General Sullivan Bridge
Spaulding Turnpike Improvements
NHS-027-1(37), 11238

Newington and Dover, New Hampshire

APRIL 2021

PREPARED FOR

NH Department of Transportation
PO Box 483, 7 Hazen Drive
Concord, NH 03302

US Department of Transportation
Federal Highway Administration
NH Division
53 Pleasant Street
Concord, NH 03301

PREPARED BY

VHB
2 Bedford Farms Drive, Suite 200
Bedford, NH 03110

General Sullivan Bridge
Spaulding Turnpike Improvements

NHS-027-1(37), 11238

Newington and Dover, New Hampshire

PREPARED FOR

NH Department of Transportation
PO Box 483, 7 Hazen Drive
Concord, NH 03302

US Department of Transportation
Federal Highway Administration
NH Division
53 Pleasant Street, Suite 2200
Concord, NH 03301

PREPARED BY

VHB
2 Bedford Farms Drive, Suite 200
Bedford, NH 03110

APRIL 2021

FHWA-NH-EIS-06-01-DS
Newington-Dover
General Sullivan Bridge Spaulding Turnpike Improvements
Strafford and Rockingham Counties, New Hampshire

Draft Supplemental Environmental Impact Statement
Submitted Pursuant to 42 USC 4332(2)(c),
49 USC 303, 16 USC 470(f) and 33 USC 1334
by the
US Department of Transportation Federal Highway Administration
and
New Hampshire Department of Transportation

Cooperating Agencies
US Army Corps of Engineers, US Coast Guard, US Environmental Protection Agency, and US Fish and Wildlife Service

Comments on this Draft Supplemental Environmental Impact Statement (DSEIS) are due by June 7, 2021 and should be sent to the following personnel, who may also be contacted for additional information concerning this document:

Mr. Jamison Sikora
NH Division Environmental Program Manager
Federal Highway Administration
53 Pleasant Street, Suite 2200
Concord, NH 03301
(603) 410-4870
Jamie.Sikora@dot.gov

Ms. Jennifer Reczek, P.E.
Project Manager
NH Department of Transportation
PO Box 483 | 7 Hazen Drive
Concord, NH 03302
(603) 271-3401
Jennifer.Reczek@dot.nh.gov

Abstract: The proposed project involves the evaluation of alternatives for the rehabilitation or replacement of the historic General Sullivan Bridge (GSB), which spans the navigational channel of Little Bay in Newington, Strafford County, New Hampshire and Dover, Rockingham County, New Hampshire. Options for the GSB were previously reviewed in a 2007 Final Environmental Impact Statement (FEIS) and a 2008 Record of Decision (ROD) which were produced by NHDOT and the FHWA under the National Environmental Policy Act (NEPA). The purpose of this project is to provide recreational access and connectivity between Newington and Dover, across Little Bay, for pedestrian and non-motorized use.

This DSEIS serves as a supplement to the 2007 FEIS. This DSEIS considers changes to the rehabilitation of the GSB, including an updated reasonable range of alternatives, as well as consideration of environmental impacts that were not previously evaluated in the original 2007 FEIS. FHWA has identified a Preferred Alternative based on this DSEIS and input from federal and state agencies; state, town, and local officials; and the public. NHDOT and FHWA may complete the NEPA environmental review process by issuing a single document that consists of the Final Supplemental Environmental Impact Statement (FSEIS) and Supplemental Record of Decision (SROD) pursuant to 49 USC 304a(b) [and 23 USC 139(n)(2)] unless FHWA determines that statutory criteria or practicability considerations preclude issuance of such a combined document.

PATRICK A BAUER Digitally signed by PATRICK A BAUER
Date: 2021.04.02 11:36:48 -04'00'

Federal Highway Administration
Date: 4/2/2021
Patrick Bauer
New Hampshire Division Administrator

New Hampshire Department of Transportation
Date: 3/31/2021
Peter Stamnas
Director of Project Development

Table of Contents

Tables

Figures

Appendices

Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ACS	American Community Survey
ADA	Americans with Disabilities Act
AGQS	Ambient Groundwater Quality Standards
APE	Area of Potential Effect
ATF	Advisory Task Force
BMPs	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DEIS	Draft Environmental Impact Statement
EFH	Essential Fish Habitat
EJ	Environmental Justice
EO	Executive Order
EPA	US Environmental Protection Agency
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
GMZ	Groundwater Management Zone
GSB	General Sullivan Bridge
HOTL	Highest Observable Tide Line
IPaC	Information for Planning and Consultation
LBB	Little Bay Bridge
LEP	Limited English Proficiency
LRS	Limited Reuse Soils
LWCF	Land and Water Conservation Fund
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NLEB	Northern Long-eared bat
NHDES	NH Department of Environmental Services
NHDHR	NH Division of Historical Resources
NHDOT	NH Department of Transportation
NHF&GD	NH Fish & Game Department
NHNHB	NH Natural Heritage Bureau
NHPA	National Historic Preservation Act of 1966
NOAA	National Oceanic and Atmospheric Administration
OHM	Oil and/or hazardous materials
OSHA	Occupational Safety and Health Administration
PFOA	Perfluorooctanioic acid
PFOS	Perfluorooctane sulfonic acid
ROD	Record of Decision
RSA	Revised Statutes Annotated
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Officer
SMP	Soil and/or Sediment Management Plan
SROD	Supplemental Record of Decision
TBZ	Tidal buffer zone
TSL	Type Span and Location
UNH	University of New Hampshire
USCG	US Coast Guard
USDOT	US Department of Transportation
USFWS	US Fish & Wildlife Service
TBZ	Tidal buffer zone

Executive Summary

ES-1. Project Description

New Hampshire Department of Transportation (NHDOT) and the Federal Highway Administration (FHWA) are evaluating alternatives for the rehabilitation or replacement of the historic General Sullivan Bridge (GSB) to provide pedestrian and recreational access. The GSB spans the navigational channel of Little Bay (the "Project" or the "11238S Contract") in Newington, Strafford County, New Hampshire and Dover, Rockingham County, New Hampshire. Pursuant to the National Environmental Policy Act (NEPA), this Draft Supplemental Environmental Impact Statement (DSEIS) supplements a 2007 Final Environmental Impact Statement (FEIS) by providing updated and additional analyses and a comparison of impacts and benefits associated with the Project. While the 2007 FEIS included an analysis of alternatives related to the GSB, its scope encompassed a much larger transportation project involving the GSB, the adjacent Little Bay Bridges (LBBs), and multiple interchanges and local roads over a 3.5-mile portion of the Spaulding Turnpike.

Study Area Description

The GSB spans a tidal estuary system known as Little Bay near its confluence with the Piscataqua River in southeast New Hampshire. The bridge connects the Town of Newington and the City of Dover. The Study Area for the DSEIS includes both the GSB and the LBBs, as well as an area approximately 800 feet north and 800 feet south of the bridge abutments in Newington and Dover.

Purpose and Need

The purpose of the Project is to provide recreational access and connectivity between Newington and Dover, across Little Bay, for pedestrian and non-motorized use. This would entail reusing the GSB substructure and superstructure, as much as practicable, given the condition of the bridge.

The FEIS established the need to continue providing access across Little Bay for pedestrians and non-motorized vehicles; the Selected Alternative included rehabilitating the historic GSB for this purpose. However, the GSB is vulnerable to corrosion and deterioration based on the harsh environmental setting of the bridge, especially since the bridge is constructed of thin steel sections and plates. Several truss members and connections require replacement and strengthening to support the weight of the structure, pedestrian and non-motorized vehicle loads, and occasional loads from maintenance equipment or emergency response vehicles when necessary. Deformations and section losses limit the remaining service-life of the bridge, and continued deterioration forced the closure of the bridge in September 2018. This closure eliminated permanent recreational use of the GSB and eliminated pedestrian and bicycle access across Little Bay. However, in August 2019, NHDOT established a temporary detour along northbound LBB to maintain a temporary multi-use connection between Newington and Dover for non-motorized transportation purposes.

ES-2. Reasonable Alternatives Considered

The SEIS includes analysis of five reasonable alternatives:

- Alternative 1: Rehabilitation of the General Sullivan Bridge
- Alternative 3: Partial Rehabilitation of the General Sullivan Bridge
- Alternative 6: Southbound Little Bay Bridge - Widened Deck on Pier Extension
- Alternative 7: Southbound Little Bay Bridge - Independent Deck on Pier Extension
- Alternative 9: Superstructure Replacement - Girder Option

The DSEIS also includes an assessment of the No-Action Alternative to serve as a baseline by which to evaluate impacts of the five reasonable alternatives.

ES-3. Description of Preferred Alternative

After consideration of all reasonable alternatives, *Alternative 9: Superstructure Replacement – Girder Option* has been identified as the Preferred Alternative. Alternative 9 involves the complete removal and replacement of the GSB superstructure. Under Alternative 9, the GSB superstructure would be replaced with a steel girder superstructure with a structural steel frame extending from the bottom of the girders to the top of the existing GSB piers. Two design options for the steel frame are under consideration – one in the form of a "V" longitudinally (the "V-Frame" option), and a second curved "Super Haunch" option. This alternative follows the existing GSB alignment, thereby allowing the reuse of the existing repointed GSB stone masonry piers without requiring substantial modifications.

Alternative 9 would fully meet the Project's Purpose and Need of providing access and connectivity between Newington and Dover, across Little Bay, for non-motorized use.

Engineering analysis determined that Alternative 9 would be reasonable and practical from a technical standpoint. It could be implemented using conventional construction techniques and materials, within a practical duration, and without excessive impacts on the environment or to the transportation network.

Alternative 9 would have an estimated initial capital cost of $28.5 million and a life cycle cost of $31.25 million. In comparison to the other alternatives, Alternative 9 is among the least expensive reasonable alternatives.

Alternative 9 would have an approximately 18.3-foot wide deck (out-to-out), a 16-foot wide multiuse path, consisting of a 12-foot wide multi-use path with 2-foot wide shoulders on each side, and pedestrian rail. The 16-foot wide multiuse path would comply with the ADA for accessibility and would have a steel pedestrian rail along both sides of the new bridge deck. The new path would be 22.5 feet from the LBB, approximately 7.4 feet further from the LBB than the existing GSB (at 15.1 feet). These characteristics contribute to the high performance of the design with respect to user safety, emergency access, and inspection safety. The new superstructure would not be in the form of a truss, and therefore would not be visually consistent with the existing GSB. However, there would be no changes to the northbound or southbound LBB which would preserve the existing transportation capacity of the LBB.

The recently constructed 2010 approach span at the Dover end of the bridge would not require substantial modifications as part of this alternative, as the alignment of the existing GSB would be maintained. The existing Newington abutment would be removed in its entirety and replaced. The overall footprint should be smaller than the existing abutment due to the proposed reduced deck width. Alternative 9 would require temporary impacts for construction access.

ES-4. Environmental Impacts (Beneficial and Adverse)

This DSEIS describes the environmental consequences analysis, or impacts analysis, which compares the probable consequences of the reasonable alternatives. Impacts, also known as "*effects,*" may be direct, indirect, temporary, or permanent. Impacts may also be beneficial or adverse. **Table ES-1** below summarizes the impact analysis described in the DSEIS.

ES-5. Mitigation

The DSEIS includes mitigation for natural, cultural, and socio-economic effects of the Project. Among other measures, these include:

- Compliance with state and federal environmental permitting requirements related to wetlands, shorelands, and water quality;
- Development and implementation of erosion control best management practices;
- Compliance with the *National Marine Fisheries Service (NMFS)/FHWA Best Management Practices Manual for Transportation Activities in the Greater Atlantic Region;*
- Application of several Avoidance and Minimization Measures for the Northern Long-eared bat pursuant to the US Fish and Wildlife Service (USFWS) *Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat;*
- Maintenance of access to the majority of Hilton Park during construction, along with restoration of disturbed portions of the Park following construction; and
- Development and implementation of a Soil Management Plan and adherence to appropriate protocols for identification and handling of hazardous materials.

During cultural resource agency coordination meetings with the FHWA, NHDOT, the New Hampshire Division of Historical Resources (NHDHR), the City of Dover, the Town of Newington, and various Consulting and Interested Parties, it was determined that the adverse effect to the GSB could be mitigated. Consultation regarding mitigation of historic impacts is ongoing. Note that other measures will be considered in response to public comments on this DSEIS. A draft list of measures is presented in the DSEIS, including:

- Marketing the GSB for re-use in compliance with 23 USC Section 144;
- Documentation of the GSB in accordance with the Historic American Engineering Record standards;
- Promotion and providing access to the NHDOT Historic Bridge Inventory and Management Plan;
- Development of an interpretive program including on-site interpretive panels and an installation at the Woodman Museum in Dover;
- Development of a plan for the rehabilitation of the Newington Railroad Depot and possible transfer of the building along with the state-owned land on Bloody Point to the Town of Newington; and
- Completion of a feasibility study of a future link between the Dover Community Trail and the new/rehabilitated GSB, including development of interpretive signage to highlight the history of the Newington-Dover Branch Line.

