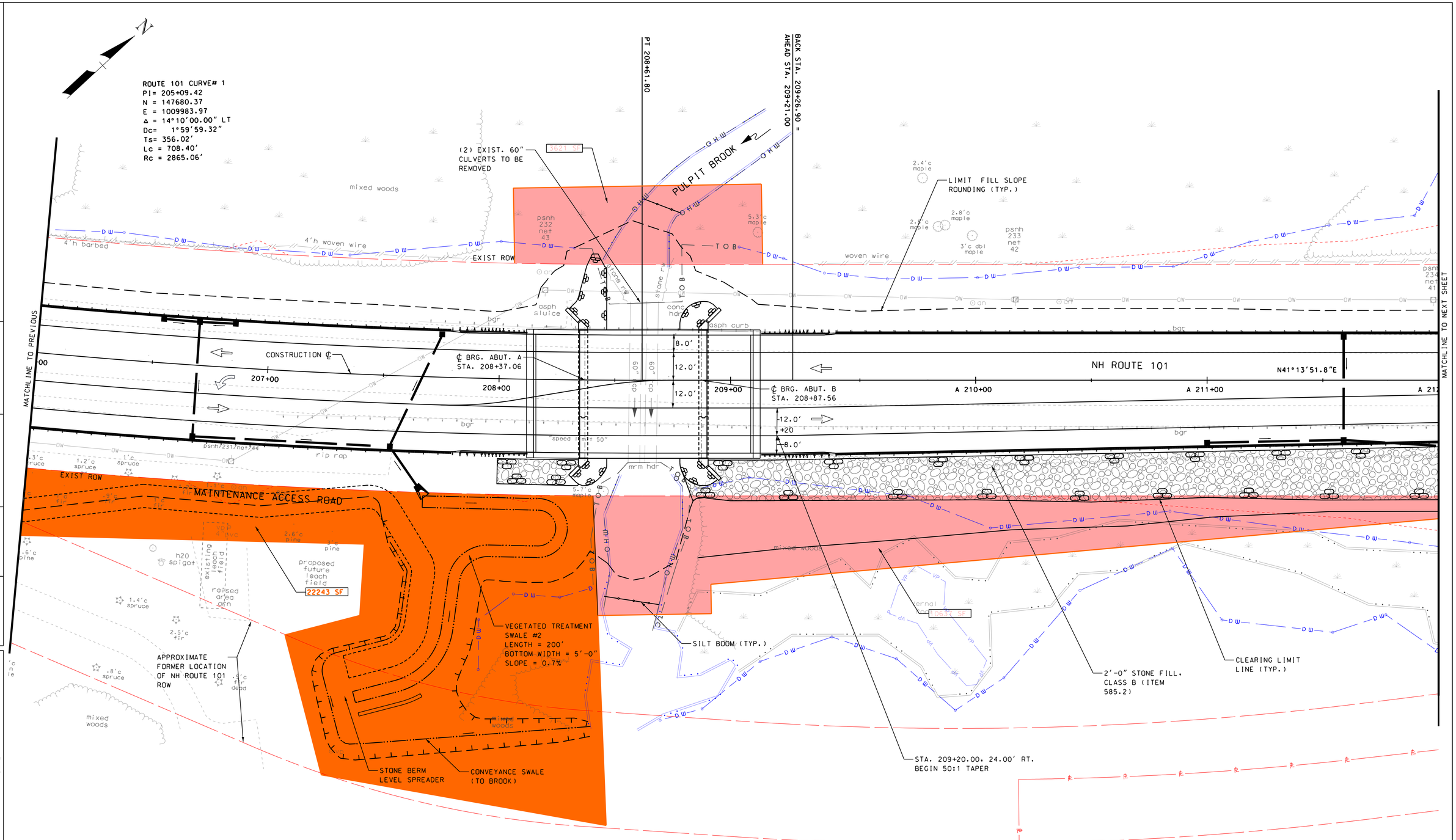
TOWN OF BEDFORD

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13692 Roadway Plan.dgn	13692C	1	3

REVISIONS AFTER PROPOSAL

STATION	STATION	DESCRIPTION	DATE	NUMBER

SDR PROCESSED	NAME1	DATE	DATE1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3	DATE	DATE3
AS BUILT DETAILS		DATE			



PLAN

SCALE: 1" = 20'

20 0 20 40

SCALE IN FEET

LEGEND

= PERMANENT EASEMENT

= TEMPORARY EASEMENT

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

NH ROUTE 101
EASEMENT PLAN

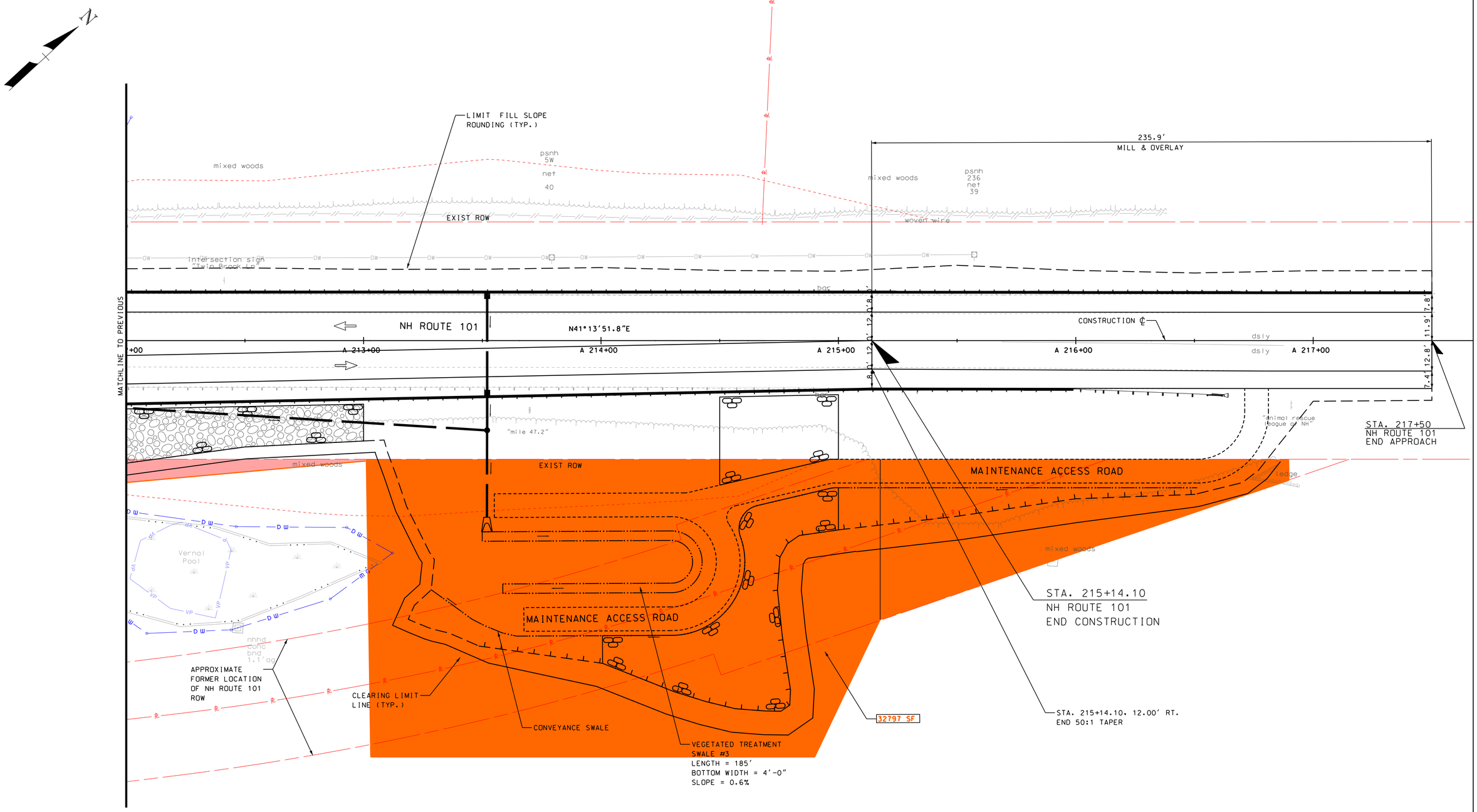
TOWN OF BEDFORD

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13692 Roadway Plan.dgn	13692C	2	3

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	



PLAN

SCALE: 1" = 20'

20 0 20 40

SCALE IN FEET

LEGEND

= PERMANENT EASEMENT

= TEMPORARY EASEMENT

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

NH ROUTE 101
EASEMENT PLAN

TOWN OF BEDFORD

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13692 Roadway Plan.dgn	13692C	3	3

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	

Exhibit F

From: Rob Clemens
To: Reczek, Jennifer
Cc: Lee Carbonneau; TMarshall@kleinfelder.com; Prehemo, Dan; Laurin, Marc; Bedard, Gerard
Subject: Re: FW: Bedford 13692C - NH 101 and Pulpit Brook project summary
Date: Thursday, October 10, 2019 9:24:48 AM

Jen, the Amherst Conservation Commission reviewed the NH DOT's plans for the Pulpit Brook Culvert Replacement project as they might impact the ACC's Bragdon Farm property abutting the west side of Rte. 101. The ACC concluded that the proposed treatment swale, along with the replacement bridge design would only improve water quality and wildlife habitat in the immediate vicinity of Pulpit Brook, and therefore are supportive of this project. We would like to continue to be notified of project updates or design changes as the project evolves. We appreciate NH DOT's efforts to keep us informed. Thanks. - Rob Clemens, Chair, Amherst Conservation Commission.

On Wed, Oct 9, 2019 at 3:19 PM Reczek, Jennifer <Jennifer.Reczek@dot.nh.gov> wrote:

> Hi Rob,
>
> We had our Pre-Hearing Utility meeting with the utility owners today. At this meeting we discuss the project and how it impacts the utilities and begin the discussion about needed relocations. Based on that meeting, it was noted that they would need to relocate the existing pole line closer to the Right-of-Way line. It is not expected to require work on the Town of Amherst parcel, but will likely require trimming of the branches overhanging the Right-of-Way for about 200' from the bridge toward the west. I wanted to provide this update ahead of your meeting this evening.
>
> Again, if you need any additional information, please let me know.
>
> Thank you,
> Jennifer
>
> Jennifer E. Reczek, P.E.
>
> NHDOT Project Manager
>
> 603-271-3401
>
> Jennifer.Reczek@dot.nh.gov
>
> ---
>
> **From:** Reczek, Jennifer
> **Sent:** Tuesday, October 08, 2019 6:27 PM

To: rhclemens@gmail.com
Cc: Lee Carbonneau (lcarbonneau@normandeau.com); TMarshall@kleinfelder.com; Prehemo, Dan; Laurin, Marc; Bedard, Gerard
Subject: Bedford 13692C - NH 101 and Pulpit Brook project summary

Hi Rob,

I know Lee sent the final minutes for our meeting in September, but I thought I would also pull together a quick summary to help you explain the project at your meeting tomorrow.

The project started back in 2016 as a project to address the bridge crossing (twin 5' pipes) of NH 101 and Pulpit Brook. The first public meeting to gather information was held in May 2016, then in February 2018, NHDOT held a Public Information Meeting to share the bridge replacement alternatives. At that time the overall project limits were pretty small with the impacts to the Town of Amherst parcel occurring right near the bridge for regrading and stabilization. The proposed bridge will widen the opening from the existing twin 5' pipes to a 48' clear span structure. The cross section will be shaped to maintain the narrow channel at low flows with an overbank area that can be used for animal migration and to accommodate flood flows. This change will reduce the risk of NH 101 being overtopped in future flood events. The hydraulic analysis indicates that this change will not have a negative impact on downstream properties or on the old roadway bridge.

At that meeting in 2018 we were asked to extend the project limits to include a left-turn lane for Twin Brook Lane. That request was brought to the Commissioner's office and ultimately we got approval to add the requested work. The final proposed action was presented at a third Public Informational Meeting in June 2019. Notices for these meetings were sent to the Town of Amherst, but whomever received them may not have realized that the Town owns land in Bedford and did not pass them along to the Conservation Commission.