Mitigation measures for the adverse effect will be finalized and stipulated in a new Memorandum of Agreement pursuant to Section 106.

ES-6. Issues and Areas of Controversy

Fate of the General Sullivan Bridge

Under the 2007 NEPA evaluation, two primary alternatives were evaluated for the historic GSB, including rehabilitation and full structure replacement. During the evaluation process that led to the 2007 decision, public input was obtained in support of both alternatives (see http://www.newington-dover.com/html-studydocs/feis.html). Based upon the cost estimation of the alternatives in 2007, the difference in the construction values between the two alternatives was estimated at $10.9M more for the preservation alternative. This earlier evaluation assumed that the aging structure was in good structural condition, and was completed in the absence of a recent, detailed structural inspection.

After the issuance of the ROD, the Department proceeded to complete structural inspections. Two extensive hands-on structural inspections were completed in May of 2014 and June of 2016 that brought to the light the level of deterioration of the GSB, which put the original commitment into question. Both these inspections resulted in sequentially greater restriction of access on the structure for the safety of the public. With the latest inspection in September 2018, the continued deterioration resulted in the immediate closure of the bridge for all public access.

Table ES-1 Summary and Comparison of Environmental Impacts

Environmental Resource	No-Action[1]	Alternative 1	Alternative 3	Alternative 6	Alternative 7	Alternative 9
Wetlands and Surface Waters	No Impacts.	Approximate impacts: • 0.1 acre temporary wetland; • 0.8 acre temporary bed and bank; • 0.9 acre temporary TBZ.	Same as Alternative 1.	Approximate impacts: • 0.1 acre temporary wetland. • 0.8 acre temporary bed and bank. • 0.1 acre permanent bed and bank. • 0.9 acre temporary TBZ.	Same as Alternative 6.	Same as Alternative 1.
Water Quality and Pollutant Loading	No Impacts.	Approximately 33 percent reduction in stormwater runoff volumes from bridge deck.	Same as Alternative 1.	Approximately 23 percent reduction in stormwater runoff volumes from bridge deck.	Same as Alternative 6.	Same as Alternative 1.
Floodplains and Hydrodynamics	No Impacts.	Minor temporary floodplain and hydrodynamic changes from causeways and trestles.	Same as Alternative 1.	Permanent floodplain, and hydrodynamic and tidal changes from pier replacement. Minor temporary floodplain and hydrodynamic changes from causeways and trestles.	Same as Alternative 6.	Same as Alternative 1.
Wildlife and Fisheries	No Impacts.	Temporary tidal habitat impacts. Approximately 0.2 acre temporary impact to blue mussel shellfish bed. Minor tree and shrub clearing.	Same as Alternative 1.	Permanent tidal habitat impacts. Approximately 0.2 acre temporary impacts and approximately 50 SF of permanent impacts to a blue mussel shellfish bed. Minor tree and shrub clearing.	Same as Alternative 6.	Same as Alternative 1.
Threatened and Endangered Species	No Impacts.	Same as Alternative 9.	Same as Alternative 9.	Same as Alternative 9. Direct temporary and permanent impacts on intertidal and subtidal habitats.	Same as Alternative 6.	"*May affect but is not likely to adversely affect*" Atlantic and shortnose sturgeon critical habitat. Direct temporary impacts on intertidal and subtidal habitats. "*May affect - likely to adversely affect*" Northern long-eared bat.
Farmlands	No Impacts.	No Impacts.	No Impacts.	No Impacts.	No Impacts.	No Impacts.
Air Quality	No Impacts.	Temporary emissions increase during construction.	Same as Alternative 1.	Temporary emissions increase during construction and replacement of pier, construction of new pier, and superstructure replacement.	Same as Alternative 6.	Temporary emissions increase during construction and superstructure replacement.
Noise	No Impacts.	Temporary noise increase during construction.	Same as Alternative 1.	Temporary increase in noise during construction and replacement of pier, construction of new pier, and superstructure replacement.	Same as Alternative 6.	Temporary increase in noise during construction and superstructure replacement.
Parks, Recreation, and Conservation Lands	Loss of bicycle and pedestrian connection.	48,000 SF temporary direct impact to Hilton Park. Periodic closure of navigational channel to marine traffic from work on GSB central spans and bridge deck.	Same as Alternative 1.	48,000 SF temporary direct impact to Hilton Park. Periodic closure of navigational channel to marine traffic from GSB removal and construction of new superstructure.	Same as Alternative 6.	Same as Alternative 6.

[1] Note that the USCG would likely require removal of the GSB if it no longer serves a transportation purpose. See November 30, 2006 letter from Gary Kassof, USCG, to Marc G. Laurin, NHDOT, regarding the Draft Environmental Impact Statement for the Newington-Dover, 11238 project.

Table ES-1. Summary and Comparison of Environmental Impacts (Cont.)

Environmental Resource	No-Action[2]	Alternative 1	Alternative 3	Alternative 6	Alternative 7	Alternative 9
Cultural Resources	Adverse, direct, permanent effect to GSB due to continued deterioration and ultimate removal due to USCG requirements. No archaeological impacts.	No direct, permanent or temporary impacts to the Ira F. Pinkham House/Wentworth Summer Residence or the Newington Railroad Depot and Toll House. Direct, permanent impact to GSB, but no adverse effects. No archaeological impacts.	No direct, permanent or temporary impacts to the Ira F. Pinkham House/Wentworth Summer Residence. Has a permanent, direct effect on the Newington Railroad Depot and Toll House due to the loss of the visual link to existing approach spans, although this impact is not adverse. Adverse, direct, and permanent effect to GSB, minimized by retention of arched central spans and continuous deck truss/ through-truss configuration. No archaeological impacts.	No direct, permanent or temporary impacts to the Ira F. Pinkham House/Wentworth Summer Residence. Has a permanent, direct effect on the Newington Railroad Depot and Toll House due to the loss of the visual link to existing GSB, although this impact is not adverse Adverse, direct, and permanent effect to GSB since bridge would be demolished. No archaeological impacts.	Same as Alternative 6.	Same as Alternative 6.
Hazardous Materials	No Impacts.	Minor direct impacts from construction debris, construction equipment use.	Same as Alternative 1, with more construction debris.	Minor direct impacts from a moderate to high volume of construction debris, minor direct impacts of removing sediment from Little Bay during new pier construction, construction equipment use.	Same as Alternative 6.	Minor direct impacts from a moderate to high volume of construction debris, construction equipment use.
Visual Resources	No Impacts.	Visual benefit. Appearance of bridge remains unchanged. Enhanced pedestrian and bicyclist views of natural visual resources. Temporary direct visual impacts from construction.	Same as Alternative 1.	Permanent, substantial visual change to GSB superstructure, alignment, and Dover approach span. Inconsistent visual effect from pier replacement and new pier construction. Enhanced pedestrian and bicyclist views of natural visual resources. Temporary direct visual impacts from construction.	Same as Alternative 6.	Permanent, substantial visual change to GSB superstructure. Enhanced pedestrian and bicyclist views of natural visual resources. Temporary direct visual impacts from construction.
Construction	No Impacts.	Estimated 3 years to construct.	Estimated 2 years to construct.	Estimated 1.5 years to construct.	Estimated 1.5 years to construct.	Estimated 1.5 years to construct.
Social and Economic Resources and Environmental Justice	Minor impact on businesses and residents in Newington and Dover from loss of alternative commuting opportunities.	No direct impacts on private property. No disproportionately high, adverse impacts on EJ populations. ADA accessible multi-use path over Little Bay. Temporary beneficial impact to businesses and wages during construction.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
Navigation	Safety concerns and potential direct impacts to marine traffic due to structural deficiencies. Removal required per USCG permit.	Existing vertical navigational clearance of the 100-foot and 200-foot navigation channels maintained at 47.9 feet and 34.7 feet.	Same as Alternative 1.	Vertical navigational clearance of 100-foot navigational channel would decrease by 1.3 feet. Vertical navigational clearance of the 200-foot navigational channel would increase by 10.2 feet.	Same as Alternative 6.	Vertical navigational clearance of 100-foot navigation channel would increase by 0.1 feet. Vertical navigational clearance of the 200-foot navigation channel would increase by 9.6 feet (V-frame), or 12.8 feet (Super Haunch).

[2] Note that the USCG would likely require removal of the GSB if it no longer serves a transportation purpose. See November 30, 2006 letter from Gary Kassof, USCG, to Marc G. Laurin, NHDOT, regarding the Draft Environmental Impact Statement for the Newington-Dover, 11238 project.

As a result of these inspection reports, FHWA concurred with NHDOT's recommendation that further evaluation of rehabilitation and other alternatives was warranted, and determined that a Supplemental Environmental Impact Statement (SEIS) would be necessary to re-evaluate any changes to the rehabilitation of the GSB, as such changes have the potential to result in significant environmental impacts that were not previously evaluated in the original EIS.

The Preferred Alternative identified in this DSEIS is not consistent with the April 3, 2008 Memorandum of Agreement (MOA) (see http://www.newington-dover.com/gsb_subsite/contract_ documents.html). The 2008 MOA among FHWA, NHDOT, and NHDHR pursuant to Section 106 of the National Historic Preservation Act (NHPA) memorialized the commitment to rehabilitate the GSB.

Should a replacement Preferred Alternative move forward as the Selected Alternative, measures for historic mitigation to compensate for the loss of the GSB will be developed through a collaborative, public input approach consistent with the Section 106 process. During cultural resource agency coordination meetings with the FHWA, NHDOT, NHDHR, the City of Dover, the Town of Newington, and various Consulting and Interested Parties, it was determined that the adverse effect to the GSB could be mitigated. Applicable Section 106 consultation documents and correspondence can be found on the project website (www.newington-dover.com/gsb_subsite/contract_ documents.html). Mitigation measures for the adverse effect would be finalized and stipulated in a new MOA pursuant to Section 106.

Maintaining a Permanent Pedestrian and Bicycle Connection

The purpose of the Project is to provide permanent pedestrian and bicycle access across Little Bay. At public informational meetings held on October 25, 2016, January 30, 2018, and September 5, 2018, the public voiced support of pedestrian and bicycle access across Little Bay via a protected bicycle lane on the LBB. A temporary detour (opened for public access in August 2019) currently provides uninterrupted pedestrian and bicycle access, but because this temporary detour requires temporary use of one lane of the northbound LBB, it limits the transportation capacity of the highway for motorized vehicles. The temporary bicycle and pedestrian detour approach on the Newington side connects to and utilizes the access road already constructed for the water quality treatment Best Management Practice (BMP) basin located adjacent to the Exit 4 northbound on-ramp from Shattuck Way. The temporary detour approach on the Dover side connects to Wentworth Terrace, adjacent to the eastern side of Hilton Park. This temporary detour would be removed as soon as possible following completion of the Project to allow the expanded LBB to accommodate vehicular traffic volumes as intended and designed.

The NHDOT is committed to engagement and coordination with the public and other stakeholders to solicit input and ensure that project decisions meet public transportation needs, community goals, and protect and enhance the environment. Public input will continue to be important as NHDOT and FHWA take all comments received into consideration to inform the decision-making process for the Project.

United States Coast Guard Terms

The GSB spans a navigation channel, which provides access from the Great Bay to the Piscataqua River. The poor condition of the GSB has become a concern to boaters and safety agencies due to the potential hazards from falling material. Under the terms of the existing permit for the GSB and expanded LBB issued by the United States Coast Guard (USCG), the GSB superstructure and substructure would eventually need to be removed if it is no longer used for transportation purposes (*i.e.*, pedestrian and bicycle use).[3]

ES-7. Federal Actions Required for the Project

Federal requirements to construct the Preferred Alternative include several permits, approvals, certifications, and reviews from Federal agencies. **Table ES-2** below outlines the applicable Federal compliance requirements.

Table ES-2 Required Federal Permits, Approvals, Certifications or Regulatory Compliance

Regulation	Issuing Agency	Name of Approval
National Environmental Policy Act	FHWA	Final Supplemental EIS (FSEIS) and Supplemental Record of Decision (SROD); or combined FSEIS/SROD
Clean Water Act, Section 404; Federal Rivers and Harbors Act, Section 10	USACE	Individual Permit
Clean Water Act, 33 USC §1251 et sq.	USEPA	National Pollutant Discharge Elimination System Construction General Permit[1]
National Historic Preservation Act, Section 106	ACHP and FHWA	Section 106 Consultation[2]
Section 4(f) of the US Department of Transportation Act	FHWA	Section 4(f) Approval
Magnuson-Stevens Fishery Conservation and Management Act	NOAA – NMFS	Essential Fish Habitat Assessment[3]
Endangered Species Act	NOAA – NMFS	Designated Critical Habitat[4]
Endangered Species Act	USFWS	Section 4(d) Rule[5]
US Coast Guard Bridge Permit	USCG	Amended Bridge Permit

1 Includes the preparation of a Notice of Intent, Notice of Termination, and combined Stormwater Pollution Protection Plan (SWPPP) and Marine Sediment Containment/Protection Plan. The National Pollutant Discharge Elimination System Construction General Permit is to be prepared just before construction begins.