While investigating the roadway widening required for the left-turn lane, it was decided to widen south. This is in the area where the temporary diversion will be constructed, helps to preserve the hydraulic clearance, and minimizes impacts to the conservation property. The project is located within an MS4 community, meaning that by the time the project is Advertised, we will need to comply with enhanced stormwater treatment requirements with the goal being that the entire disturbed/new impervious area be treated. This has required the creation of several treatment swales, including one along the Right-of-Way that impacts the Town of Amherst conservation land. These treatment swales will be grassed and dry most of the time. They are generally less intrusive than the more traditional stormwater detention ponds. NHDOT will need to be able to access the swales in the future for mowing and maintenance resulting in the easement that we are proposing along the swale.

At our meeting several questions and concerns were discussed:

- There were questions related to a drive access at a break in the guardrail on the south side of NH101A. This location is about 400' west of the project limits and will not be impacted by the work.

- There is an existing drive across from Twin Brook Lane that is used as access to the fields for haying. NHDOT will include contract provisions requiring the contractor to coordinate their work with the Amherst Conservation Commission to not disrupt the haying operations.

- There are no provisions in the Deed that would restrict the work as proposed.

- NHDOT does not specify contractor staging areas in our plans or proposals. The Town may negotiate directly with the contractor regarding potential staging areas.

There is a Public Hearing for the project scheduled for November 7, 2019 for the Right-of-Way process. As part of the Hearing and Right-of-Way process we will be seeking construction and maintenance easements for the work described above and as shown on the plan. I have requested that the Amherst Conservation Commission be included on the list of notified parties. In advance of that meeting, we will be posting the draft NEPA document on the project website, which will be finalized after the Hearing.

After you have reviewed the plan as a Commission, we would request that you provide a letter regarding the effect of the project on the parcel's conservation purpose.

If there is any additional information about the project I can provide in advance of your meeting please let me know.

Thank you,

Jennifer

Jennifer E. Reczek, P.E.

Project Manager

NH Department of Transportation

7 Hazen Drive, P.O. Box 483

Concord, NH 03301-0483

603-271-3401

Jennifer.Reczek@dot.nh.gov

Meeting Minutes

Date/Time: September 13, 2019
Place: Normandeau Associates, Inc. Office, Bedford, NH
Attendees: Jennifer Reczek, PE – NHDOT
Dan Prehemo, PE – NHDOT
Marc Laurin – NHDOT
Thomas Marshall, PD – Kleinfelder
Rob Clemens – Amherst Conservation Commission Chair
Dean Shankle – Amherst Town Administrator
Eric Hahn – Amherst Public Works Director
Lee Carbonneau – Normandeau Associates, Inc.

Thom Marshall provided a roll plan of the project area for the Pulpit Brook culvert replacement project on Route 101, and oriented the Amherst officials to the primary features and location of the Bragdon Farm property, an Amherst conservation parcel. Jennifer Reczek provided the project history and described how the project evolved after the 2016 and 2018 public meetings. A left turn lane was added to the project to address local safety concerns at the Twin Brook Lane intersection. This widened the road, which required lengthening the project to the east and west along Route 101 to accommodate the widening. The project now extends into Amherst. The additional road width was accommodated on the south side to limit impacts to Bragdon Farm and wetlands bordering Route 101 to the north. Rob Clemens asked about the stormwater treatment now included in the design. The access road for maintenance of the treatment swale along the Bragdon Farm property r will be vegetated, not gravel and within the existing ROW. Ms. Reczek explained that the new MS4 program requires that all runoff from new or rehabilitated impervious surfaces be treated, and described the three primary stormwater treatment swales added to the design, one of which extends slightly onto the Bragdon Farm conservation parcel. Curbing directs water to the collection drains and swales, which flows out across level spreaders.

Eric Hahn asked if the curbing and drainage features would affect with the Town's plans to improve access and parking on the Bragdon Farm property on the south side of Route 101, or access to the hayfield on the north side. Amherst has this parcel commercially hayed, and the Conservation Commission is the steward of this land. It was determined that the guard rail break allowing access to the south parcel is approximately 250 feet west of the project and will not be affected.

Ms. Reczek stated that the project construction contract can direct the contractor to coordinate work with the Conservation Commission to avoid interference with property management activities. Mr. Clemens, Dr. Shankle, and Mr. Hahn described the Town plans to provide a parking area and two-way access for recreational sledding on the Bragdon Farm property on the south side of Route 101. Currently, people park at the nearby winery, park along Route 101, or park on the north side and either dart across the highway or shuffle through a 5-foot culvert under the road. They suggested that the project could help develop the proposed parking lot as a construction staging area. Ms. Reczek stated that any such arrangement would need to be worked out directly with the contractors, not NHDOT.

The discussion turned to the replacement bridge itself. Ms. Reczek explained that the joints of the twin culverts are separating and during flood events, material can be washed out and weaken the roadbed. Mr. Hahn confirmed that Route 101 was underwater during the Mother's day flood. The recent replacement of a culvert upstream on Pulpit Brook will let even more flow to this crossing. The details of the bridge design on the north side of Route 101 was discussed. Mr. Clemens asked about the overall status of the project design and natural resource review. Ms. Reczek described the NEPA process for federal projects, and added that this process is nearing completion. The draft Categorical Exclusion document will be posted on the NHDOT project website (Bedford 13692C) prior to the public hearing scheduled for November 7th. . Lee Carbonneau stated that NH Natural Heritage Bureau data includes Blanding's turtles in the watershed, and NH Fish and Game reported that turtles have nested near the culvert, so the project will specify wildlife friendly erosion and sedimentation controls, and fencing will prevent turtles from nesting in the work area during construction. Impacts to wetlands and vernal pool buffers have been assessed, but the project does not meet the threshold for mitigation, and no wetland mitigation is proposed.

Mr. Clemens asked about invasive species, and described the invasive species control work that is taking place around the perimeter of the Bragdon Farm. Ms. Carbonneau will share Normandeau's invasive species mapping from the project area with the Conservation Commission. Mr. Clemens indicated that the Commission will be interested in wetlands, the Natural Heritage Bureau information and invasive species, and will review the stream crossing in the field.

The project schedule was discussed. The advertising date is the spring of 2021, and work will begin with construction of the traffic bypass. Construction will continue into 2022. The public hearing is November 7th, and notice will be provided to the Town. Ms. Reczek will also notice the Amherst Conservation Commission directly. Ms. Reczek described the ROW acquisition process, which requires a finding of necessity by a Governor and Council-appointed commission. Marc Laurin added information about the process for obtaining an easement on conservation land. Mr. Clemens asked if NHDOT has reviewed the Bragdon Farm deed for restrictions. This is the responsibility of the NHDOT ROW department and Ms. Reczek has not heard from them about this yet.

Action Items:

- Ms. Reczek will insure that the construction contract includes language requiring guardrail breaks to be maintained.
- Ms. Reczek will include language in the contract that requires the contractor to coordinate the work with the Amherst Conservation Commission, so they have access to the field when needed to maintain their haying operation.
- Ms. Reczek will follow up with ROW regarding possible deed restrictions for the Bragdon Property.
- Ms. Reczek will add the Conservation Commission to the list for public hearing notices.
- Ms. Carbonneau will send the invasive species map and Natural Heritage Bureau report to the Amherst Conservation Commission.
- The Amherst Conservation Commission will provide a letter regarding the project after their October 9th meeting.

- Mr. Marshall will update project plans and post them on the NHDOT website, and send them directly to the Amherst Conservation Commission for their review prior to their October 9th Conservation Commission Meeting.

Vicki Chase

From: Walker, Steve <Steve.Walker@nh.gov>
Sent: Tuesday, June 20, 2017 2:38 PM
To: Vicki Chase
Subject: RE: LCIP review

Thanks Vicki, There are no LCIP properties in the project area. Hope you and yours are doing well. Cheers steve

---

From: Vicki Chase [mailto:VChase@normandeau.com]
Sent: Tuesday, June 20, 2017 2:36 PM
To: Walker, Steve
Subject: LCIP review

Hi Steve,

Normandeau is assisting Kleinfelder and the New Hampshire Department of Transportation with permitting and documentation for the rehabilitation or replacement of the bridge carrying NH Route 101 over Pulpit Brook in Bedford. We would like to know if there are any projects that have received funding from the LCIP program in the vicinity of the project. There is a conservation parcel west of the bridge (Bragdon Farm) that is owned by the Town of Amherst.

Thanks for your help. Location map and conservation land map attached.

VICKI CHASE, CWS
Principal Regulatory Specialist
NORMANDEAU ASSOCIATES, INC.
25 Nashua Road, Bedford, NH 03110
603-637-1111(direct) | 603-731-7653 (cell)
vchase@normandeau.com www.normandeau.com

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Please consider the environment before printing this e-mail.

From: DNCR: Land & Water Conservation Fund
To: Lee Carbonneau
Subject: RE: NHDOT Project - Bedford 13692C - Route 101 over Pulpit Brook
Date: Monday, August 12, 2019 9:57:00 AM
Attachments: image009.png
image010.png
image011.png
image012.png

Lee,

Pulpit Rock Conservation Area in the town of Bedford is protected under the LWCF program. Based on the map provided though it does not look like the road project abuts that property and should be clear of any impacts on LWCF properties. Is the projects area all within the DOT right-of-way?

Thanks
Eric

Eric Feldbaum-Community Recreation Specialist/CPRP
Division of Parks and Recreation
NH Department of Natural and Cultural Resources
172 Pembroke Road
Concord, NH 03301
Phone 603.271.3556
Fax 603.271.3553
eric.feldbaum@dncr.nh.gov
www.nhstateparks.org

From: Lee Carbonneau <lcarbonneau@normandeau.com>
Sent: Friday, August 9, 2019 10:47 AM
To: DNCR: Land & Water Conservation Fund <LWCF@dncr.nh.gov>
Subject: FW: NHDOT Project - Bedford 13692C - Route 101 over Pulpit Brook

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

Hi Bill –
I am just following up on this request for information about LWCF lands in the vicinity of the Pulpit Brook Project. Thanks!
Lee

Lee E. Carbonneau
Normandeau Associates, Inc.
(603) 637-1150 (direct) (603) 714-3084 (cell)

From: Lee Carbonneau
Sent: Wednesday, June 26, 2019 9:48 AM
To: 'bill.gegas@dred.state.nh.us' <bill.gegas@dred.state.nh.us>
Cc: Laurin, Marc <Marc.Laurin@dot.nh.gov>; Thomas Marshall <TMarshall@kleinfelder.com>
Subject: NHDOT Project - Bedford 13692C - Route 101 over Pulpit Brook

Good Morning,
Normandeau is assisting Kleinfelder and the New Hampshire Department of Transportation with permitting and NEPA documentation for the replacement of the bridge carrying NH Route 101 over Pulpit Brook in Bedford. The proposed project will replace the deficient crossing with a 48-foot bridge, and requires work in Bedford and Amherst. A project location map is attached. Please let me know if there are any lands conserved with Land and Water Conservation Funds in the project area. Thank you!

Lee

LEE CARBONNEAU, PWS, NHCWS
Senior Principal Scientist
NORMANDEAU ASSOCIATES, INC.
603-637-1150 (direct) 603-714-3084 (cell)
lcarbonneau@normandeau.com www.normandeau.com

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Please consider the environment before printing this e-mail.

Vicki Chase

From: Paula Bellemore <pbellemore@lchip.org>
Sent: Tuesday, June 20, 2017 4:09 PM
To: Vicki Chase
Subject: RE: LCHIP review NH Route 101 over Pulpit Brook in Bedford

Vicki,
LCHIP does not have any protected resources in the service area described.

Paula

From: Vicki Chase [mailto:VChase@normandeau.com]
Sent: Tuesday, June 20, 2017 2:48 PM
To: Paula Bellemore
Subject: LCHIP review NH Route 101 over Pulpit Brook in Bedford

Good afternoon,

Normandeau is assisting Kleinfelder and the New Hampshire Department of Transportation with permitting and documentation for the rehabilitation or replacement of the bridge carrying NH Route 101 over Pulpit Brook in Bedford. We would like to know if there are any projects that have received funding from the LCHIP program in the vicinity of the project. There is a conservation parcel west of the bridge (Bragdon Farm) that is owned by the Town of Amherst.