2 An Adverse Effects Memo was executed for the Project on January 2, 2020 which determined that the Preferred Alternative would result in an Adverse Effect to the General Sullivan Bridge (DOV0158). Applicable Section 106 consultation documents and

3 On November 30, 2006, Gary Kassof of the USCG sent a letter to Marc G. Laurin, Senior Environmental Manager of NHDOT, regarding the Draft Environmental Impact Statement for the Newington-Dover, 11238 project. The USCG advised NHDOT that the GSB should be removed as it no longer served a transportation purpose, and that a clear and reasonable rationale must be presented for retaining or rebuilding the structure. The letter also stipulated that the bridge permit application to be submitted must address the need to retain or rebuild the GSB and, if the old bridge is to be removed, should include complete removal of all parts not utilized in the new structure.

correspondence can be found on the project website (www.newington-dover.com/gsb_subsite/contract_documents.html). An MOA will be finalized following public input on the DSEIS.

3 Essential Fish Habitat consultation with NOAA – NMFS was completed on May 17, 2019.

4 Designated Critical Habitat consultation with NOAA - NMFS was completed on June 18, 2019.

5 The Project complies with the ESA 4(d) rule (NLEB conservation) per the Streamlined Consultation Form.

1

Introduction

The New Hampshire Department of Transportation (NHDOT) and the Federal Highway Administration (FHWA) have prepared this Draft Supplemental Environmental Impact Statement (DSEIS) pursuant to the National Environmental Policy Act (NEPA)[4] to evaluate alternatives for the rehabilitation or replacement of the historic General Sullivan Bridge (GSB) (the "Project" or the "11238S Contract") to provide access across Little Bay for non-motorized users.

This DSEIS supplements a 2007 Final Environmental Impact Statement (Final EIS) addressing a set of improvements to the Spaulding Turnpike (carrying a section of US 4 and NH 16).[5] While the 2007 FEIS included an analysis of alternatives related to the GSB, its scope encompassed a much larger transportation project involving the GSB, the adjacent Little Bay Bridges (LBBs), and multiple interchanges and local roads over a 3.5-mile portion of the Spaulding Turnpike.

In the 2008 Record of Decision (ROD) following publication of the 2007 FEIS, NHDOT and FHWA committed to maintain pedestrian and bicycle connectivity between Dover and Newington, and to accomplish that by rehabilitating the GSB as part of the Selected Alternative.[6] An April 2008 Memorandum of Agreement (MOA) among FHWA, NHDOT, and the New Hampshire Division of Historical Resources (NHDHR) pursuant to Section 106 of the National Historic Preservation Act (NHPA) memorialized the commitment to rehabilitate the GSB. The 2008 MOA addressed the removal and replacement of the deck and floor system, replacement of rivets, and the removal of the north embankment and portions of the north abutment and wing wall, while assuming the GSB piers and truss would be preserved.

Inspections and engineering studies of the current GSB condition were completed from 2009 to 2016 to prepare for the final design of the rehabilitation project. A Type Span and Location (TSL) Study was completed in 2017. These studies indicated that the GSB was more deteriorated than originally understood at the time of the 2007 FEIS. It became clear that the rehabilitation would have very high costs, would carry high risks, and would have a limited life span compared to other options.

As a result of these studies, FHWA concurred with NHDOT's recommendation that further evaluation of rehabilitation and other alternatives was warranted, but determined that a Supplemental Environmental Impact Statement (SEIS) would be necessary to re-evaluate any changes to the rehabilitation of the GSB, as such changes have the potential to result in significant environmental impacts that were not previously evaluated in the original EIS.

In accordance with FHWA's regulations pertaining to supplemental environmental impact statements, this DSEIS adheres to the applicable requirements set forth in 23 Code of Federal Regulations (CFR) 771.130. Pursuant to 23 CFR 771.130(a), a draft EIS, final EIS, or supplemental EIS may be supplemented at any time; an EIS shall be supplemented when FHWA determines that changes to the proposed action would result in significant environmental impacts that were not evaluated in the EIS, or when new information or circumstances relevant to environmental concerns and bearing on the proposed action or its impacts would result in significant environmental impacts not evaluated in the EIS.

Per 23 CFR 771.130(d), this DSEIS uses the same process and format (*i.e.,* draft EIS, final EIS, and ROD) as the original EIS; however, scoping is not required. This DSEIS is of limited scope and addresses the evaluation of the location and/or design of alternatives associated with a limited portion of the overall project (*i.e.*, the rehabilitation or replacement of the GSB) and related mitigation [23 CFR 771.130(f)]. The preparation of this DSEIS, in accordance with 23 CFR 771.130(f)(1) through (3), shall not necessarily prevent the granting of new approvals, require the withdrawal of prior approvals, or require the suspension of project activities which are not directly affected by the DSEIS.

NHDOT and FHWA may complete the NEPA process by issuing a combined FSEIS/SROD pursuant to 49 USC 304a(b) [and 23 USC 139(n)(2)], unless FHWA determines that statutory criteria or practicability considerations preclude issuance of a combined FSEIS/SROD. Recent USDOT Office of Transportation Policy guidance has indicated that the requirement to develop a combined FEIS/ROD is applicable to a SEIS.[7] **Section 1.4**, *Requirements for Combined FSEIS/SROD*, outlines the factors that FHWA uses in making this determination.

---

[4] NEPA applies to federal actions that may affect the human environment, such as traffic or air—or natural environment, such as wetlands or endangered species. The FHWA is the lead federal agency overseeing the NEPA process for the General Sullivan Bridge Project. Documentation of the NEPA process is essential; it helps assess the Project from a wide range of viewpoints, including environmental to economic impacts.

[5] Federal Highway Administration. 2007. *Spaulding Turnpike Improvements, Final Environmental Impact Statement*. US Department of Transportation. Accessed from http://www.newington-dover.com/html-studydocs/feis.html.

[6] Federal Highway Administration. 2008. *Spaulding Turnpike Improvements, Record of Decision*. US Department of Transportation. Accessed from http://www.newington-dover.com/documents/studydocs/Record_of_Decision_11238_signed.pdf.

[7] At the time of the publication of the Notice of Intent to Prepare an EIS in the Federal Register (January 18, 2018), it was unclear whether a combined FSEIS/SROD would apply to this SEIS.

1.1 Study Area

The GSB spans a tidal estuary system known as Little Bay near its confluence with the Piscataqua River in southeast New Hampshire. The bridge connects the Town of Newington and the City of Dover. The Study Area for the DSEIS includes both the GSB and the LBBs, as well as an area approximately 800 feet north and 800 feet south of the bridge abutments in Newington and Dover. Certain elements of the analysis provided in this DSEIS consider resources located outside of this immediate Study Area. Any modifications are clearly defined in the specific resource sections of the DSEIS. **Figures 1.1-1** and **1.1-2** depict the project Study Area.

1.2 Description of the General Sullivan Bridge

The GSB, built in 1934, is 1,528 feet long with the primary superstructure consisting of a combination deck truss and partial through arch truss. The GSB is supported by two reinforced concrete abutments and eight concrete piers with granite block facing and caps. The main span traverses a navigable channel and is 275 feet long. The existing GSB deck is approximately 32 feet wide and is oriented southeast to northwest. The nine spans of the GSB are numbered from north to south to maintain consistency with the original span numbering. The Dover abutment is located in Hilton Park. The approach to the GSB from Hilton Park is a pedestrian bridge constructed in 2010, and the south approach to the bridge in Newington is an on-grade pedestrian path. NHDOT's Bureau of Bridge Design-Existing Bridge Section designates the bridge as Dover 200/023.

Although originally designed to support two lanes of highway traffic over the mouth of the Little Bay, the bridge was closed to vehicular traffic in 1984, when the original LBB, located to the east of the GSB, was completed.[8] The north abutment was reconstructed in 2010, along with a new north approach bridge. Additional work in 2011 replaced the former paved emergency response and maintenance vehicle access from the south approach from Shattuck Way with a curved pedestrian path.

The general condition of the GSB has declined since the 2008 ROD was issued. Detailed inspections of the bridge determined it was in critical condition, and the exterior portions of the deck exhibit advanced deterioration. In 2015, chain link fencing was added to the center of the bridge along the entire length, as a safety measure to keep pedestrians away from the outside deck limits. Truss members exhibit section loss, pack rust, and corrosion holes, and the underwater piers have damage from sulfates and need repointing. A more recent inspection completed in September 2018 found significant additional deterioration of a critical floor beam under the bridge deck. Due to the unsafe condition of the GSB, it is currently closed to all traffic, including pedestrian/bicycle activities and fishing. Fencing and bridge closure signs were installed in late September 2018 to prevent access to the bridge due to its unsafe condition.

The GSB functioned as a pedestrian/bicycle/recreational facility from 1984 until its closure in September 2018. The GSB served as an important bicycle/pedestrian connection across Little Bay and was used for fishing and other recreational activity. As stated above in the introduction, this DSEIS is being prepared to re-evaluate options to maintain pedestrian/ bicycle access and connectivity between Newington and Dover, across Little Bay.

A photograph of the GSB is provided in **Figure 1.2-1**, and an engineering drawing of the existing bridge (and the adjacent LBB) is provided in **Figure 1.2-2**. Additional photographs of the immediate area are provided in **Appendix A**.

1.3 Purpose and Need

The Purpose and Need statement is fundamental to the analysis of a project under NEPA, the Clean Water Act (Section 404), and other environmental regulations. Sections 1.4.1 and 1.4.2 of the Newington-Dover 11238 FEIS published in December 2007 present the Purpose and Need that was developed in conjunction with an Advisory Task Force (ATF), reviewed by the cooperating agencies with no objections, and unanimously adopted by the ATF on October 29, 2003.

Much of the larger Newington-Dover 11238 Project has been constructed since FHWA issued its ROD on October 24, 2008, including most of the Newington segment and expansion of the LBBs. Construction of the Dover segment is underway, including reconstruction of Exit 6. However, new information relating to the condition of the GSB was developed during inspections conducted in 2010, 2014, 2016 and 2018. This new information has prompted a review of the Selected Alternative, which proposed the re-use of the GSB for non-motorized and emergency uses. Therefore, the Purpose and Need statement presented in the 2007 FEIS was reviewed and updated to ensure that it adequately addresses the provision of non-motorized transportation across the Little Bay. Revisions to the Purpose and Need are provided below.

1.3.1 Purpose

The project purpose presented in the 2007 FEIS was: "*The purpose of this project is to improve transportation efficiency and reduce safety problems, while minimizing social, economic, and environmental impacts, for an approximate 3.5-mile section of the Spaulding Turnpike extending north from the Gosling Road/Pease Boulevard Interchange (Exit 1) in the Town of Newington, across the Little Bay Bridges, to a point just south of the existing Toll Plaza in the City of Dover. Options that include implementing Transportation System Management (TSM) improvements, reusing the General Sullivan Bridge for local motorized and non-motorized traffic, enhancing rail service, improving bus transit service and instituting other travel demand management strategies that may reduce vehicle trips along the Spaulding Turnpike have been considered, in addition to widening the mainline, widening and/or replacing the Little Bay Bridges, and reconstructing the interchanges.*"

The revised purpose of the project element (GSB) that is the subject of this DSEIS is to provide recreational access and connectivity between Newington and Dover, across Little Bay, for pedestrians and non-motorized vehicles. This would entail reusing the GSB substructure and superstructure, as much as practicable, given the condition of the bridge, while accommodating infrequent uses such as maintenance equipment or emergency response vehicles.

[8] The Little Bay Bridge was rehabilitated and expanded as part of the Selected Alternative discussed in the 2007 FEIS. There are now two Little Bay Bridges adjacent to the GSB. The original bridge was rehabilitated and now carries northbound traffic, while a new bridge carries southbound traffic.

Figure 1.1-1

\\vhbvgis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 1.1-1_USGS_Location_Map.mxd

0 750 1500 3000 Feet

Approximate Work Limits

Study Area

Municipal Boundaries

Note: USGS topographic source map is from 1983 and therefore does not reflect all current conditions.