Location map and conservation land map attached.

VICKI CHASE, CWS
Principal Regulatory Specialist
NORMANDEAU ASSOCIATES, INC.
25 Nashua Road, Bedford, NH 03110
603-637-1111(direct) | 603-731-7653 (cell)
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U.S. Department of Agriculture

Exhibit J

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 10/8/19
Name Of Project Bedford, 13692C	Federal Agency Involved FHWA
Proposed Land Use NHDOT proposes to replace a structurally defici	County And State Hillsborough County, Town of Bedford, NH
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 10/8/19

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☑	No ☐	Acres Irrigated 0	Average Farm Size 150
Major Crop*(s)* corn silage, grass legume hay	Farmable Land In Govt. Jurisdiction Acres: 387,956 % 63		Amount Of Farmland As Defined in FPPA Acres: 209269 % 37
Name Of Land Evaluation System Used Hillsborough County	Name Of Local Site Assessment System NA		Date Land Evaluation Returned By NRCS 10/9/19

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	0.4			
B. Total Acres To Be Converted Indirectly	0.0			
C. Total Acres In Site	0.4	0.0	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	0.0			
B. Total Acres Statewide And Local Important Farmland	0.4			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.0			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	34.0			
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	58	0	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Nonurban Use	15	3			
2. Perimeter In Nonurban Use	10	10			
3. Percent Of Site Being Farmed	20	0			
4. Protection Provided By State And Local Government	20	20			
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average	10	0			
8. Creation Of Nonfarmable Farmland	25	0			
9. Availability Of Farm Support Services	5	5			
10. On-Farm Investments	20	10			
11. Effects Of Conversion On Farm Support Services	25	0			
12. Compatibility With Existing Agricultural Use	10	0			
TOTAL SITE ASSESSMENT POINTS	160	48	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	58	0	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	48	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	106	0	0	0

Site Selected: Site A	Date Of Selection 10/11/19	Was A Local Site Assessment Used? Yes ☐ No ☒

Reason For Selection: The proposed conversion is consistent with the FPPA and FHWA's policies.

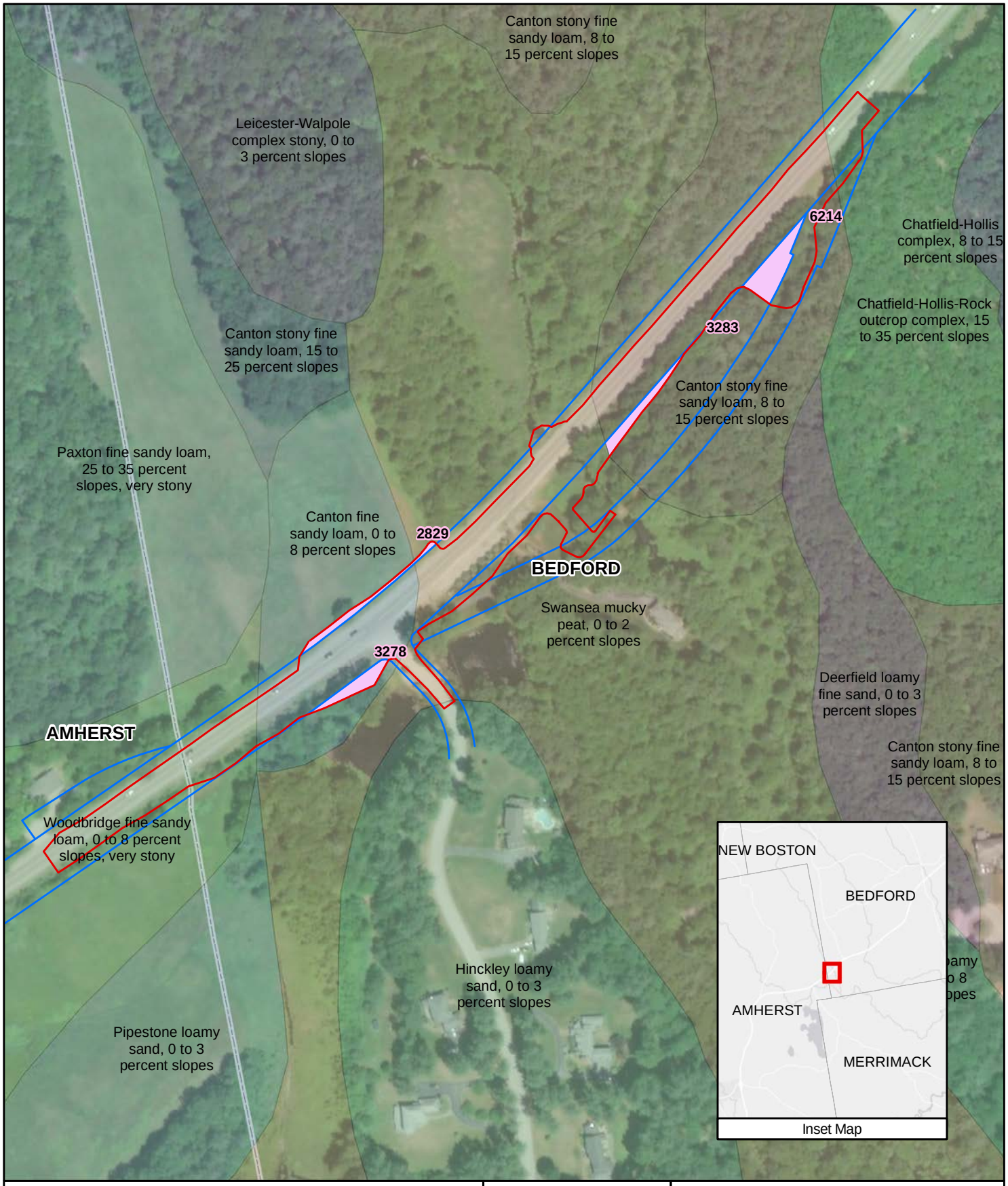
The proposed impacts will enhance water quality by providing a storm water treatment swale with minimal impacts to adjacent farmland.

(See Instructions on reverse side)

This form was electronically produced by National Production Services Staff

Clear Form

Form AD-1006 (10-83)



N

Project Limits
Existing ROW
Farmland Soils Impact (SF)
Town boundary

0 125 250 500 Feet

NORMANDEAU ASSOCIATES
Environmental Consultants

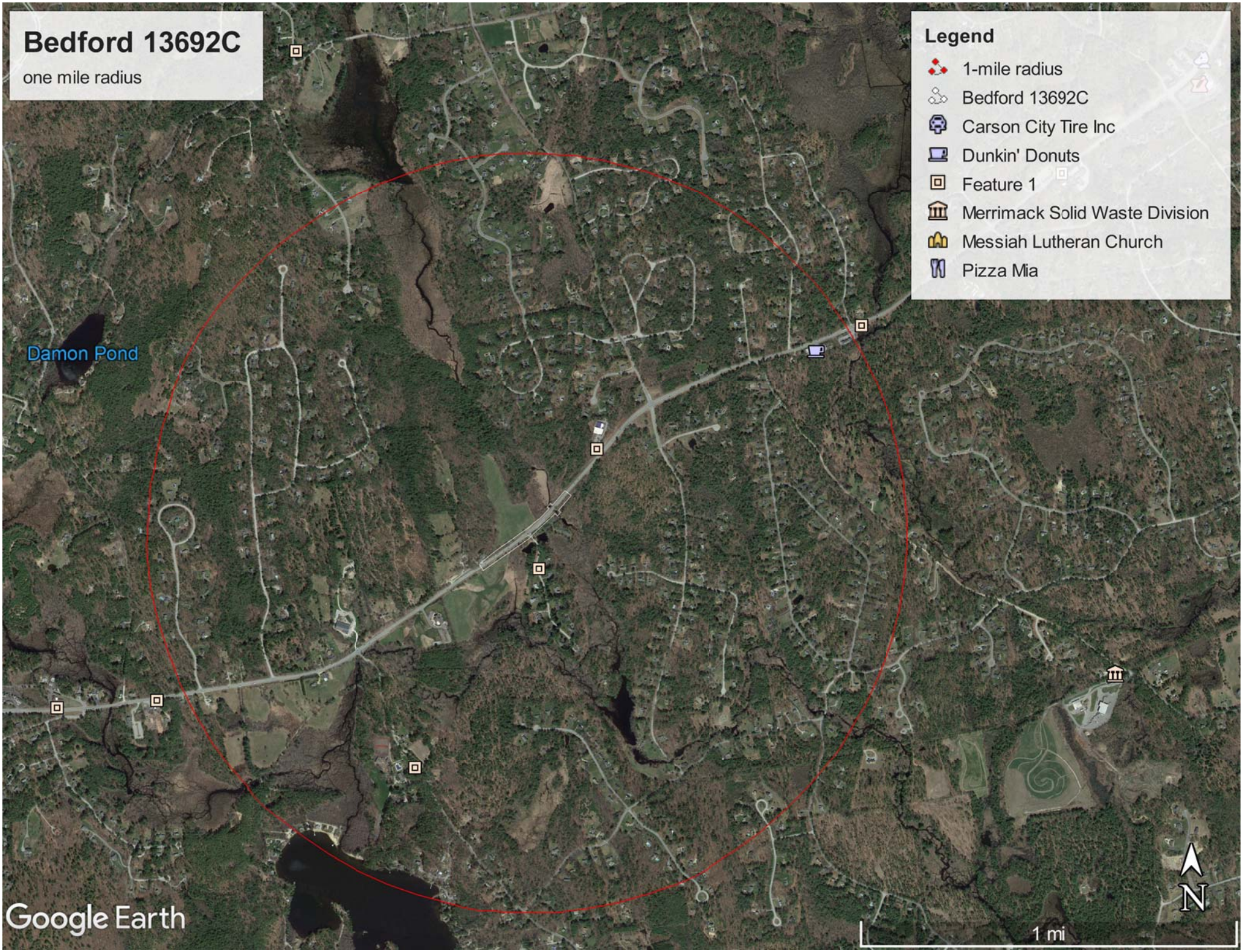
Date: 10/3/2019

NHDOT
BEDFORD 13692C
NH ROUTE 101 OVER PULPIT BROOK
SOILS MAP

25 Nashua Road Bedford, NH 03110

Prepared For: LEC Project: 23741.003 Prepared By: JO

Path: J:\Projects\PulpitBrook\PB_SoilMap_100219.mxd


Bedford 13692C
one mile radius
Legend
1-mile radius
Bedford 13692C
Carson City Tire Inc
Dunkin' Donuts
Feature 1
Merrimack Solid Waste Division
Messiah Lutheran Church
Pizza Mia
Damon Pond
Google Earth
1 mi
N

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
INTER-OFFICE COMMUNICATION

DATE: September 6, 2019

FROM: Jay Ankenbrock, Chief of Labor Compliance, Executive Office

TO: Marc Laurin, Bureau of Environment

RE: Environmental Justice Population Analysis, Project: **Bedford 13692C**

The attached analysis and recommendations are provided pursuant to Title VI of the Civil Rights Act of 1964 and Executive Orders 12898 & 13166. The intent of these statutes is to ensure fair and full participation and the equal receipt of benefits under Federally-assisted programs. Your efforts to accommodate and encourage participation by traditionally underserved groups, where significant, will ensure program access and minimize the potential for disproportionate project impacts on protected groups.

The table entitled "EJ Population Analysis" shows the presence of protected groups that might be impacted by the project. Personnel responsible for project planning/design and the coordination of public meetings/hearings should use this analysis to guide their outreach efforts under Title VI and in support of developing a context sensitive solution. Based on the availability of information and where appropriate, we have included specific outreach recommendations to facilitate public comment from underrepresented groups.

Please note that US Census Bureau, American Community Survey (ACS) 2012-2016 data is used to provide to an EJ Population analysis for the project. If you have questions regarding this analysis, please contact me @ 271-2467.