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

USGS Site Location and Study Area

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Source: VHB, NH GRANIT, USGS 7.5-minute Topographic Quadrangles Dover East and Portsmouth, dated 1983

Figure 1.1-2

\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 1.1-2_Study Area.mxd

0 125 250 500 Feet

Legend

Study Area

Town Boundaries

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Study Area

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Source: NHGRANIT, VHB

Figure 1.2-1

A view of the General Sullivan Bridge in 2013, looking northeast from the Newington side of Little Bay. Note on-going work on the expanded Little Bay Bridge in the background.

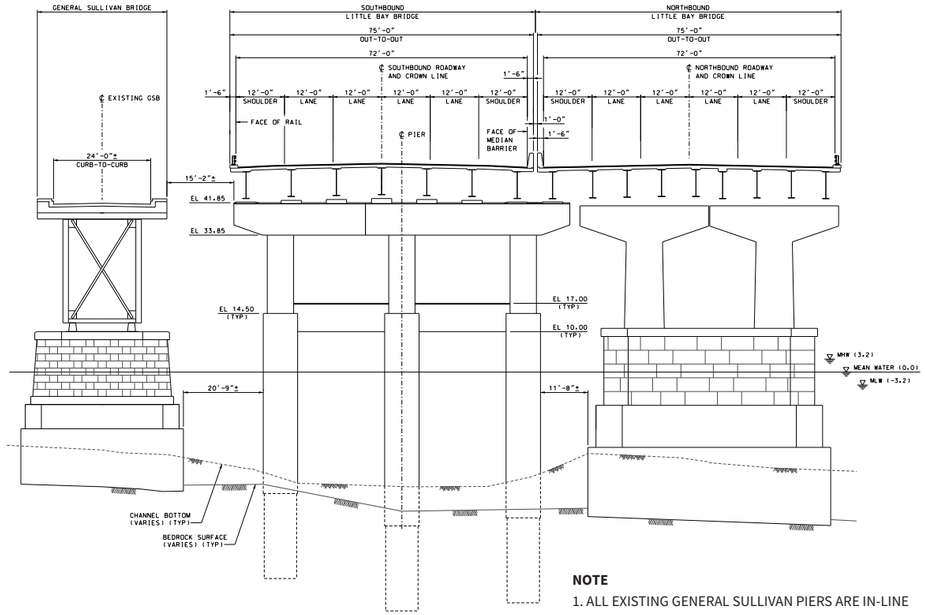
Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Site Photograph

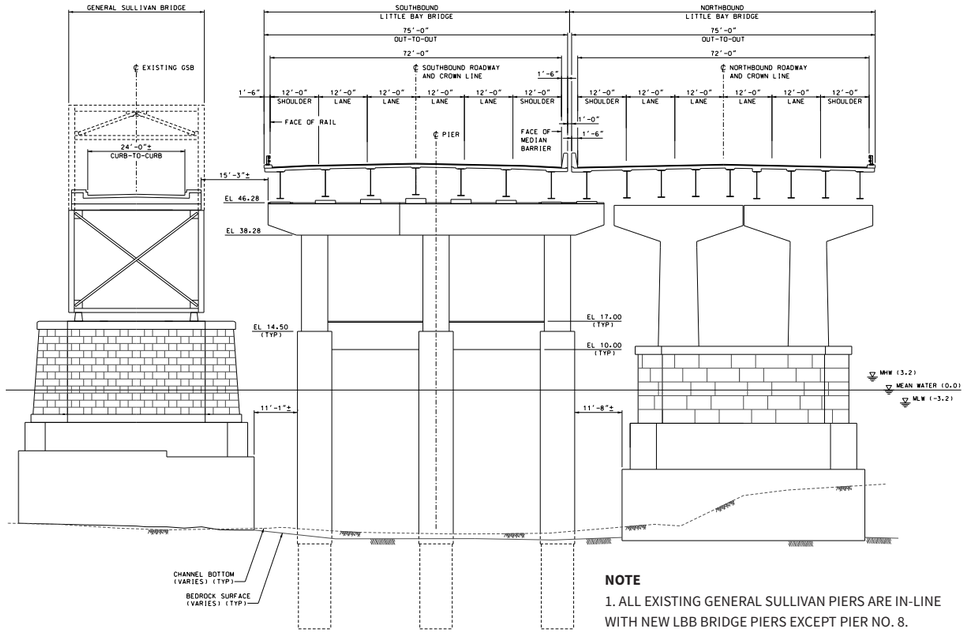
U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation



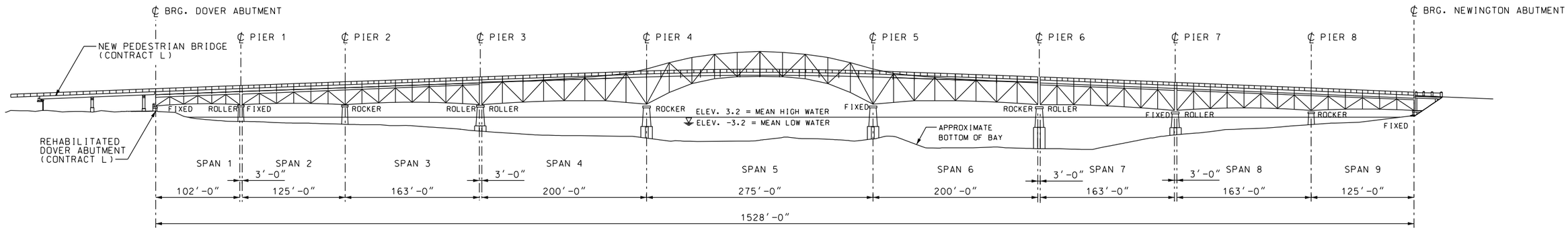
NOTE
1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH NEW LBB BRIDGE PIERS EXCEPT PIER NO. 8.

EXISTING CONDITION
TYPICAL BRIDGE SECTION (PIERS 1, 2, 7, & 8)—EXISTING
NOT TO SCALE



NOTE
1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH NEW LBB BRIDGE PIERS EXCEPT PIER NO. 8.

EXISTING CONDITION
TYPICAL BRIDGE SECTION (PIERS 3, 4, 5, & 6)—EXISTING
NOT TO SCALE



EXISTING GENERAL SULLIVAN BRIDGE ELEVATION
NOT TO SCALE

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Existing Conditions

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

1.3.2 Need

The Spaulding Turnpike is eastern New Hampshire's major limited access north-south highway, serving as a gateway linking the Seacoast Region with Concord, the eastern portion of the Lakes Region, and the White Mountains. The Turnpike is also part of the National Highway System reflecting its significance as an important transportation link in the state and regional system. Functionally classified as a principal arterial, it is a major commuter route which ties the growing residential areas of Dover-Somersworth-Rochester with the industrial and regional commercial centers in Newington, Portsmouth, and northern Massachusetts. It serves as the major artery for freight into and out of the areas north of the LBBs and is the economic lifeline of the region. It also serves as a major tourist route, providing access to the northern reaches of the state from the seacoast and points south of New Hampshire.

The FEIS established the need to continue providing access across Little Bay for pedestrians and non-motorized vehicles; the Selected Alternative included rehabilitating the historic GSB for this purpose.

However, the GSB design and configuration is vulnerable to corrosion and deterioration based on the harsh environmental setting of the bridge, especially since the bridge is constructed of thin steel sections and plates. Several truss members and connections require replacement and strengthening to support the weight of the structure, pedestrian and non-motorized vehicle loads, as well as periodic loads from maintenance equipment or emergency response vehicles when necessary. Deformations and section losses limit the remaining service-life of the bridge, and continued deterioration forced the closure of the bridge in September 2018. This closure eliminated permanent recreational use of the GSB and eliminated pedestrian and bicycle access across Little Bay. However, in August 2019, NHDOT established a temporary detour along northbound LBB to maintain a temporary multi-use connection between Newington and Dover for non-motorized transportation purposes.

1.4 Requirements for Combined FSEIS/SROD

Following the public comment period for the DSEIS, FHWA will make a determination as to whether issuance of a combined FSEIS/SROD is practicable or not. In accordance with FHWA's NEPA regulations, a combined FEIS/ROD format must be used, to the maximum extent practicable, unless the FEIS makes substantial changes to the proposed action that are relevant to environmental or safety concerns, or there are significant new circumstances or information relevant to environmental concerns that bear on the proposed action or the impacts of the proposed action [23 CFR 771.124(a)(1)].

The USDOT Office of Transportation Policy's "*Guidance on the Use of Combined Final Environmental Impact Statements/Records of Decision and Errata Sheets in National Environmental Policy Act Reviews,*" dated April 25, 2019, includes factors used to evaluate and determine the practicality of issuing a combined FSEIS/SROD format.[9] Each of the following factors will be evaluated by FHWA in making a decision as to whether to issue a combined document, or to issue the FSEIS and SROD separately:

1. Are there any coordination activities that are more effectively completed after the FEIS is available?
2. Are there any unresolved interagency disagreements over issues that need identification in the FEIS?
3. Is there a substantial degree of controversy?
4. Does the DEIS identify a preferred alternative from among the comparatively evaluated reasonable alternatives?
5. Are there compliance issues with substantive requirements that must be resolved before issuance of the ROD, or that the Operating Administration wants to resolve before signing the ROD, but that do not merit deferring issuance of the FEIS?

[9] The 2019 *"Guidance on the Use of Combined Final Environmental Impact Statements/Records of Decision and Errata Sheets in National Environmental Policy Act Reviews"* includes a factor pertaining to Executive Order 13807: Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects. As of January 20, 2021, Executive Order 13807 has been revoked and is therefore not included in this discussion.

2

Alternatives

Section 2.1 of this chapter introduces the range of design options, or alternatives, developed for the Project. Developing a reasonable range of alternatives to address the Project Purpose and Need is an essential part of the NEPA process. **Section 2.2** of this chapter chronicles the screening process used to develop an initial list of alternatives and to eliminate those determined to be unreasonable. **Section 2.3** describes the reasonable alternatives which passed the screening process and are fully analyzed in the DSEIS and identifies the Preferred Alternative. **Section 2.4** describes other project elements including the temporary bicycle and pedestrian detour, and the proposed temporary contractor construction access.

While the 2007 FEIS included an analysis of alternatives related to the GSB, its scope encompassed a much larger transportation project involving the GSB, the adjacent Little Bay Bridges (LBBs), and multiple interchanges and local roads over a 3.5-mile portion of the Spaulding Turnpike. The initial alternatives described in the 2007 FEIS focused on identifying and evaluating potential highway improvements and traffic mitigation measures to improve safety, relieve congestion, reduce travel time and accommodate projected increases in traffic demand. As described in Chapter 1, the 2007 FEIS included an analysis of alternatives related to the GSB, referred to as the Bridge Segment alternatives. General descriptions of each of the build alternatives evaluated for the Bridge Segment is included in Section 2.4.8.4 of the 2007 FEIS, and the discussion in the following paragraphs summarizes the alternatives addressed in this previous NEPA documentation.

In summary, 14 conceptual bridge alternatives were developed during production of the DEIS. During the preliminary screening of alternatives, it was determined that only two main bridge alternatives warranted consideration in the 2007 FEIS:

- Widen/rehabilitate the Little Bay Bridges and rehabilitate the General Sullivan Bridge
- Widen/rehabilitate the Little Bay Bridges and remove the General Sullivan Bridge

As discussed in Section 2.5.4 of the 2007 FEIS, the two bridge alternatives that were carried forward and evaluated were similar in that each involved the proposed rehabilitation and westerly widening of the LBBs from the current four-lanes to eight-lanes. The difference between them was the disposition of the GSB. One alternative included the retention and rehabilitation of the GSB, while the other alternative included the demolition and removal of the GSB, with the addition of a multi-use path on the expanded LBB to accommodate bicycles and pedestrians.

Section 2.7.1 of the 2007 FEIS summarized the rationale behind selecting the rehabilitation of the GSB. The rationale included recognition of the bridge's historic and recreational importance, and the position of agencies and the public to preserve the GSB. Section 2.7.1 also described the extent of the proposed work that would be required to rehabilitate the GSB, including the complete replacement of the deck and supporting structural system, other miscellaneous repairs to the structural steel to arrest future corrosion, cleaning and painting the entire structure, and repairing the substructure.

The alternative that proposed removal of the GSB had lower initial costs and lower long-term maintenance costs, but the alternative that proposed to retain the GSB had a high degree of community support and would not have adversely impacted the historic structure. As stated in the 2008 ROD, "*…after consideration of the landmark status of the GSB and its historic and recreational significance to the area, and that more members of the public have voiced support for the bridge's rehabilitation than for its removal, the Bridge Rehabilitation and Widening option which retains the GSB was identified as part of the Selected Alternative.*"

However, inspections and engineering studies of the current GSB condition were completed from 2009 to 2016 to prepare for the final design of the rehabilitation project. A Type Span and Location (TSL) Study was completed in 2017. These studies indicated that the GSB was more deteriorated than originally understood at the time of the 2007 FEIS. It became clear that the rehabilitation would have very high costs, would carry high risks, and would have a limited life span compared to other options.