Encls: EJ Population Analysis

Cc: Michael O'Donnell, Bureau of Traffic
Kevin Nyhan, Administrator, Bureau of Environment
Paul Coddington, Bureau of Right-of-Way

EJ Population Analysis for Project: Bedford 13692C

STUDY AREA	AVG% Elderly Population	AVG % Minority Population	AVG % Low-income Household Population**	AVG% LEP
Impacted Area-Hillsborough County, 1 mile radius of project area.	7.60%	4.44%	3.01%	0.0%
Surrounding Area-Hillsborough County, 3 mile radius of project area.	9.41%	5.10%	4.34%	0.03%

REMARKS:

* The population percentage identified is meaningfully greater than the surrounding area and constitutes an EJ population. Characteristics of this particular study area indicate that targeted outreach efforts to solicit public participation should be taken.

** Low-income population for this analysis is defined as household income of less than $25,000.

LEP Definition: Where there is a population of people who speak English as a second language less than well (as indicated by the U.S. Census data). When a particular LEP language group constitutes 5% of the impacted population, the Department is required to translate public information meeting notices and take appropriate measures to ensure language access. If this requirement exists, the Project Manager should contact the Title VI Coordinator for further assistance.

Impacted Area: The impacted area was defined by the project limits and a 1 mile radius the immediate vicinity.

Surrounding Area: The surrounding area was defined by a 3 mile radius (excluding the impact area) of the project area.

Special Considerations: Special consideration should be given to any project features that affect pedestrian accessibility. This project constitutes an alteration in accordance with Title II of the Americans with Disabilities Act. As such, minimum ADAAG accessibility requirements apply, unless deemed technically infeasible.

ADAAG was adopted as the 2010 Standards for Accessible Design on July 23, 2010 by the DOJ http://www.ada.gov/reg3a.html#Anchor-Appendix-52467

For more information, I have provided a link to the Draft Public Rights-of-Way Guidelines (PROWAG

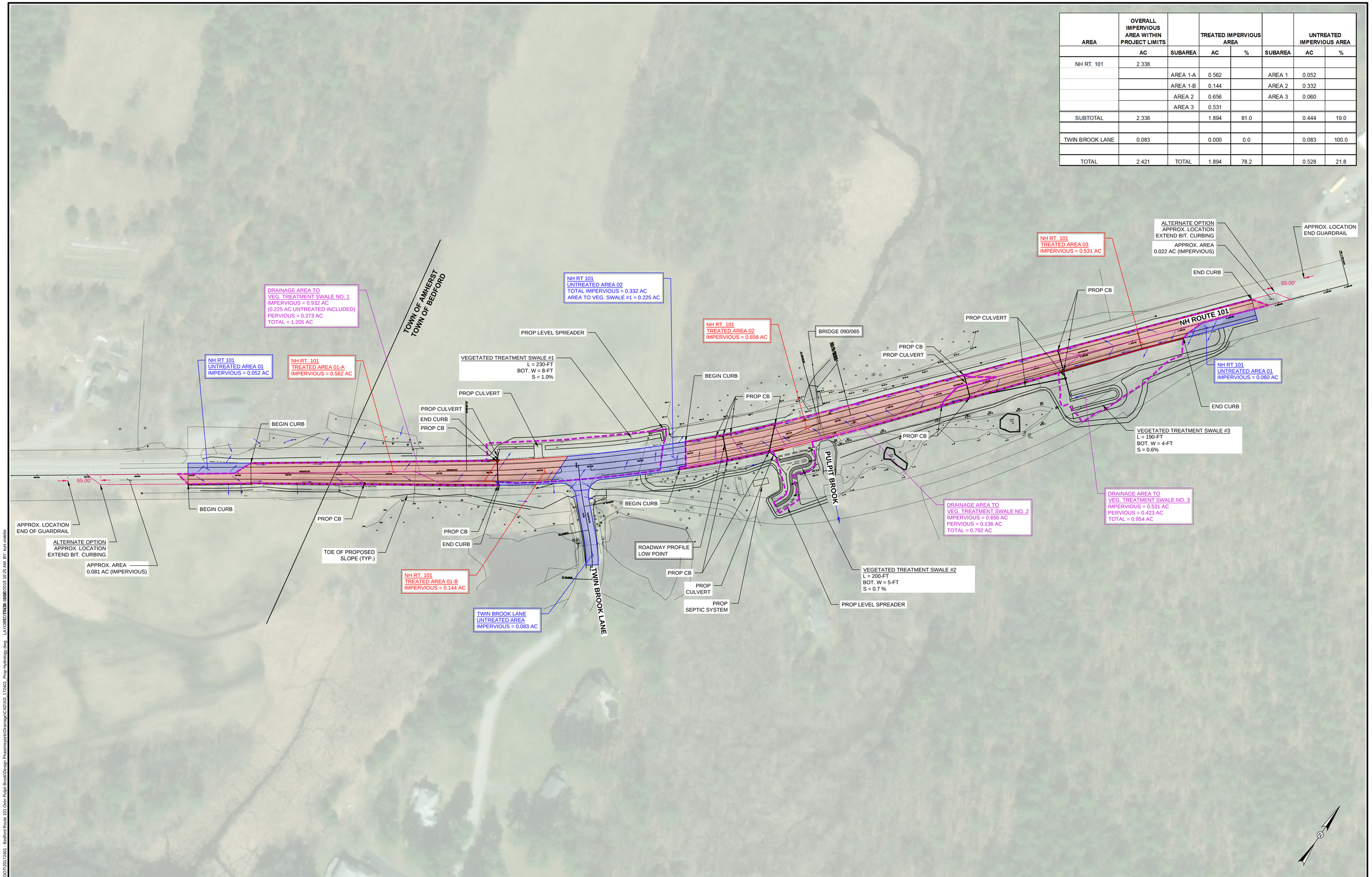
The Draft PROWAG (Revised Draft Guidelines for Accessible Public Rights-of-Way) was released in November 2005 and has not been adopted by DOJ or FHWA
In 2006, FHWA issued a statement that the Draft PROWAG is to be considered best practice for making public rights-of-way accessible
http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/background/revised-draft-guidelines
The Draft PROWAG includes specifications for detectable warnings and gives detailed information regarding their installation on curb ramps and on blended curbs, including at street corners, at cut-through islands and medians, and in front of buildings. It also has sections on accessible pedestrian signals (APS), roundabouts, channelized turn lanes, protruding objects, channelizing devices and barriers, and tactile and print signs.

Outreach Recommendations:

Resident/Agency Address	Org/Housing Type	Contact Name/Number
Carlyle Place 40 Route 101 Bedford, NH 03110	Seniors	603-472-2000
NH Housing Finance Authority 32 Constitution Dr. Bedford, NH 03110	Low-Income	603-472-8623
Pine Village Estates 45 Ridgewood Rd Bedford, NH 03110	Seniors/Low-Income	603-641-2163
Town of Bedford 24 North Amherst Road Bedford, NH 03110		Sally Kellar 603-472-3550
Bedford Public Library 3 Meetinghouse Road Bedford, NH 03110		Mary Ann Senatro 603-472-2300

Bedford Community Television 10 Meetinghouse Road Bedford, NH 03110	Bill Jennings 603-427-8288 bctv@bedfordtv.com
Bedford Parks & Rec 24 North Amherst Road Bedford, NH 03110	Danielle Basora 603-472-5242
Greater Manchester Chamber of Commerce 54 Hanover St Manchester, NH 03101	Lauren Getts 603-792-4104
VFW Post 8401 PO Box 10144 Bedford, NH 03110	
American Legion NH Post 54 3 Meeting House Rd Bedford, NH 03110	
USPS Bedford 25 South River Rd Suite 110 Bedford, NH 03110	603-627-0517
WBNH-LPFM 10 Meetinghouse Rd Bedford, NH 03110	Harry Kozlowski 603-472-5242 x293
Town of Amherst 2 Main Street Amherst, NH 03031	Nancy Demers 603-673-6041
Amherst Town Library 14 Main Street Amherst, NH 03031	Amy Lapointe 603-673-2288
USPS Amherst 199 State Rte 101 Unit D Amherst, NH 03031	603-673-4132

AREA	OVERALL IMPERVIOUS AREA WITHIN PROJECT LIMITS		TREATED IMPERVIOUS AREA			UNTREATED IMPERVIOUS AREA	
	AC	SUBAREA	AC	%	SUBAREA	AC	%
NH RT. 101	2.338						
		AREA 1-A	0.562		AREA 1	0.052	
		AREA 1-B	0.144		AREA 2	0.332	
		AREA 2	0.656		AREA 3	0.060	
		AREA 3	0.531				
SUBTOTAL	2.338		1.894	81.0		0.444	19.0
TWIN BROOK LANE	0.083		0.000	0.0		0.083	100.0
TOTAL	2.421	TOTAL	1.894	78.2		0.528	21.8



0 80 160
SCALE: 1" = 80' SCALE IN FEET

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KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.	172401
DRAWN BY	K.VIOLETTE
CHECKED BY	-
DATE:	09-25-2019
REVISED:	10-08-2019

PRE-HEARING DRAINAGE AND BMP REVIEW

REPLACEMENT OF BRIDGE NO. 090/065
NH RT. 101 OVER PULPIT BROOK
NEW HAMPSHIRE

FIGURE
PD-1
Exhibit L
PAGE: 1 OF 1

CAD FILE: G:_clients\NH DOT\20172401 - Bedford Route 101 Over Pulpit Brook\Design Phase\reports\Drainage\CAD\XD_172401_Prop Hydrology.dwg LAYOUT: 10/08/2019 10:25 AM BY: kurt violette

Exhibit M

ROUTE 101 CURVE# 1
PI= 205+09.42
N = 147680.37
E = 1009983.97
Δ = 14°10'00.00" LT
Dc= 1°59'59.32"
Ts= 356.02'
Lc = 708.40'
Rc = 2865.06'

PT 208+61.80

BACK STA. 209+26.90 =
AHEAD STA. 209+21.00

(2) EXIST. 60" CULVERTS TO BE REMOVED

711 SF

1154 SF

PULPIT BROOK

TOB

LIMIT FILL SLOPE ROUNDING (TYP.)

mixed woods

4'h barbed

4'h woven wire

EXIST ROW

woven wire

asph sluice

conc hdr

asph curb

bgr

MATCHLINE TO PREVIOUS

CONSTRUCTION ℄

℄ BRG. ABUT. A
STA. 208+37.06

℄ BRG. ABUT. B
STA. 208+87.56

207+00

208+00

209+00

A 210+00

A 211+00

NH ROUTE 101

N41°13'51.8"E

MATCHLINE TO NEXT SHEET

8.0'

12.0'

12.0'

12.0'

+20

8.0'

"speed limit 50"

rip rap

EXIST ROW

MAINTENANCE ACCESS ROAD

h20 spigot

existing leach field

raised area

proposed future leach field

3187 SF

2300 SF

Vernal Pool

VEGETATED TREATMENT SWALE #2
LENGTH = 200'
BOTTOM WIDTH = 5'-0"
SLOPE = 0.7%

SILT BOOM (TYP.)

APPROXIMATE FORMER LOCATION OF NH ROUTE 101 ROW

STONE BERM LEVEL SPREADER

CONVEYANCE SWALE (TO BROOK)

STA. 209+20.00, 24.00' RT.
BEGIN 50:1 TAPER

2'-0" STONE FILL, CLASS B (ITEM 585.2)

CLEARING LIMIT LINE (TYP.)

PLAN

SCALE: 1" = 20'

20 0 20 40

SCALE IN FEET

LEGEND

= PERMANENT WETLAND IMPACT

= TEMPORARY WETLAND IMPACT

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

0 1 2 3

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

NH ROUTE 101 WETLAND IMPACT PLAN

TOWN OF BEDFORD

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13692 Roadway Plan.dgn	13692C	1	1

NUMBER	DATE	STATION	STATION	DESCRIPTION

REVISIONS AFTER PROPOSAL

SOR PROCESSED	NAME1	DATE	DATE1	DATE	DATE
NEW DESIGN	NAME2	DATE	DATE2		
SHEET CHECKED	NAME3	DATE	DATE3		
AS BUILT DETAILS		DATE			

Exhibit N

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: June 19, 2019
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Matt Urban
Sarah Large
Andrew O'Sullivan
Doug Locker
Tim Boodey
Arin Mills
Chris Carucci
Julius Nemeth
Jennifer Reczek
Anthony Weatherbee
Maggie Baldwin
Jason Abdulla
Marc Laurin
Ralph Sanders
Tim Mallette
Jon Evans
Wendy Johnson
Tom Jameson
Chelsea Noyes

ACOE
Mike Hicks

NHDES
Collis Adams
Karl Benedict
Andrew Madison

NHF&G
Carol Henderson

NH NHB
Amy Lamb

LCHIP
Paula Bellemore

NH DNCR
Tracey Boisvert

Consultants/Public Participants
Lee Carbonneau
Thomas Marshall
Sarah Barnum
Chris Fournier
Christine Perron
Burr Phillips
Greg Howard
Jed Merrow

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH: *(minutes on subsequent pages)*

Postpone finalizing the April 17, 2019 Meeting Minutes 2
Northwood, #42363 2
Bedford, #13962-C (X-004(254)) 3
Deerfield, #42279 5
Woodstock, #42618 6
Littleton, #40244 6
Colebrook-Columbia, #42313 6
Shelburne, #42426 (X-A004(842)) 8
Dummer-Cambridge-Errol, #16304B (X-A004(699)) 11
Nashua-Merrimack-Bedford, #13761 15
Conway, #41755 16
Newington-Dover, #11238S (NHS-027-1(037)) 19

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

Karl Benedict asked for clarification that the Q100 showed an increase in capacity and Chris Carucci confirmed that the proposed culvert will pass the Q100 with headwater elevation just below the adjacent garage elevation.

Matt Urban clarified that since the new culvert will be shorter and there is existing riprap the project would be considered self-mitigating. Matt Urban clarified that since the new culvert will be shorter and there is existing riprap the project may be considered self-mitigating.

Karl Benedict noted additional discussion about addressing stormwater treatment and the limited areas to provide treatment. My additional notes on this one were that abutter permissions would be required and provision of a stream diversion plan.

Karl Benedict asked if there was a specification sheet for the streambed material. Chris said the material would be a mixture of material designed to match the existing stream bed material, along with a placement specification. Colis Adams asked if an open bottom culvert was considered. Chris Carucci said this was not evaluated as a possible alternative for concerns for potential scour at the footing which could lead to deeper embedment.

Mike Hicks asked about the IPaC and 4(d) rule, Arin said both were done, and Northern long eared bat was the only species resulting from the USFWS species list. Mike also asked about floodplain impacts and Arin stated there were no anticipated impacts. Chris determined the hydraulic model shows no change in flow rate or depth in the channel immediately downstream of the culvert.

Collis Adams asked if treatment from the 12” cmp outlet was considered. Chris Carucci said that was not considered due to space constraints within the project area. The catch basin and associated pipe are within the private land and treatment would require work in the front lawn. Chris Carucci said catch basins typically have a sump which provides sediment retention and that treatment options would be further investigated.

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

Bedford, #13962-C (X-004(254))

Thom Marshall described the existing bridge and changes to the replacement design since the Project was presented in this venue in September of 2017. The two five-foot diameter culverts will be replaced by a 48-ft clear span precast box-beam bridge. Stormwater treatment swales have been added, and a left turning lane into Twin Brook Road was added based on input at the public meeting. The bankfull channel is 22’ wide. A 4-ft 8-inch wide wildlife corridor will be constructed adjacent to each side of the stream channel below the riprap. A temporary bypass will be constructed as close to the south side of the existing road as possible, and construction work on the bridge will be phased.

L. Carbonneau reviewed natural resources. The Aquatic Restoration Mapper shows a flood hazard flag and notes that the existing culvert is undersized, has reduced passage and is in poor condition. Pulpit Brook is a Tier 3 stream with a 5.3 square mile watershed. There is a 100-year floodplain and floodway, but a hydraulic analysis shows that the new crossing decreases flood levels significantly upstream and results in no changes downstream. Fill will be removed around the

culverts. There are forested and scrub-shrub wetlands on both sides of Route 101, and two vernal pools on the south side of Route 101.

State listed Blanding's turtles have been recorded as being present within the project limits by NH NHB, and NHF&G requested that no plastic netting be used, and timing restrictions and protective fencing should be incorporated to avoid nesting turtle impacts. Northern long-eared bats will be reviewed under FHWA's range-wide programmatic consultation with the USFWS.

Preliminary impact estimates are 5,615 sf permanent wetland impacts, which includes 3,000 sf of stream channel grading to tie the restored stream in with the rest of the channel and fill in scour holes. We believed this might be more akin to a temporary impact as it is part of the stream restoration. There will also be 2,240 sf of temporary impacts mostly near the stream crossing for siltation devices and water handling structures. These areas will be restored.

Normandeau conducted a vernal pool survey, and found two vernal pools in the forested wetland to the south of the road. No fill will be placed in the pools. The USACE value assessment indicates that these are Medium value pools. A GIS analysis of the post-construction condition revealed that impacts to the vernal pool envelopes and 750-ft buffers were not sufficient to drop the value of either pool from Medium to Low, so it is expected that mitigating for indirect vernal pool impacts will not be required. Sufficient information on stream morphology was collected for the bridge design so that the stream channel can be restored, so we assumed that to be self-mitigating. Indirect edge impacts to wetlands have not been quantified, but given the permanent impact area is 5,615 sf, the project should be below the 10,000 sf mitigation threshold, and no compensatory mitigation is proposed.

Conservation lands are present on the north and south sides of Route 101. The Bragdon Farm is approximately 111 acres, and is owned by the Town of Amherst. The south side is a local sledding hill, and the north side has a former ski area and hiking trails. The project will require Permanent slope/drainage easements (5,489 sf) as well as a temporary construction easement (1,904 sf) near the bridge on this conservation parcel. The potential for 4(f) impacts are still being investigated, but are not anticipated.

C. Henderson asked for details regarding the wildlife shelf under the bridge, and stated that it should be flat/level. T. Marshall stated that it will be level, and will likely consist of regraded channel material. He noted the difficulty of growing vegetation in the center of a bridge span due to shade.

M. Hicks asked when the bridge was constructed. J. Reczek replied that it was constructed in the 1950's. M. Hicks stated that FHWA would be the lead agency, and asked about Section 6(f) coordination. J. Reczek provided an overview of the archeological and historical determinations, confirming no adverse effects. M. Hicks noted that coordination with the Coast Guard would be required. S. Large stated that the Coast Guard has provided email confirmation that Pulpit Brook was not considered navigable and no further coordination was required. She will forward this information to L. Carbonneau.

K. Benedict stated that the work in the stream channel would be considered a permanent impact. He asked for the stream channel linear impact length, which T. Marshall estimated to be approximately 50 feet X 3, or 150-200 feet. K. Benedict asked how the temporary bypass would be handled after construction and if there would be downstream impacts. T. Marshall and L. Carbonneau stated that the temporary culverts and fill would be removed and the stream would be restored. K. Benedict noted that a restoration plan and longitudinal profile for the restores streambed would be necessary. L. Carbonneau stated that sufficient information was collected during the hydraulic analysis to restore the stream channel and confirm that no downstream impacts would occur, including to the old bridge just below the Project area.

L. Carbonneau asked if there was concurrence that mitigation will not be required. It was noted that further coordination with Lori Sommer and Mark Kern will be necessary, as they were not present at today's meeting.

M. Hicks asked when the Project would be built. J. Reczek replied that construction was expected to take place in 2021 and 2022. C. Henderson asked if construction would be coordinated with the F.E. Everett Turnpike Project also in Bedford and neighboring towns, and J. Reczek replied that there was no plan to coordinate the two projects.

Follow-up: L Carbonneau spoke with Lori Sommer by phone on June 27, 2019 regarding the Pulpit Brook project wetland impacts. The discussion included permanent wetland impact quantities, the "self-mitigating" stream crossing, and the assessment of vernal pool buffer impacts. L. Sommer said that she had also discussed the project with K. Benedict, who attended the Natural Resource Coordination meeting on June 19th. They both concur that compensatory mitigation does not appear to be necessary.

This project was previously discussed at the 9/20/2017 Monthly Natural Resource Agency Coordination Meeting.

Deerfield, #42279

Tim Mallette started the meeting describing the severe scour issue at several different locations on both abutments of the three sided concrete box culvert. The boulders deposited at the outlet of the culvert was also evidence of the high flows the culvert was subjected to. Tim Boodey explained that the footings will be underpinned with concrete to fill voids and class III Rip Rap will be placed in front of the footings 1' wide. Tim Mallette recommends the simulated stream bed material, 585.3401 extend several feet beyond the inlet and outlet of the box culvert.

Tim Boodey and Tim Mallette discussed placing simulated stream bed material, Item 585.3401. Carol Henderson from NHF & G was agreeable with this proposal.

Karl Benedict NH DES asked how much hydraulic reduction will there be after placing the materials, 585.3401, Class III Rip Rap and concrete in the culvert? Tim explained the culvert will pass the 100 year event at 400 CFS.

Tim Mallette and Ralph Sanders will obtain more survey data to determine the pre and post analysis flow rates.

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: September 20, 2017
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Matt Urban
Sarah Large
Ron Crickard
Mark Hemmerlein
Marc Laurin
Meli Dube
Josh Lafond
Kathy Corliss
Jennifer Reczek
Joseph Adams
Charles Willeke
Jason Trembley
John Butler
Tobey Reynolds
Jim Kirouac
Tim Mallette
James Bowles

ACOE
Mike Hicks

EPA
Mark Kern

NHDES
Gino Infascelli
Chris Williams

NHF&G
Carol Henderson

NH Natural Heritage Bureau
Amy Lamb

Consultants/Public Participants
Joshua McAllister
Vicki Chase
Thomas Marshal
Darren Blood
Kim Smith
Christine Perron

(When viewing these minutes online, click on an attendee to send an e-mail)

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH:
(minutes on subsequent pages)

Finalization August 16, 2017 Meeting Minutes 2
Northfield, #29756 (Non-Federal) 2
Newport, #29763 (Non-Federal) 3
Bedford, #13692-C (X-004(254)) 4
Newport, #16109 (X-A001) 6
Durham, #16236 (X-A0001(202) 7
Barnstead, #14121 (X-A000(208)) 10
Orford, #40366 (X-A004(371)) 11

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

The Connecticut River and all its tributaries are mapped as Essential Fish Habitat for Atlantic Salmon but the National Marine Fisheries Service has recently determined that because they are no longer present, consultation for projects on the Connecticut or its tributaries is no longer needed, as long as impacts are avoided and minimized.

Invasive Species – Japanese knotweed on the northwest bank.

Permanent impacts (~ 400 square feet) are associated with infrastructure protection so no compensatory mitigation is proposed.

T. Marshall reviewed potential water diversion methods. Temporary impacts would depend on the type of diversion structure to be used. A portadam, a framed structure with a membrane would be lain on the streambed (approximately 2,800 square feet of impact) or if sheetpile or sandbag cofferdams were used would result 1,600 square feet of impact. There is a desire to keep costs as low as possible. A third option would be to run a row of sheetpiles or sandbags across the entire channel width both upstream and down to create temporary headwalls so that the water could be channeled through pipes near the center of the river.

Mike Hicks commented that sheetpile diversions would not be counted as ACOE impacts but sandbags would.

M. Hicks asked if an IPaC form had been submitted, it has and only Northern Long-Eared Bats were identified. A 4d informal consultation form will be submitted to USACE.
M. Hicks asked if floodplain impacts were anticipated and said that floodplain compensation would be required if so.

M. Hicks asked if Section 106 had been started. The bridge falls under the 2014 Programmatic Agreement between FHWA, ACHP, NHSHPO and NHDOT, and the recordation form has been submitted to NHDHR.

Carol Henderson commented that her preference would be for the work to be undertaken so there was always flow in the river and was not in support of an option that would block the entire stream and bypass water through pipes.

Gino Infascelli indicated that riprap extended past its current location would require mitigation.