As a result of these studies, FHWA concurred with NHDOT's recommendation that further evaluation of rehabilitation and other alternatives was warranted, but determined that a SEIS would be necessary to re-evaluate any changes to the rehabilitation of the GSB, as such changes have the potential to result in significant environmental impacts that were not previously evaluated in the original EIS.

2.1 Preliminary Alternatives

For this DSEIS, the alternatives development process considered almost two dozen preliminary alternatives and design options, several of which came from the *2016-2017 Type, Span, and Location Study*. In 2018, the project team developed additional alternatives after further consultation with the public and FHWA. Each preliminary alternative was developed using roadway and multi-use path design guidelines based on American Association of State Highway

and Transportation Officials (AASHTO) standards for lane and shoulder widths for pedestrians, bicycles, and vehicles.[10]

For roadways such as the Spaulding Turnpike, 12-foot lanes and 12-foot shoulders represent the recommended or "desirable" shoulder width, and 10-foot shoulders represent the "minimum" shoulder width.[11] For multi-use paths, a 12-foot path with 2-foot shoulders (*i.e.,* 16 feet total) represent the recommended or "desirable" multi-use path width, and a 10-foot multi-use path with 1-foot shoulders (*i.e.,*12 feet total) represents the "minimum" multi-use path width.[12] **Table 2.1-1** summarizes the minimum and desirable design widths used in developing the preliminary alternatives. **Figure 2.1-1** provides a visual for the two multi-use path options.

Table 2.1-1 General Sullivan Bridge SEIS – Roadway and Multi-Use Path Width Criteria

Travel Corridor	Minimum Design Width (feet)	Desirable Design Width (feet)
Roadway Lane	12	12
Roadway Shoulder	10	12
Multi-Use Path Lane	10	12
Multi-Use Path Shoulder	1	2

The preliminary alternative designs included both a minimum 12-foot total width and 16-foot total width multi-use path. A 16-foot deck (*i.e.,* 12-foot path with 2-foot shoulders on each side) is structurally desirable over a 12-foot deck for preliminary alternatives. The following range of preliminary alternatives were developed for the Project.[13]

Alternative 1: Rehabilitation of General Sullivan Bridge

Alternative 1 is to rehabilitate the GSB's substructure and truss superstructure and replace the GSB bridge deck. The deck and floor system would be replaced with an 18.3-foot wide deck (out-to-out), which matches the deck width of the newly constructed approach bridge on the Dover side. This deck would provide approximately 16 feet rail-to-rail to accommodate a multi-use path approximately 13.7 feet wide bounded by 1-foot wide shoulders and pedestrian rails. There would be no changes to the LBB.[14]

Alternative 2: Superstructure Replacement – Truss Alternative

Alternative 2 is to replace the GSB superstructure while retaining the existing substructure. The new superstructure would be a truss with a similar aesthetic appearance to the existing GSB truss. The new GSB superstructure would have an approximately 18.3-foot wide deck (out-to-out). This deck would provide approximately 16 feet rail-to-rail to accommodate a multi-use path approximately 12 feet wide bounded by 2-foot shoulders and pedestrian rails. There would be no changes to the LBB.

Alternative 3: Partial Rehabilitation of the General Sullivan Bridge

Alternative 3 is to replace the GSB approach spans (spans 1, 2, 3, 7, 8, and 9), and rehabilitate the through-truss main spans (spans 4, 5, and 6). Under this alternative, the through-truss main spans would be rehabilitated and remain in place; the substructure would be retained. Like Alternatives 1 and 2, the GSB superstructure would have an approximately 18.3-foot wide deck (out-to-out). This deck would provide approximately 16 feet rail-to-rail to accommodate a multi-use path approximately 12 feet wide bounded by 2-foot shoulders and pedestrian rails. There would be no changes to the LBB.

Alternative 4: Complete Replacement

Alternative 4 is to replace the GSB superstructure and substructure, including piers. Under this alternative, both the bridge superstructure and substructure would be replaced with a new substructure and either a steel or concrete superstructure. The new bridge would not have a truss and would not be visually consistent with the existing GSB. The new bridge would be constructed on concrete piers supporting an approximately 18.3-foot wide deck (out-to-out). This deck would provide approximately 16 feet rail-to-rail to accommodate a multi-use path approximately 12 feet wide bounded by 2-foot shoulders and pedestrian rails. There would be no changes to the LBB.

Alternative 5: Reconfigure Southbound Little Bay Bridge

Alternative 5 is to reconfigure the LBB roadway lanes and shoulders to accommodate a new multi-use path on the existing bridge deck without modifying the existing west bridge fascia,[15] thereby maintaining the existing width of the LBB. Under this alternative, the four roadway lanes would remain 12 feet wide, and the roadway shoulders would be reduced from the desirable 12-foot width to the minimum 10-foot width. A 2-foot wide concrete barrier would separate the roadway shoulders from a new multi-use path. Without modifying the west fascia of the LBB, the multi-use path would only be 2 feet wide in total with no shoulders and a pedestrian rail, which

[10] A "multi-use" (or "shared use") path is defined by the American Association of State Highway and Transportation Officials as a bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way.

[11] American Association of State Highway and Transportation Officials. 2011. *A Policy on Geometric Design of Highways and Streets, 6th edition*. Chapter 8, Sections 2.4 and 4.2.

[12] American Association of State Highway and Transportation Officials. 2012. *Guide for the Development of Bicycle Facilities, 4th edition*. Chapter 5, Sections 2.1 and 2.10.

[13] The list of preliminary alternatives is not consecutive due to the removal of Alternative 8. Alternative 8 was originally developed as a rehabilitation alternative. Upon review of the alternative, it was determined to be substantially identical to Alternative 1. For this reason, Alternative 8 was discarded from the list of preliminary alternatives before being fully developed. The numbering was retained for consistency with other materials developed for the Project.

[14] NH House Bill 2018 (2018 legislative session) adopted the state's 10-year transportation improvement plan for 2019-2028 with provisions that limit funding for the rehabilitation of GSB while allowing its replacement. While this remains the legislative direction, it does not preempt the responsibility of NHDOT to review alternatives under NEPA. Should the rehabilitation of the GSB become the Selected Alternative under this NEPA SEIS, the NHDOT will need to go back to the Governor's Advisory Commission on Intermodal Transportation committee and NH General Assembly to seek to amend the 10-year plan.

[15] A bridge "fascia" is defined as an outside, covering member designed as an architectural effect rather than to provide strength and rigidity although its function may involve both. A fascia girder is an exposed outermost girder of a span sometimes treated architecturally or otherwise to provide an attractive appearance.

does not provide an adequate facility. Under this alternative, the GSB superstructure and substructure would be demolished.

Alternative 6: Southbound Little Bay Bridge - Widened Deck on Pier Extension

Alternative 6 is to widen the southbound LBB to accommodate a new multi-use path. This alternative requires constructing a pier extension, supported by the existing GSB piers, to carry the widened LBB superstructure. The southbound LBB bridge deck would be extended approximately 17.67 feet, including two new girder lines, which are supported by the pier extension. Under Alternative 6, the four travel lanes and shoulders would all remain the desirable 12-foot width. A 2-foot wide concrete barrier would separate the roadway shoulders from a new multi-use path. The multi-use path would be 16-feet wide in total, consisting of the desirable 12-foot wide multi-use path with 2-foot wide shoulders on each side and a pedestrian rail. The new multi-use path would not be in the form of a truss, and therefore would not be visually consistent with the existing GSB. Under this alternative, the GSB superstructure would be demolished. The GSB Piers 2 through 8 would be left in place, but GSB Pier 1 would be removed and replaced with a new drilled shaft pier to support the reconfigured approach span.

Alternative 7: Southbound Little Bay Bridge - Independent Deck on Pier Extension

Alternative 7 is to construct a new separate multi-use path with an approximately 18.3-foot wide deck (out-to-out) adjacent to the LBB, but not connected to the LBB bridge deck. Similar to Alternative 6, a pier extension would be constructed from the LBB superstructure, which would be supported by the existing GSB piers. On the pier extension, a new multi-use path deck would be constructed, approximately 7.5 feet from the LBB. The LBB superstructure would not be modified. The multi-use path would be 16 feet wide, consisting of the desirable 12-foot wide multi-use path with 2-foot wide shoulders on each side, and a pedestrian rail. The new superstructure would not be in the form of a truss, and therefore would not be visually consistent with the existing GSB. Under this alternative, the GSB superstructure would be demolished. The GSB Piers 2 through 8 would be left in place, but GSB Pier 1 would be removed and replaced with a new drilled shaft pier to support the reconfigured approach span.

Alternative 9: Superstructure Replacement – Girder Option

Alternative 9 is to completely replace the GSB superstructure with a steel girder system with a structural steel frame extending from the bottom of the girders to the top of the existing GSB piers. The new superstructure would not be in the form of a truss, and therefore would not be visually consistent with the existing GSB. This alternative would have an approximately 18.3-foot wide deck (out-to-out), a 16-foot wide multiuse path, consisting of the desirable 12-foot wide multi-use path with 2-foot wide shoulders on each side, and a pedestrian rail. Under Alternative 9, the GSB superstructure would be demolished; however, this alternative would reuse the existing piers without requiring significant modifications.

2.2 Screening Criteria and Results

A process called screening was used to eliminate preliminary alternatives that did not score well when compared to other alternatives. **Figure 2.2-1** provides a visual representation of the screening process. The screening criteria included:

- **Purpose and Need:** Alternative meets the project Purpose and Need - To provide bicycle and pedestrian access between Dover and Newington. This criterion also considers how well the alternative meets the project Purpose and Need.
- **Feasibility:** Alternative is reasonable and practicable from a technical standpoint. Alternative can be implemented using existing techniques and materials, within a reasonable duration, and without excessive impacts on the environment or the transportation network.
- **Cost:** Alternative has construction and life cycle costs that are not excessive in comparison with other reasonable alternatives.[16,17]
- **Safety - User Safety:** Alternative provides a safe and efficient crossing for vehicular and non-motorized travel across the span, minimizing deviations from the design standards for roadways and bridges.
- **Safety – Inspection and Emergency Access:** Alternative provides safe means for inspection, maintenance, and emergency vehicle access.
- **Transportation Capacity:** Alternative maintains or improves existing vehicle capacity across the LBB, with no decrease in the number or width of travel lanes or shoulders.
- **Cultural Resource Impacts:** Alternative preserves some or all of the GSB.

A screening matrix was developed to review the preliminary alternatives based on how well they met the screening criteria (**Table 2.2-1**). The screening criteria eliminated three of the preliminary alternatives from further analysis in the DSEIS, as shown in the screening matrix and described in the following text.

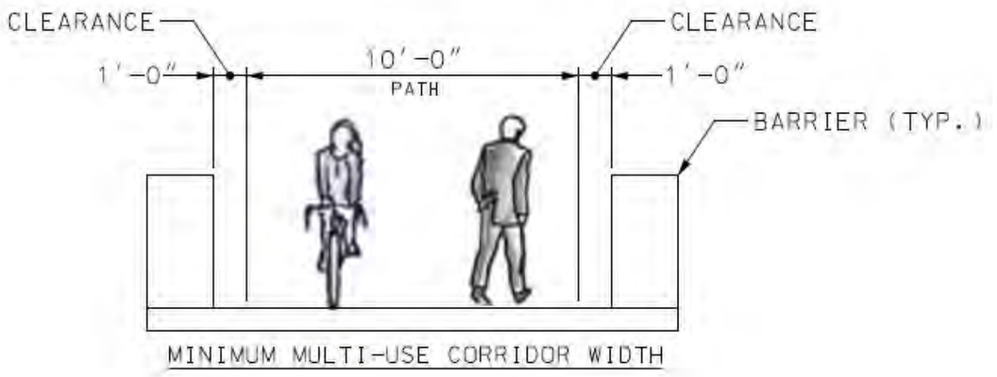
Applying the screening criteria to the preliminary alternatives resulted in the elimination of certain alternatives from further consideration:

- **Alternative 2:** Alternative 2 would completely replace the GSB superstructure, similar to Alternatives 6, 7 and 9. The notable differences among these four alternatives are cost and design. While Alternative 2 would be a truss design with a similar aesthetic appearance to the existing GSB truss, it would have an initial capital cost of $37.75 million, amounting to $8.25 million to $9.75 million more than Alternatives 6, 7 and 9. For these reasons, Alternative 2 would not provide the most cost-effective option for a superstructure replacement and was eliminated during the screening process.