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

Bedford, #13692-C (X-004(254))
Vicki Chase introduced the project. The project is a federally funded bridge rehabilitation / replacement project. Pulpit Brook is a relatively small stream with extensive wetlands on both the north and south sides. The setting is rural with scattered residential with conservation land abutting the bridge right of way to the north.

Thom Marshall described the existing bridge, which was built in the 1950's and consists of two five-foot diameter culverts. The bridge was red-listed in 2008. The downstream end has a mortared rubble wall and the upstream end headwall was rebuilt in 2011. Engineering study is currently being developed. Based on preliminary hydraulics a 48-foot span is proposed, which would meet the stream crossing guidelines. The bankfull channel is 22' wide with wildlife corridors on each side.

Two alternatives are under consideration. A Conventional precast superstructure on cast-in-place abutments matching existing geometry of the roadway. A temporary bypass will be required (traffic volumes 20,000 vehicles per day) for this conventional alternative. Second alternative is accelerated bridge construction which would require a short term detour and no temporary bypass. Geotechnical information is not yet available.

V. Chase reviewed natural resources. There are forested wetlands to the south that would be affected by a temporary bypass. These will be reviewed in the spring to determine whether they are functioning as vernal pools. Pulpit Brook is a 2nd order stream, crossing is a Tier 3 stream with a 5.29 square mile watershed and no impairments.

There are state listed Blanding's turtles in the vicinity of the project. NHF&G has requested that sufficient aquatic organism passage be provided and that no plastic netting be used.

Carol Henderson noted that she spoke to Kim Tuttle who says the Blanding's turtles are nesting in the direct vicinity of the bridge and suggested that timing of construction, fencing to isolate construction, and reporting to NHF&G of any observed nesting activities will be required. No fisheries recommendations were noted by NHF&G.

There is a FEMA mapped floodway.

Currently no additional mitigation is proposed. There would be under 1,000 square feet of impact and the result would be a huge improvement. If the temporary detour were utilized there would be approximately 25,000 square feet of temporary impact.

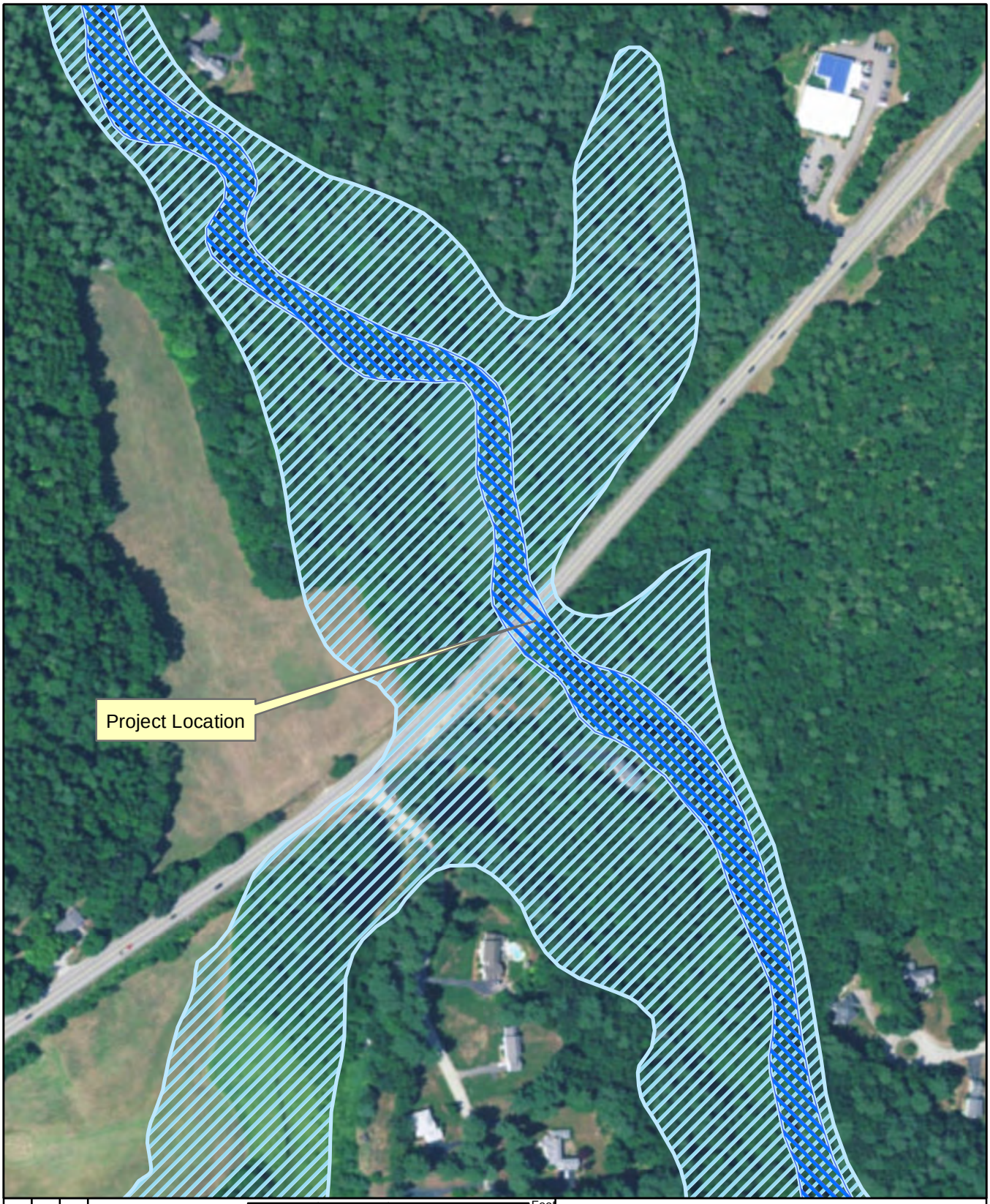
C. Henderson asked for additional details about the wildlife platform under the bridge. There will be a 4.8' platform (made of riprap) on either side of the bridge. The proposed abutments are outside of the existing pipes.

Mike Hicks asked about northern long-eared bat coordination and Section 106 coordination. Bat coordination would be handled under FHWA's range-wide programmatic agreement.
M. Hicks asked about impacts to the 100-year floodplain. There will be a net removal of material from the floodplain.

Mark Hemmerlein noted that the project was within the urbanized area regulated under the NPDES Phase II MS4 permit.

Gino Infascelli asked about stormwater treatment. T. Marshall said design is in progress. If the bypass is pursued stormwater treatment can be constructed as part of the site restoration.

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



Project No: 86753.09

Drawn By: vchase

Date : 6/20/2017

0 150 300 600 Feet

Legend

FEMA FLOOD ZONES

FLOODWAY

100-YEAR FLOODPLAIN WITH BASE FLOOD ELEVATION

Data Source: Federal Emergency Management Agency. DIGITAL FLOOD INSURANCE RATE MAP DATABASE, HILLSBOROUGH COUNTY, NEW HAMPSHIRE 2009.

NHDOT

BEDFORD 13692C

NH ROUTE 101 OVER PULPIT BROOK

EXHIBIT O - FEMA FLOODPLAIN

SCALE: 1:3,600

NORMANDEAU ASSOCIATES
Environmental Consultants
25 Nashua Road Bedford, NH 03110
(603) 472-5191 www.normandeau.com

SEPTEMBER 2017

CHRISTOPHER T. SUNUNU
GOVERNOR

STATE OF NEW HAMPSHIRE
OFFICE OF STRATEGIC INITIATIVES
107 Pleasant Street, Johnson Hall
Concord, NH 03301-3834
Telephone: (603) 271-2155
Fax: (603) 271-2615

Exhibit P

DIVISION OF PLANNING
DIVISION OF ENERGY
www.nh.gov/osi

MEMORANDUM

TO: Lee Carbonneau, Senior Principal Scientist, Normandeau Associates

FROM: Samara Ebinger, Principal Planner
State National Flood Insurance Program, Assistant Coordinator

DATE: July 15, 2019

SUBJECT: Bedford, 13692C

I am writing in reference to your June 26, 2019 email to Jennifer Gilbert regarding the above-referenced project's impact on floodplain areas.

I have reviewed the FEMA Flood Insurance Rate Map (FIRM) where the proposed project area is located, and the locator map and hydraulic report titled "Appendix C: Hydrology, River Geomorphology and Hydraulics Summary Report" attached to your email. As the hydraulic report also indicates, the project area appears to be located within the Special Flood Hazard Area (SFHA) on the FIRM and within a designated AE zone and the regulatory floodway.

Since the Town of Bedford is a participating community of the National Flood Insurance Program (NFIP), any development in an SFHA should meet the NFIP requirements contained in the community's floodplain management ordinance. Development is defined under the NFIP as "any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials."

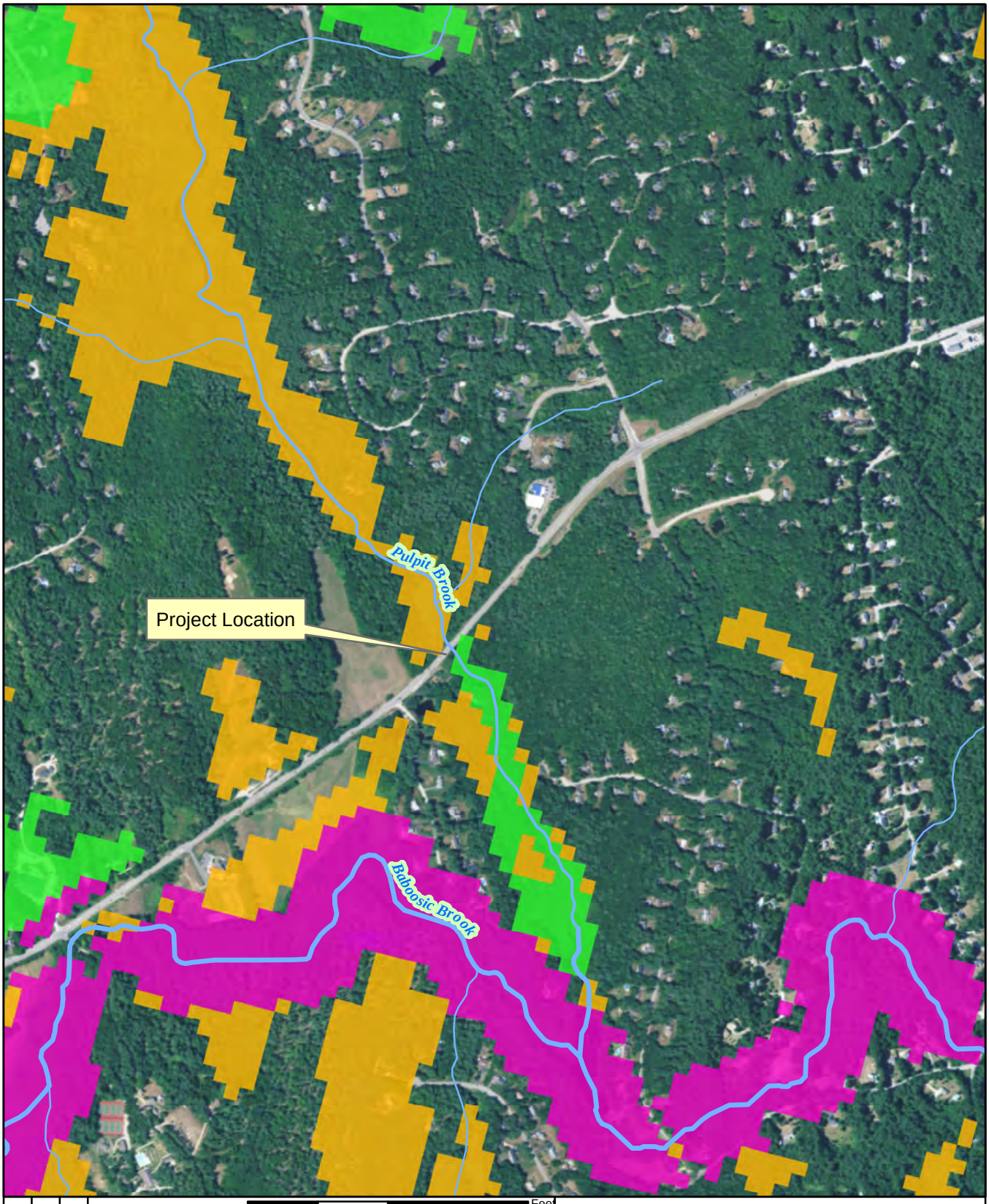
Since the proposed project appears to be located in Zone AE with a regulatory floodway, the following NFIP requirement contained in the community's floodplain regulations would apply:

> Along watercourses with a designated Regulatory Floodway no encroachments, including fill, new construction, substantial improvements, and other development are allowed within the floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practices that the proposed encroachment would not result in any increase in flood levels within the community during the base flood discharge.

However, based on the description of the proposed project in the hydraulic report, it does not appear that it would cause any increase in base flood elevation if built according to either of the two alternative specifications in the report. As such, a Conditional Letter of Map Revision would not be required prior to the start of the project, as is also stated in the report.

Additionally, please note that if the temporary bypass measures to divert traffic that are referenced in your email will be in place longer than six months, that work will also be subject to the requirements of the town's floodplain management ordinance (if located in the SFHA).

If you need further assistance, please contact me at 603-271-1755 or samara.ebinger@osi.nh.gov.



Project No: 86753.09

Drawn By: vchase

Date : 6/20/2017

Legend

0 500 1,000 2,000 Feet

2015 NHFG Wildlife Action Plan Tier

- No Color - Unranked
- Highest Ranked in the State by Ecological Condition
- Highest Ranked in the Biological Region by Ecological Condition
- Supporting Landscapes

Data Source: New Hampshire Fish and Game Department, Wildlife Division
Publication_Date: 20151001
NH Wildlife Action Plan 2015: Highest Ranked Wildlife Habitat
<URL:http://www.granit.unh.edu/cgi-bin/nhsearch?dset=wap2015_tiers/nh>
Accessed 6/20/2017

NHDOT
BEDFORD 13692C
NH ROUTE 101 OVER PULPIT BROOK

EXHIBIT Q - 2015 WILDLIFE ACTION PLAN

SCALE: 1:12,000

NORMANDEAU ASSOCIATES
Environmental Consultants
25 Nashua Road Bedford, NH 03110
(603) 472-5191 www.normandeau.com

SEPTEMBER, 2017

Exhibit R

Vicki Chase

From: Magee, John <john.magee@wildlife.nh.gov>
Sent: Monday, July 10, 2017 10:48 AM
To: Vicki Chase
Cc: Carpenter, Matthew
Subject: Re: Pulpit Brook Bedford

Hi Vicky. We have no specific time of year restriction recommendations. We do prefer to see that the new crossing provide AOP all the time as required by the permitting rules.

Please let me know if we can help with other aspects of this crossing replacement.

John

John Magee
M.S., Certified Fisheries Professional
Fish Habitat Biologist
New Hampshire Fish and Game Department
11 Hazen Drive
Concord, NH 03301
p 603-271-2744
f 603-271-5829

_____
From: Vicki Chase <VChase@normandeau.com>
Sent: Tuesday, June 20, 2017 1:55 PM
To: Magee, John
Subject: Pulpit Brook Bedford

Hi John,

Normandeau Associates is assisting Kleinfelder Engineers and the New Hampshire Department of Transportation with permitting and documentation for the replacement of the bridge carrying NH Route 101 over Pulpit Brook in Bedford. Pulpit Brook flows into Baboosic Brook about 0.6 miles downstream of the bridge. We would like to know if there are any concerns about fisheries in Pulpit Brook that could affect construction schedules or activities. Location map attached.

VICKI CHASE, CWS

Principal Regulatory Specialist

NORMANDEAU ASSOCIATES, INC.

25 Nashua Road, Bedford, NH 03110

603-637-1111(direct) | 603-731-7653 (cell)

vchase@normandeau.com<mailto:vchase@normandeau.com>
www.normandeau.com<http://www.normandeau.com/>

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Please consider the environment before printing this e-mail.

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

To: Jamie O'Brien, Normandeau Associates, Inc.
25 Nashua Road
Bedford, NH 03110

From: Amy Lamb, NH Natural Heritage Bureau
Date: 6/7/2019 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB19-1721 Town: Bedford Location: NH Route 101
Description: This is a bridge replacement project of bridge number 090/065 carrying NH Route 101 over Pulpit Brook. The current bridge is on the NHDOT Red List due to its poor condition. The proposed project will maintain the existing 40'-0" wide roadway on the current alignment and correct the structure deficiencies to create safe, reliable passage over Pulpit Brook. A 48'-0" clear span replacement has been identified as the preferred option for meeting hydraulic requirements, stream crossing guidelines and other project goals.
cc: Kim Tuttle

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

Comments: Contact the NH Fish & Game Department.

Vertebrate species	State[1]	Federal	Notes
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).

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

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

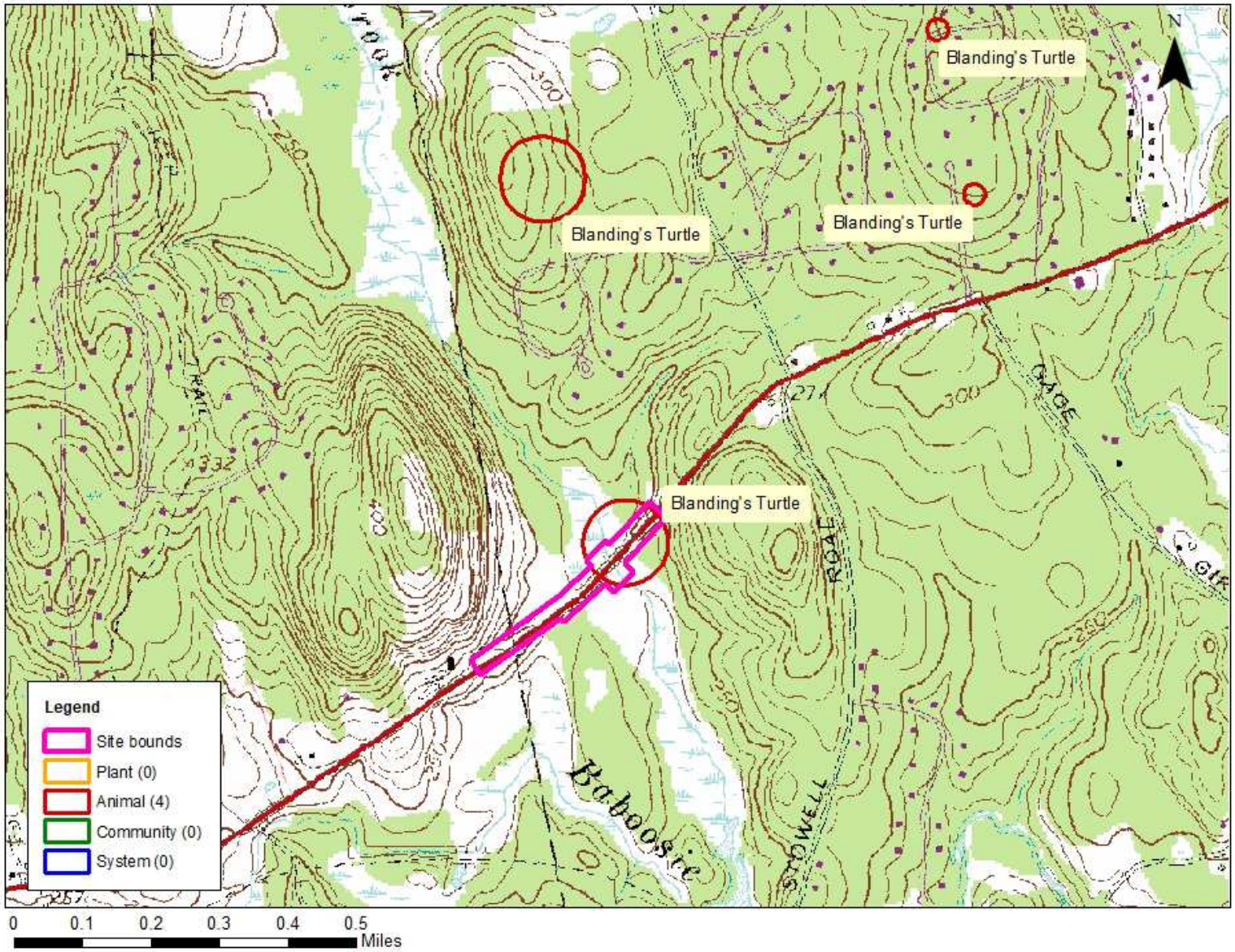
A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

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

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB19-1721



Vicki Chase

From: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Sent: Monday, September 18, 2017 11:15 AM
To: Vicki Chase
Subject: RE: NHB17-1970 (NHB15-3219) Pulpit Brook Bedford

Hello Vicki,

We would need to know what size and type of pipes or bridge is proposed. Also as below, we would definitely like a natural bottom across the stream if one is to be reconstructed after the twin culvert are pulled or at least no rip-rap across the entire stream bed above and below the pipes if larger pipes are proposed. Avoid the use of welded plastic or 'biodegradable plastic' netting or thread in erosion control matting at this project site. There are numerous documented cases of snakes including the state endangered eastern hognose snake, documented in Bedford, and other wildlife being trapped and killed in erosion control matting with synthetic netting and thread. Several 'wildlife friendly' options such as woven organic material (e.g., coco matting) are commercially available.

Thanks,

Kim Tuttle
Wildlife Biologist
NH Fish and Game
11 Hazen Drive
Concord, NH o3301
603-271-6544

From: Vicki Chase [mailto:VChase@normandeau.com]
Sent: Monday, September 18, 2017 10:54 AM
To: Tuttle, Kim
Subject: RE: NHB15-3219 Pulpit Brook Bedford

Good morning Kim,

Our team ended up winning this job (Kleinfelder is the engineer). You provided helpful information for our proposal in this email thread – thanks. For the wetland permit and other environmental documentation, are there recommendations we should include for Blanding's turtles?

The correspondence in the thread below was from 2015, the NHB request was re-upped in June 2017, see attached.

Thanks for your help.

VICKI CHASE
NORMANDEAU ASSOCIATES, INC.
603-637-1111 (direct) | 603-731-7653 (cell)

From: Tuttle, Kim [mailto:Kim.Tuttle@wildlife.nh.gov]
Sent: Monday, November 23, 2015 10:35 AM

To: Vicki Chase <VChase@normandeau.com>
Subject: RE: NHB15-3219 Pulpit Brook Bedford

We would not require turtle surveys if the double pipes are upsized. We usually recommend one significantly larger culvert or bridge in order to provide aquatic species passage opportunities for Blanding's turtle but if the double pipes are upsized, that may be okay. Will the road be widened at some point? that's another reason why the openings should be upsized. If the length of the culverts will be increasing we would want to provide the same or more light/openness in the culvert to attract wildlife and not to increase velocities- so the pipe openings would have to increase.

From: Vicki Chase [mailto:VChase@normandeau.com]
Sent: Monday, November 23, 2015 10:25 AM
To: Tuttle, Kim
Subject: RE: NHB15-3219 Pulpit Brook Bedford

From DOT

This project involves rehabilitation or replacement of the Red List bridge (Br. No. 090/065) carrying NH Route 101 over Pulpit Brook in the Town of Bedford. This bridge was built in 1936 and is a twin 6.5-foot concrete pipe bridge. The bridge has a rail to rail width of 40 feet to accommodate one-lane of traffic in each direction, and handles 24,000 ADT in 2013.

From: Tuttle, Kim [mailto:Kim.Tuttle@wildlife.nh.gov]
Sent: Monday, November 23, 2015 10:24 AM
To: Vicki Chase
Subject: RE: NHB15-3219 Pulpit Brook Bedford

What is the size of the opening of the culverts there now?

From: Vicki Chase [mailto:VChase@normandeau.com]
Sent: Monday, November 23, 2015 10:14 AM
To: Tuttle, Kim
Subject: RE: NHB15-3219 Pulpit Brook Bedford

Here are some photos, a USGS topo, and an aerial of the crossing. I have no idea what size – as I mentioned at this stage we are just writing the technical proposal – the proposal is actually for "rehabilitation or replacement" so it is not even known if it will be replaced (although I suspect it will).