[16] Costs were developed for both a 12-foot and 16-foot wide multi-use path, for each of the alternatives. Because the cost difference between the 12-foot path and a 16-foot path is very small (typically 1% depending on the alternative), the project engineers recommended a 16-foot wide path since it is safer.

[17] Additional information on the cost estimates for each alternative is provided in **Appendix C**.

Figure 2.1-1



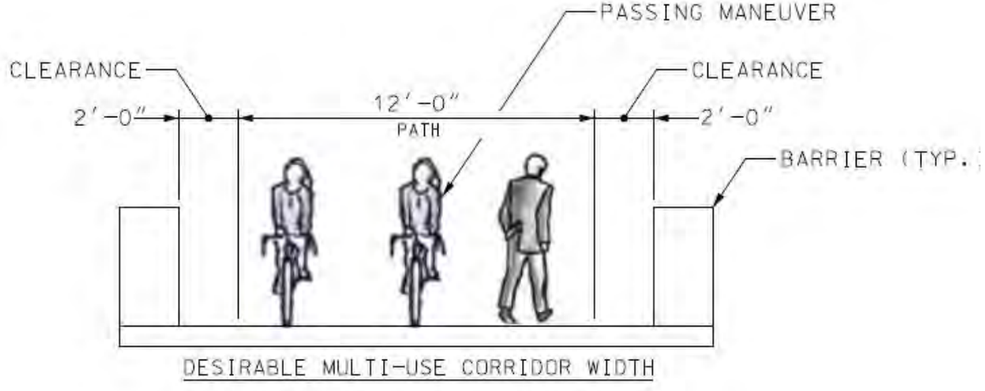


Figure 2.2-1

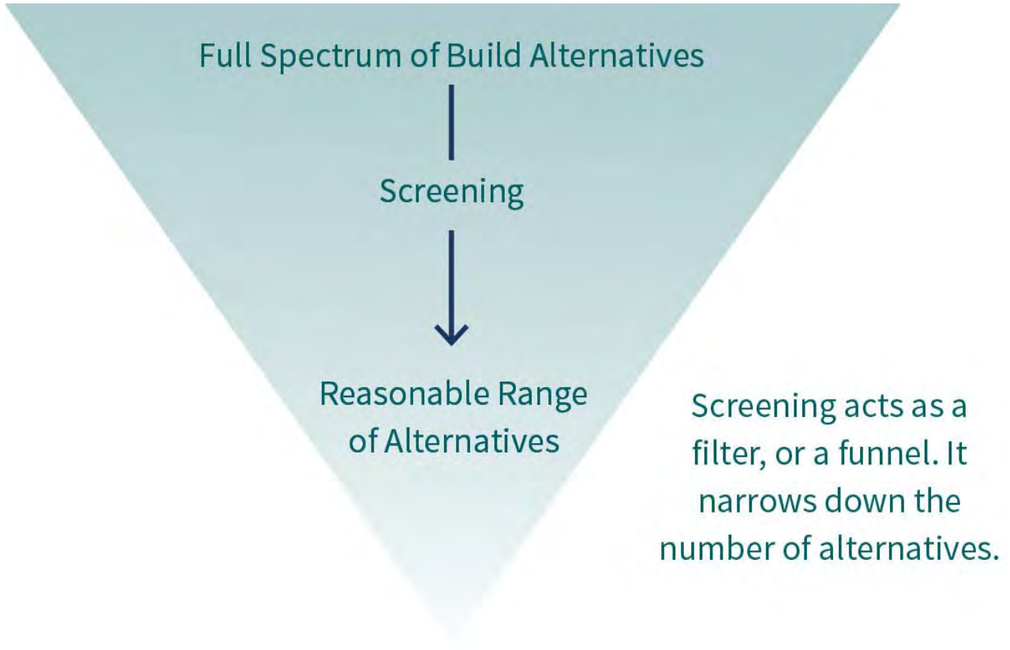


Table 2.2-1 Alternatives Analysis Screening Matrix

Alternative[1]	Screening Criteria								Advanced to Detailed Study in SEIS?
	Purpose and Need[2]	Feasibility[3]	Estimated Costs[4]		Safety - User Safety[5]	Safety - Inspection and Emergency Access[6]	Transportation Capacity[7]	Cultural Resource Impacts[8]	
			Initial Capital Cost, 2018 Dollars	Life Cycle Cost, 2018 Dollars					
No-Action	○	○	$8,000,000[9]	-	○	○	●	●	Y
Alternative 1: Rehabilitation of the General Sullivan Bridge	●	◐	$43,000,000	$74,000,000	●	●	●	●	Y
Alternative 2: Superstructure Replacement - Truss Alternative[10]	●	●	$37,750,000	-	●	●	●	◐	N
Alternative 3: Partial Rehabilitation	●	●	$42,250,000	$61,750,000	●	●	●	◐	Y
Alternative 4: Complete Replacement[10]	●	●	$31,750,000	-	●	●	●	○	N
Alternative 5: Reconfigure Southbound Little Bay Bridge[11]	○	●	-	-	○	○	◐	●	N
Alternative 6: Southbound Little Bay Bridge - Widened Deck on Pier Extension	●	●	$28,000,000	$31,250,000	◐	●	●	◐	Y
Alternative 7: Southbound Little Bay Bridge - Independent Deck on Pier Extension	●	●	$29,500,000	$32,250,000	●	●	●	◐	Y
Alternative 9: Superstructure Replacement - Girder Option	●	●	$28,500,000	$31,250,000	●	●	●	◐	Y

Notes:

○ - Does not perform well in comparison with other preliminary alternatives ◐ - Performs adequately in comparison with other preliminary alternatives ● - Performance exceeds other preliminary alternatives

1 – The list of preliminary alternatives is not consecutive due to the removal of Alternative 8. Alternative 8 was originally developed as a rehabilitation alternative. Upon review of the alternative, it was determined to be identical to Alternative 1. For this reason, Alternative 8 was not included in this table. The numbering was retained for consistency with other materials developed for the Project.
2 – Alternative meets the project Purpose and Need: *To provide bicycle and pedestrian access between Dover and Newington.* This criterion also considers how well the alternative meets the project Purpose and Need.
3 – Alternative is reasonable and practicable from a technical standpoint. Alternative can be implemented using existing techniques and materials, within a reasonable duration, and without excessive impacts on the environment or the transportation network.
4 – Alternative has construction and life cycle costs that are not excessive in comparison with other reasonable alternatives.
5 – Alternative provides a safe and efficient crossing for vehicular and non-motorized travel across the span, minimizing deviations from the design standards for roadways and bridges and the AASHTO design standards for bicycle and pedestrian facilities.
6 – Alternative provides safe means for inspection, maintenance, and emergency vehicle access.
7 – Alternative maintains or improves existing vehicle capacity across the Little Bay Bridge, with no decrease in travel lanes.
8 – Alternative preserves some or all of the GSB.
9 – Under the terms of the existing USCG Bridge Permit for the GSB and LBB, the GSB must be removed if it no longer serves a transportation purpose. The estimated cost to remove all parts of the GSB is $8,000,000.
10 – Life Cycle Cost estimates for Alternatives 2 and 4 were not completed since these alternatives were eliminated early in in the screening due to issues related to their relatively high initial capital costs, combined with concerns related to feasibility and cultural resource impacts.
11 – Alternative 5 was eliminated from consideration prior to development of the cost estimates because it fails to meet the project Purpose and Need.

- **Alternative 4:** Alternative 4 would completely replace the GSB superstructure and stone masonry piers. Compared to all other preliminary alternatives, Alternative 4 is the only alternative that would not preserve any portion of the GSB, which is why this alternative received the lowest score under the cultural resource impacts criterion. Furthermore, this alternative would require greater impacts on the Little Bay aquatic environment. For these reasons, Alternative 4 was eliminated during the screening process.
- **Alternative 5:** Under Alternative 5, the multi-use path would only be 2 feet wide in total with no shoulders. A 2-foot wide multi-use path would not provide an adequate facility and would be unsafe (for both the public and emergency or inspection services). For these reasons, Alternative 5 would not meet the Purpose and Need or provide a safe multi-use path and was eliminated during the screening process.

2.3 Reasonable Alternatives

The screening process narrowed down the preliminary alternatives from eight to five; the five preliminary alternatives that passed screening are referred to as reasonable alternatives.[18] See **Appendix D** for a set of drawings depicting temporary construction access impact plans for each reasonable alternative. These five reasonable alternatives include:

- Alternative 1: Rehabilitation of the General Sullivan Bridge
- Alternative 3: Partial Rehabilitation of the General Sullivan Bridge
- Alternative 6: Southbound Little Bay Bridge - Widened Deck on Pier Extension
- Alternative 7: Southbound Little Bay Bridge - Independent Deck on Pier Extension
- Alternative 9: Superstructure Replacement - Girder Option

This section provides an in-depth description and comparison of the reasonable alternatives, and also discusses the No-Action Alternative. The DSEIS includes an assessment of the No-Action Alternative to serve as a baseline by which to evaluate impacts of the five reasonable alternatives.

No-Action Alternative

Under the No-Action Alternative, non-motorized transportation across the Little Bay would be permanently eliminated. Although the temporary detour (opened for public access in August 2019) provides uninterrupted pedestrian and bicycle access, this temporary detour requires temporary use of one lane of the northbound LBB, which limits the transportation capacity of the highway for motorized vehicles. The temporary detour would need to be removed to allow the expanded LBB to accommodate vehicular traffic volumes as intended and designed (see also **Section 2.4**, *Other Project Elements*). For these reasons, the No-Action Alternative would not meet the Purpose and Need of the Project.

Normal maintenance, monitoring, or inspections that would occur under this alternative would not be adequate to correct the existing state of significant deterioration of the GSB. The No-Action Alternative would not correct the situation that causes the GSB to be considered structurally deficient and deteriorated. Over time, the structural deterioration would lead to serious and unacceptable safety hazards including hazards to navigation. Additionally, under the terms of the existing permit for the GSB and expanded LBB issued by the USCG, the GSB would eventually need to be removed.[19]

Alternative 1: Rehabilitation of the General Sullivan Bridge

Under Alternative 1, the GSB would be rehabilitated and the bridge deck would be replaced. The substructure and truss superstructure would be repaired and rehabilitated to support loading requirements. Predominant work under this alternative would involve removal and replacement of the existing floor system, removal and replacement in-kind of upper and lower lateral braces, replacement in-kind of several sway braces, rehabilitation of the Newington abutment, steel truss repair work, repointing the existing stone masonry piers, cleaning and painting existing structural steel and installing a pedestrian bridge railing. **Figure 2.3-1** depicts the conceptual design for Alternative 1, and more detailed plans are provided in **Appendix B**.

However, the GSB is deteriorated and structurally deficient to a point where a substantial number of structural elements would need to be replaced or extensively repaired. The initial capital cost for this extensive rehabilitation work is estimated to be $43 million. Additionally, extraordinary maintenance would be required to preserve the rehabilitated bridge, including extensive routine paint system touch-up and sealing, overcoating, and multiple full repainting cycles, in addition to rehabilitation to members which continue to deteriorate. Therefore, the total life cycle costs for this alternative, when considered over a 75-year design life, rises to $74 million. These life cycle costs are almost two and a half times the estimated life cycle costs of Alternative 9 over the same period ($31.25 million). As such, Alternative 1 was not identified as the Preferred Alternative.

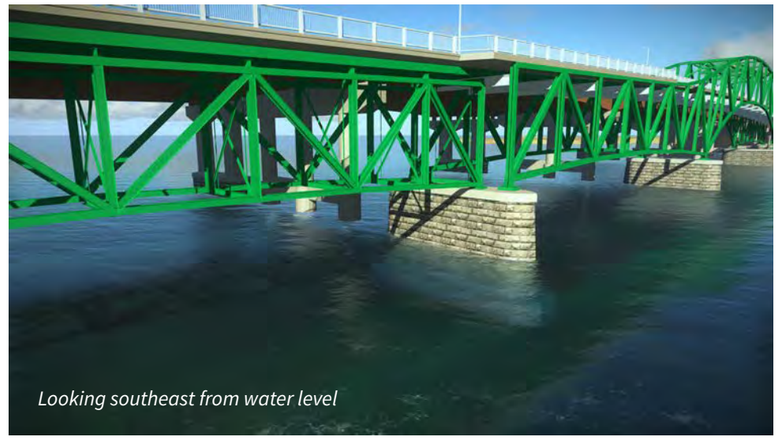
Alternative 3: Partial Rehabilitation of the General Sullivan Bridge

Under Alternative 3, the GSB approach spans from both Dover (Spans 1, 2, and 3) and Newington (Spans 7, 8, and 9) would be replaced, but the through-truss main spans (Spans 4, 5, and 6) would be rehabilitated and remain in place. Additionally, all the substructure units would be retained, and the existing stone masonry piers would be repointed. The resulting GSB superstructure would have an 18.3-foot wide deck (out-to-out); this deck would provide a multiuse path approximately 16 feet wide. As with Alternative 1, the recently constructed 2010 approach span at the Dover end of the bridge would not require substantial modifications as part of this alternative, as the alignment of the existing GSB would be maintained. Work under this alternative would involve rehabilitation of the Newington abutment. There would be no

[18] The range of reasonable alternatives are not numbered consecutively due to the elimination of preliminary alternatives during the screening process. The numbering was retained for consistency with other materials developed for the Project.

[19] On November 30, 2006, Gary Kassof of the USCG sent a letter to Marc G. Laurin, NHDOT Senior Environmental Manager, regarding the Draft Environmental Impact Statement for the Newington-Dover, 11238 project. The USCG advised NHDOT that the GSB should be removed as it no longer served a transportation purpose, and that a clear and reasonable rationale must be presented for retaining or rebuilding the structure. The letter also stipulated that the bridge permit application to be submitted for construction of the new LBB must address the need to retain or rebuild the GSB and, if the old bridge is to be removed, should include complete removal of all parts not utilized in the new structure.

Looking southeast from Dover to Newington



Looking southeast from water level

Looking south from deck

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Alternative 1: Rehabilitation of the General Sullivan Bridge Conceptual Design Renderings

changes to the LBB under this alternative. **Figure 2.3-2** depicts the conceptual design for Alternative 3, and more detailed plans are provided in **Appendix B**.

This alternative was determined to fully meet the Project's Purpose and Need, providing access and connectivity between Newington and Dover, across Little Bay, for non-motorized use.

Alternative 3 would have an initial capital cost of $42.25 million and a 75-year life cycle cost of $61.75 million, nearly double the cost of other alternatives (Alternative 9, Alternative 6, and Alternative 7). Given the additional construction, maintenance, and operational costs of an extraordinary magnitude, Alternative 3 was not identified as the Preferred Alternative.

Alternative 6: Southbound Little Bay Bridge – Widened Deck on Pier Extension

Under Alternative 6, the deck of the southbound LBB would be widened approximately 17.5 feet to the west to accommodate a new multi-use path on the LBB. To accomplish this widening, the GSB superstructure would be removed, since the GSB is approximately 15 feet from the LBB.

This alternative would preserve the existing highway lane and shoulder widths on the LBB to avoid compromising the transportation capacity of the recently-expanded LBB while accommodating an AASHTO-compliant 16-foot wide path. This alternative would extend each of the eight LBB pier caps which would be supported on 24.5-foot pier extensions with new columns connecting down to seven of the eight existing GSB piers. The LBB bridge deck would be extended approximately 17.5 feet, including two new girder lines, which are supported by the pier extensions. Under this alternative, the four travel lanes and shoulders of the LBB would all remain at the AASHTO-recommended 12-foot width. A 2-foot wide concrete barrier would separate the roadway shoulders from a new multi-use path. The multi-use path would be 16 feet wide in total, consisting of the AASHTO-desirable 12-foot wide multi-use path with desirable 2-foot wide shoulders on each side and a steel pedestrian rail. Under this alternative, the GSB superstructure would be demolished and the seven repointed GSB existing stone masonry piers would be left in place to support the pier extensions.

The existing curved approach span on the Dover end of the bridge would need to be replaced as part of this alternative, along with the northernmost existing pier (GSB Pier 1). The existing approach span and mechanically-stabilized earth approach, constructed in 2010, consists of curved steel girders with a concrete deck supported on mono-shaft pier foundations, connecting the multi-use path from Dover Point Road to the existing GSB. The replacement of this approach span is required under this alternative as the location of the multi-use path is shifted to the east away from its current alignment to become adjacent to the existing LBB. Connecting to the LBB from the end of the existing GSB approach span is not viable as the gradient required to meet the elevation of the LBB from this location would be greater than the 5 percent maximum gradient, without including landings every 30-feet, as required by the Americans with Disabilities Act (ADA) guidelines for accessibility. This alternative would require the construction of a new mechanically-stabilized earth approach with accompanying curved steel girder approach span, supported on two new mono-shaft foundations requiring one new approach span pier be constructed in Little Bay. At the Newington approach, the existing abutment would be removed in its entirety and replaced, due to changes in geometry and bridge type. **Figure 2.3-3** depicts the conceptual design for Alternative 6, and more detailed plans are provided in **Appendix B**.

This alternative was determined to fully meet the Project's Purpose and Need. The cost of Alternative 6 is estimated to be $28 million and the life cycle costs are estimated to be $31.25 million, similar to Alternative 9.

Under Alternative 6, the multi-use path would be immediately adjacent to the LBB deck. The multi-use path would comply with ADA guidelines for accessibility and would incorporate adequate safety rails. Chain link fencing would be installed on top of a 2-foot wide concrete barrier; this would provide a measure of safety but would not shield users of the path from noise and wind generated by vehicles passing at highway speeds on the LBB. The lack of separation between vehicular traffic and recreational and non-motorized travelers, and the associated noise, wind, and perception of risk is a substantial disadvantage of this alternative which has viewed unfavorably by the public. While the deflection limits are expected to be within the limits allowable by the design code, the live load deflection induced at mid-span of each span, due to passing trucks, could produce objectionable vibration detectible by users of the multi-use path. This vibration could be detectible due to the length of the spans and the constant high-speed traffic over the bridge. This alternative would therefore perform poorly with respect to user safety and experience relative to other alternatives.

Alternative 6 suffers from a disadvantage in that the new path would be located directly adjacent to high speed vehicle traffic, thus adversely affecting safety and user experience. This alternative was viewed unfavorably by the public during informational meetings, who expressed concerns that this alternative would put users at risk of potential accidents as well as decreased air and noise quality from adjacent vehicles.

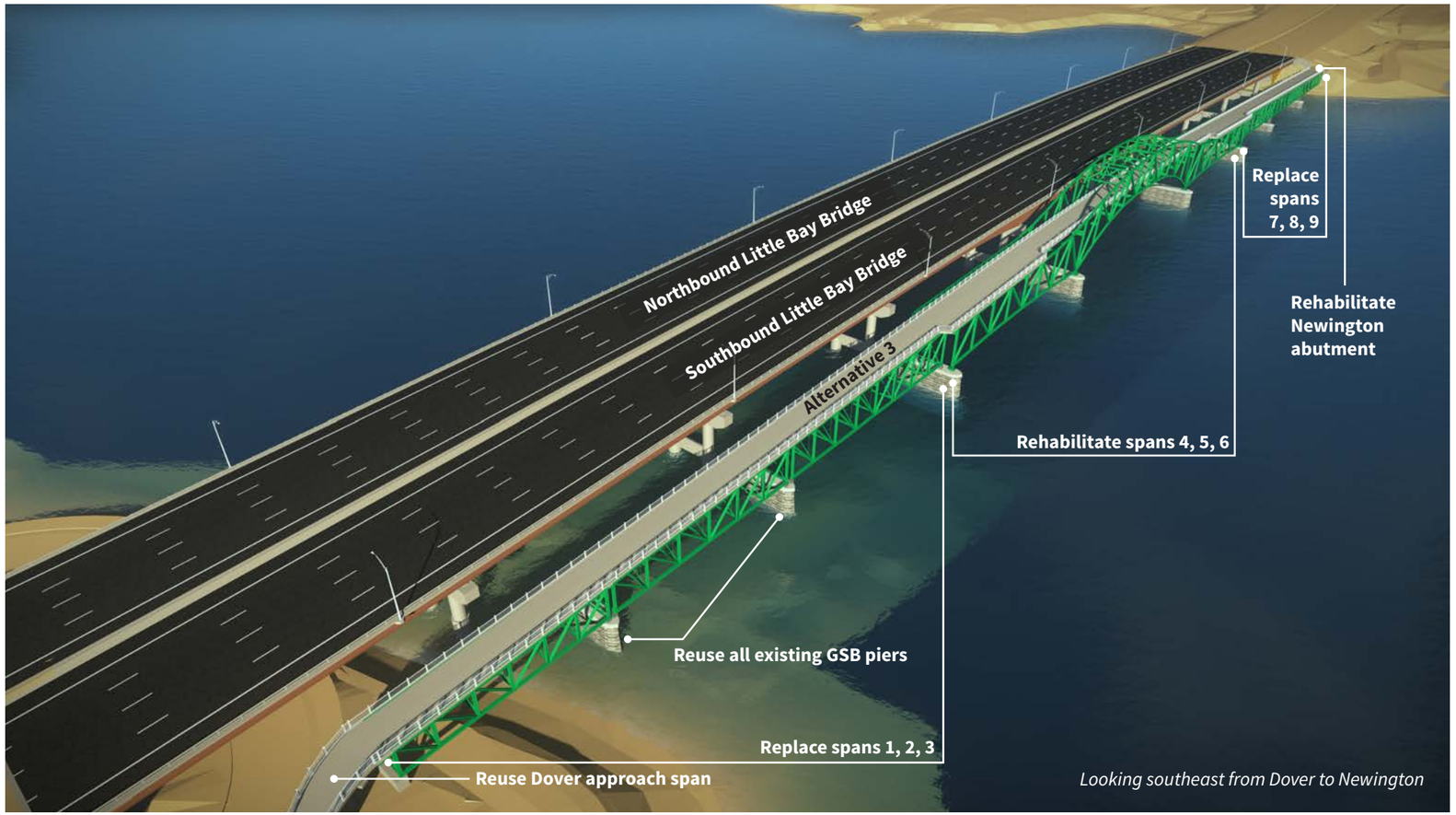
Additionally, construction activities during the erection of the deck extensions has the potential to adversely affect traffic operations for the duration of construction. Alternative 6 would require temporary impacts for construction access and would require reconstruction of the approach span from Hilton Park, including relocation of an existing pier in Little Bay. This work would have permanent impacts to intertidal habitat.

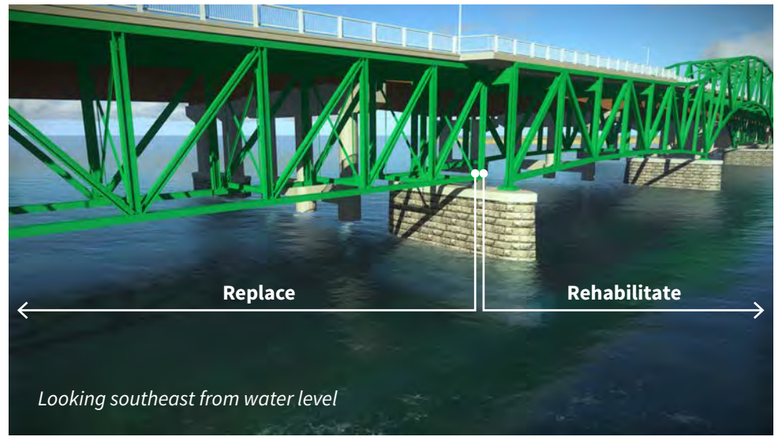
Alternative 6 was determined to be reasonable. However, it is not the Preferred Alternative due to its disadvantages with respect to user safety and experience, as well as its environmental and construction-phase impacts.

Alternative 7: Southbound Little Bay Bridge – Independent Deck on Pier Extension

Alternative 7 is similar to Alternative 6 but would construct a new, separate multi- use path adjacent to the existing southbound LBB superstructure rather than extend the LBB deck. This alternative would require the demolition and removal of the GSB superstructure. Like Alternative 6, pier cap extensions would be constructed 24.5 feet from the LBB superstructure, which would be supported on new columns connecting down to the existing GSB piers. A new multi-use path deck would be constructed approximately 7.5 feet from the existing southbound LBB superstructure. Under this alternative, the southbound LBB superstructure would not be modified, and would thereby maintain the current 12-foot wide travel lanes and shoulders. The multi-use path would be 16-feet wide (rail-to-rail), consisting of the desirable 12-foot wide multi-use path with desirable 2-foot wide shoulders on each side, and a steel pedestrian rail.