Would you require turtle surveys? We want to budget for it if so.

From: Tuttle, Kim [mailto:Kim.Tuttle@wildlife.nh.gov]
Sent: Monday, November 23, 2015 9:50 AM
To: Vicki Chase
Subject: NHB15-3219 Pulpit Brook Bedford

Vicki,

Can you provide a couple of photos of the crossing? What are you thinking for the width of the bridge? If you are putting in a bridge, we may not need a 'wildlife shelf' for turtles if the velocity of the water is not restricted resulting in significantly increased velocities. We would definitely like a natural bottom across the stream if one is to be reconstructed after the culvert is pulled.

Thanks,

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

From: Vicki Chase [mailto:VChase@normandeau.com]
Sent: Monday, November 23, 2015 9:42 AM
To: Tuttle, Kim
Subject: FW: NHB review: NHB15-3219

Kim, Normandeau Associates has been short-listed for the replacement of the Route 101 culvert over Pulpit Brook in Bedford, and I am writing an environmental scope of work for the project. As you can see on the attached, there are records of Blanding's turtles right at the crossing. To help in our planning process, what would you be likely to require in the way of surveys or studies (if any) for the turtles? I am guessing that the bridge would need to have a wildlife shelf – what timing restrictions for construction would be needed to accommodate the turtles?

Thanks for your help.

VICKI CHASE *Environmental Analyst*
Normandeau Associates, Inc.
25 Nashua Road, Bedford, NH 03110
603-637-1111(direct) 603-731-7653 (cell)

From: Lamb, Amy [mailto:Amy.Lamb@dred.nh.gov]
Sent: Monday, October 05, 2015 12:19 PM
To: Vicki Chase
Cc: Tuttle, Kim
Subject: NHB review: NHB15-3219

Attached, please find the review we have completed. If your review memo includes potential impacts to plants or natural communities please contact me for further information. If your project had potential impacts to wildlife, please contact NH Fish and Game at the phone number listed on the review.

Best,
Amy

Note: Melissa Coppola is still working part-time on reviews, but I am now the reviewer at NH Natural Heritage. Please address future correspondence to me at: Amy.Lamb@dred.nh.gov
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Amy Lamb
Ecological Information Specialist
NH Natural Heritage Bureau
DRED - Forest & Lands
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

172 Pembroke Rd
Concord, NH 03301
603-271-2215 ext. 323

Please consider the environment before printing this e-mail.

Exhibit U

United States Department of the Interior

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

In Reply Refer To: June 20, 2017
Consultation Code: 05E1NE00-2017-SLI-1914
Event Code: 05E1NE00-2017-E-04191
Project Name: NH 101 over Pulpit Brook 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(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E1NE00-2017-SLI-1914

Event Code: 05E1NE00-2017-E-04191

Project Name: NH 101 over Pulpit Brook bridge replacement

Project Type: TRANSPORTATION

Project Description: The New Hampshire Department of Transportation proposes to rehabilitate or replace Bridge 090/065 carrying NH Route 101 over Pulpit Brook in Bedford.

Project Location:

Approximate location of the project can be viewed in Google Maps:
https://www.google.com/maps/place/42.90607389419543N71.56947009537758W

Counties: Hillsborough, NH

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate 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. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area. Please contact the designated FWS office if you have questions.

Mammals

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

Critical habitats

There are no critical habitats within your project area.

Exhibit V

United States Department of the Interior

FISH AND WILDLIFE SERVICE

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

September 4, 2019

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

Re: NH DOT Project 13692C, Bedford, NH
TAILS: 05E1NE00-2019-F-2257

Dear Mr. Laurin:

The U.S. Fish and Wildlife Service (Service) is responding to your request, dated August 9, 2019, to verify that the New Hampshire Department of Transportation (NHDOT) Project 13692C (Project), the proposed replacement of a bridge in Bedford, New Hampshire, may rely on the December 15, 2016, Programmatic Biological Opinion (BO) for federally funded or approved transportation projects that may affect the northern long-eared bat (*Myotis septentrionalis*) (NLEB). We received your request and the associated LAA Consistency Letter on August 13, 2019. This letter provides the Service's response as to whether the Federal Highway Administration may rely on the BO to comply with section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; U.S.C. 1531 *et seq.*) for the Project's effects to the NLEB.

The NHDOT, as the non-Federal agency representative for the Federal Transportation Agency, has determined that the Project may affect, and is likely to adversely affect the NLEB. The Project consists of the replacement of Bridge No. 090/065 carrying U.S. Route 101 over Pulpit Brook and additional changes to the road alignment and a turning lane. Approximately 0.85 acre of tree clearing will occur which may be implemented during the bat active season. A bridge survey of the existing bridge did not document the presence of bat use.

NHDOT also determined the Project may rely on the programmatic BO to comply with section 7(a)(2) of the ESA, because the Project meets the conditions outlined in the BO and all tree clearing related to the proposed work will occur farther than 0.25 mile from documented roosts and farther than 0.5 mile from any known hibernacula. The Service reviewed the LAA Consistency Letter and

concurs with NHDOT's determination. This concurrence concludes your ESA section 7 responsibilities relative to this species for this Project, subject to the Reinitiation Notice below.

Conclusion

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

Incidental Take of the Northern Long-eared Bat

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

Reporting Dead or Injured Bats

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

Reinitiation Notice

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

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

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

We appreciate your continued efforts to ensure that this Project is fully consistent with all applicable provisions of the BO. If you have any questions regarding our response, or if you need additional information, please contact Susi von Oettingen of this office at 603-227-6418.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

APPENDIX D: Bridge/Structure Assessment 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; from activities that could impact expansion joints; from deck removal on bridges; or from structure demolition for bridges/structures within 1000 feet of suitable bat habitat.

DOT Project #	Water Body	Date/Time of Inspection	Within 1,000ft of suitable bat habitat (circle one)
Bedford 13692C	Pulpit Brook	July 18, 2019 (14:00 - 14:45)	Yes (circled) / No

Route	County	Federal Structure ID
NH 101	Hillsborough	090/065

If the bridge/structure is 1,000 feet or more from suitable bat habitat (e.g., an urban or agricultural area without suitable foraging habitat or corridors linking the bridge to suitable foraging habitat), check box and STOP HERE. No assessment required. ☐
Please submit to the U.S. Fish and Wildlife Service.

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 & ≥4" deep	N/A	Crevices, rough surfaces or imperfections in concrete	✓	Human disturbance or traffic under bridge/in culvert or at the structure	High	Low	None (circled)
All crevices >12" deep & not sealed	N/A	Spaces between walls, ceiling joists	N/A	Possible corridors for netting	None/poor (circled)	Marginal	Excellent
All guardrails	✓						
All expansion joints	N/A						
Spaces between concrete end walls and the bridge deck	N/A						

Last Revised May 31, 2017

Vertical surfaces on concrete I-beams	N/A						

Evidence of Bats (Circle all that apply) Presence of one or more indicators is sufficient evidence that bats may be using the structure.

None

Visual (e.g. survey, thermal, emergent etc.)

- Live __number seen
- Dead __number seen

Photo documentation Y/N

Guano

Odor Y/N

Photo documentation Y/N

Staining definitively from bats

Photo documentation Y/N

Audible

Assessment Conducted By: SARAH BARNUM **Signature(s):** _____

District Environmental Use Only: Date Received by District Environmental Manager: _____

DOT Bat Assessment Form Instructions

1. Assessments must be completed no more than 2 years prior to conducting any work below the deck surface on all bridges, regardless of whether assessments have been conducted in the past.
2. 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 coordinated with the USFWS. 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.
3. Any questions should be directed to the District Environmental Manager.

Exhibit W

New Hampshire DOT
Department of Transportation

Victoria F. Sheehan
Commissioner

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

William Cass, P.E.
Assistant Commissioner

RECEIVED
JUL 19 2019
RECEIVED
BUREAU OF ENVIRONMENT
JUL 22 2019
NH DEPARTMENT OF
TRANSPORTATION

BEDFORD
X-A004(254)
13692C
RPR 9086

No Historic Properties Affected Memo

In order to assist the Federal Highway Administration (FHWA) in complying with Section 106 of the National Historic Preservation Act of 1966 and its amendments, The New Hampshire Department of Transportation (NHDOT), in consultation with the New Hampshire Division of Historical Resources (SHPO), has reviewed this undertaking according to the standards and procedures detailed in the 2018 Programmatic Agreement regarding the Federal-Aid Highway Program in New Hampshire.

Project Description:

The proposed action would replace Bridge No. 090/065 and include approach and drainage work. The existing culvert would be replaced with an approximately 50-foot precast concrete butted box beam bridge. The project includes roadway approach work that extends approximately 1,300 feet southwest of Bridge No. 090/065 on Route 101 and approximately 800 feet northeast of Bridge No. 090/065 on Route 101 (see APE map below). The project would retain two 12-foot travel lanes with 8-foot shoulders, but would add a left turn lane at Twin Brook Lane for westbound Route 101 traffic. The project would raise the centerline of construction by approximately 6 inches to accommodate proposed cross slopes. Guardrail would be installed in areas of proposed curbing and steeper side slopes.

Identification:

Above-Ground Resources
Bridge No. 090/065 is a twin reinforced pipe culvert built c.1951 and reconstructed in 2011. The culvert is 12.5 feet long and 70 feet wide. The culvert has a rubble stone headwall on the eastern elevation, concrete and rubble stone wingwalls, and a reinforced concrete headwall on the western elevation. The bridge carries NH Route 101 over Pulpit Brook in southwest Bedford.

Based on a review pursuant to 36 CFR 800.4, NH Department of Transportation (NHDOT) determined, through the use of the FHWA Program Comment for Common Post-1945 Concrete and Steel Bridges, that Bridge No. 090/065 is exempt from Section 106 review.

Below-Ground Resources
All necessary phases of archaeological survey have been completed as well. A Phase IA study was completed and archaeologists found low to non-existent potential for Pre-Contact or Post-Contact cultural deposits and recommended no further study.

Public Consultation:

NHDOT initiated consultation with SHPO by filing a Request for Project Review (RPR) from on October 12, 2017. NHDOT submitted an addendum to the 2017 RPR to SHPO on May 29, 2019. NHDOT submitted a Phase IA study to SHPO on May 30, 2019.

The chart below captures public meetings, past and future, about this project.

Date	Meeting
May 18, 2016	Public Information Meeting
February 13, 2018	Public Informational Meeting
June 20, 2019	Public Information Meeting
Anticipated September 2019	Design Public Hearing

The Town of Amherst's Conservation Commission was contacted via letter in late June 2019 about the Bragdon Farm. To date, the Town has not submitted a formal reply to the letter.

Determination of Effect:

Bridge No. 090/065 bridge is exempt from Section 106 review under the Program Comment for Common Post-1945 Concrete and Steel Bridges and Culverts. The Bragdon Farm property, located on both sides of Route 101, would require minimal grading for swales related to drainage improvements. All grading would be loamed and seeded and all swales vegetated. In addition, some riprap would be installed along Pulpit Brook at the replacement bridge, but this area would not be visible to most of the farm property. The proposed project would result in no impacts to the use or function of the Bragdon Farm.

Applying the criteria at 36 CFR 800.4(d)(1), the result of identification and evaluation for the undertaking is a finding of ***No Historic Properties Affected***.

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

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

Jill L Edelmann 7/19/2019

Jill Edelmann Date
Cultural Resources Manager

Concurred with by the NH State Historic Preservation Officer:

Elizabeth Muzzey, DSHPO 7/22/19

Elizabeth H. Muzzey Date
State Historic Preservation Officer
NH Division of Historical Resources

cc. Marc Laurin, NHDOT
Jennifer Reczek, NHDOT
Thom Marshall, Kleinfelder
Marika Labash, NHDHR

Photo Key Map by NH GRANIT

Legend

APE

Map Scale

1: 4,123

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Map Generated: 1/3/2017

Notes