Figure 2.3-2





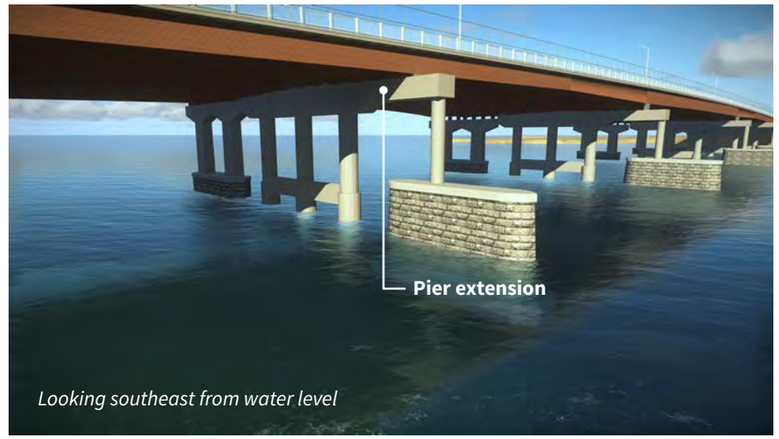
Newington-Dover 11238S | Newington and Dover, NH

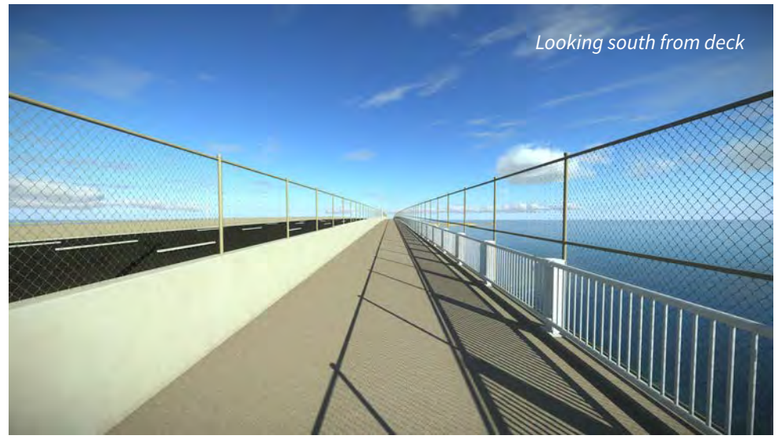
General Sullivan Bridge Supplemental EIS

Alternative 3: Partial Rehabilitation Conceptual Design Renderings

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation





Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

U.S. Department of Transportation Federal Highway Administration

New Hampshire DOT Department of Transportation

Alternative 6: Southbound Little Bay Bridge—Widened Deck on Pier Extension Conceptual Design Renderings

Under this alternative, the GSB superstructure would be demolished and seven of the eight existing GSB stone masonry piers would be repointed and left in place for support of the pier extensions. Also, like Alternative 6, the recently constructed 2010 GSB approach span on the Dover end of the bridge would need to be replaced, including removal of GSB Pier 1 and construction of a new pier in Little Bay to support a new approach span. At the Newington approach, the existing abutment would be removed in its entirety and replaced, due to changes in geometry and bridge type. **Figure 2.3-4** depicts the conceptual design for Alternative 7, and more detailed plans are provided in **Appendix B**.

Alternative 7 was determined to fully meet the Project's Purpose and Need. In comparison to the other alternatives, Alternative 7 has an estimated initial capital cost of $29.5 million and a life cycle cost of $32.25 million, slightly more than Alternative 6 and Alternative 9, but substantially less than Alternatives 1 and 3.

Like other alternatives, Alternative 7 would provide a 16-foot wide multiuse path, and this path would be designed to comply with the ADA rules for accessibility and would incorporate adequate safety rails. As with the reasonable alternatives, these design characteristics provide adequate user safety and access for emergency and inspection vehicles. It would locate the new path relatively close to high speed vehicle traffic (about 7.5 feet), thereby compromising its ability to fully support the Purpose and Need relative to the Preferred Alternative (22.5 feet from the LBB). Because Alternative 7 would preserve the existing width of the southbound LBB, it would not impact the existing transportation capacity of the LBB.

The proposed separation from the high-speed traffic on the LBB (7.5 feet) is a substantial reduction relative to the existing condition, and while greater than Alternative 6, is still a concern to the public. And, like Alternative 6, construction of the pier cap extensions could temporarily impact traffic operations during the construction phase. Alternative 7 would require temporary impacts for construction access and would require reconstruction of the approach span from Hilton Park, including removal of an existing pier. This work would have permanent impacts to intertidal habitat. Additionally, the initial capital costs and life cycle costs of Alternative 7 are slightly higher than Alternative 9.

Alternative 7 was determined to be reasonable. However, it is not the Preferred Alternative because of its disadvantages with respect to user safety and experience, its additional environmental and construction-phase impacts, and its slightly higher costs.

Alternative 9: Superstructure Replacement – Girder Option

Alternative 9 has several advantages over other alternatives. Under Alternative 9, the GSB superstructure would be replaced with a steel girder superstructure with a structural steel frame extending from the bottom of the girders to the top of the existing GSB piers. Two design options for the steel frame are under consideration – one in the form of a "V" longitudinally (the "V-Frame" option), and a second curved "Super Haunch" option. This alternative follows the existing GSB alignment, thereby allowing the reuse of the existing repointed GSB stone masonry piers without requiring significant modifications. **Figure 2.3-5** depicts the conceptual design for Alternative 9, and more detailed plans are provided in **Appendix B**.

Alternative 9 would fully meet the Project's Purpose and Need of providing access and connectivity between Newington and Dover, across Little Bay, for non- motorized use, and it would perform well in comparison to the other alternatives when factors such as feasibility, cost, safety, and preservation of the transportation capacity of the LBB.

Engineering analysis determined that Alternative 9 would be reasonable and practical from a technical standpoint. It could be implemented using conventional construction techniques and materials, within a reasonable time frame, and without excessive impacts on the environment or to the transportation network.

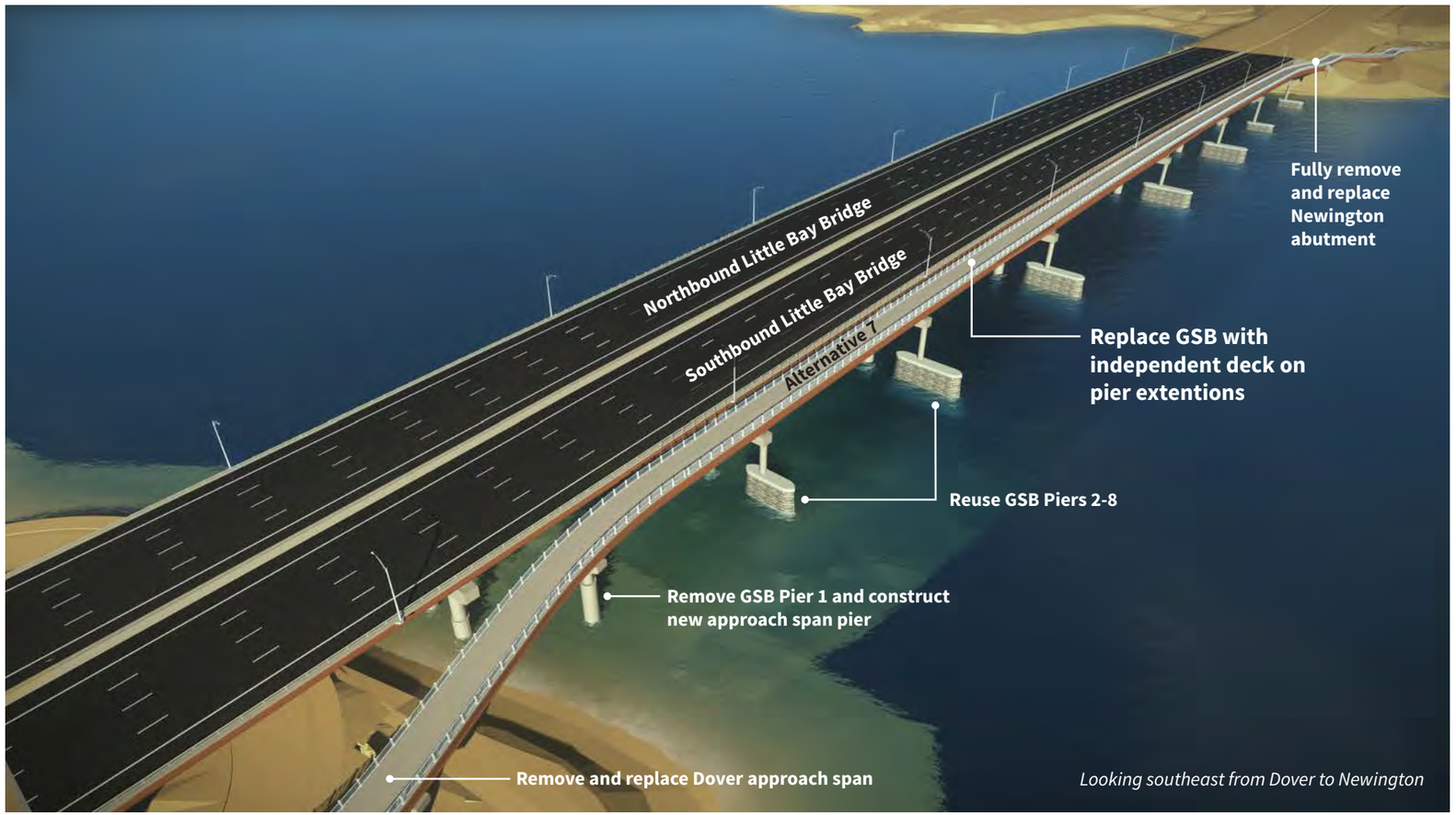
Alternative 9 would have an estimated initial capital cost of $28.5 million and a life cycle cost of $31.25 million. In comparison to the other alternatives, Alternative 9 would cost slightly more than Alternative 6 but is otherwise the least expensive reasonable alternative.

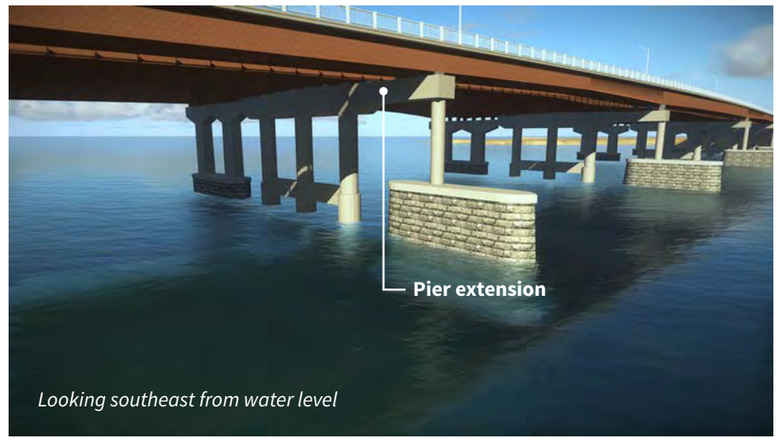
This alternative would have a 16-foot wide multiuse path, would comply with the ADA guidelines for accessibility and would have a steel pedestrian rail along both sides of the new bridge deck. The new path would be 22.5 feet from the LBB, approximately 7.4 feet further from the LBB than the existing GSB (at 15.1 feet). These characteristics contribute to the high performance of the design with respect to user safety, emergency access, and inspection safety. The new superstructure would not be in the form of a truss, and therefore would not be visually consistent with the existing GSB. There would be no changes to the southbound LBB which would preserve the existing transportation capacity of the LBB.

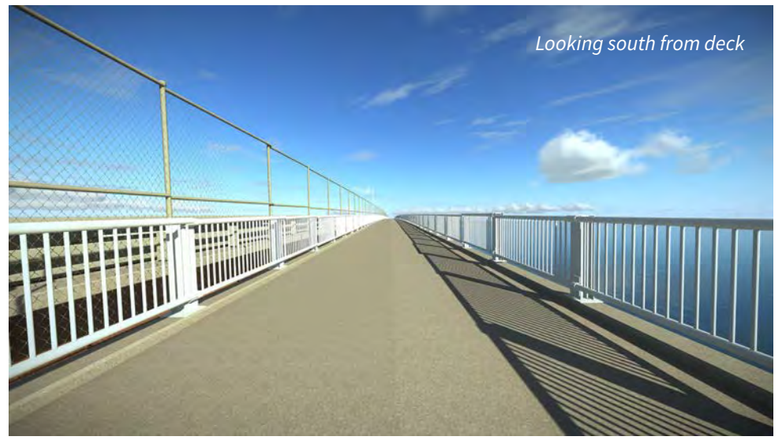
The recently constructed 2010 approach span at the Dover end of the bridge would not require substantial modifications as part of this alternative, as the alignment of the existing GSB would be maintained. The existing Newington abutment would be removed in its entirety and replaced. The overall footprint should be smaller than the existing abutment due to the proposed reduced deck width. Alternative 9 would require temporary impacts for construction access. It would avoid the need to reconstruct the approach span from Hilton Park which would minimize intertidal habitat impacts.

Preferred Alternative

For the reasons discussed above, the Preferred Alternative for the Project has been determined to be Alternative 9: Superstructure Replacement - Girder Option, which involves the complete removal and replacement of the GSB superstructure. Under Alternative 9, the GSB superstructure would be replaced with a steel girder system with a structural steel frame extending from the bottom of the girders to the top of the existing GSB piers. Alternative 9 would preserve the existing piers without requiring significant modifications.







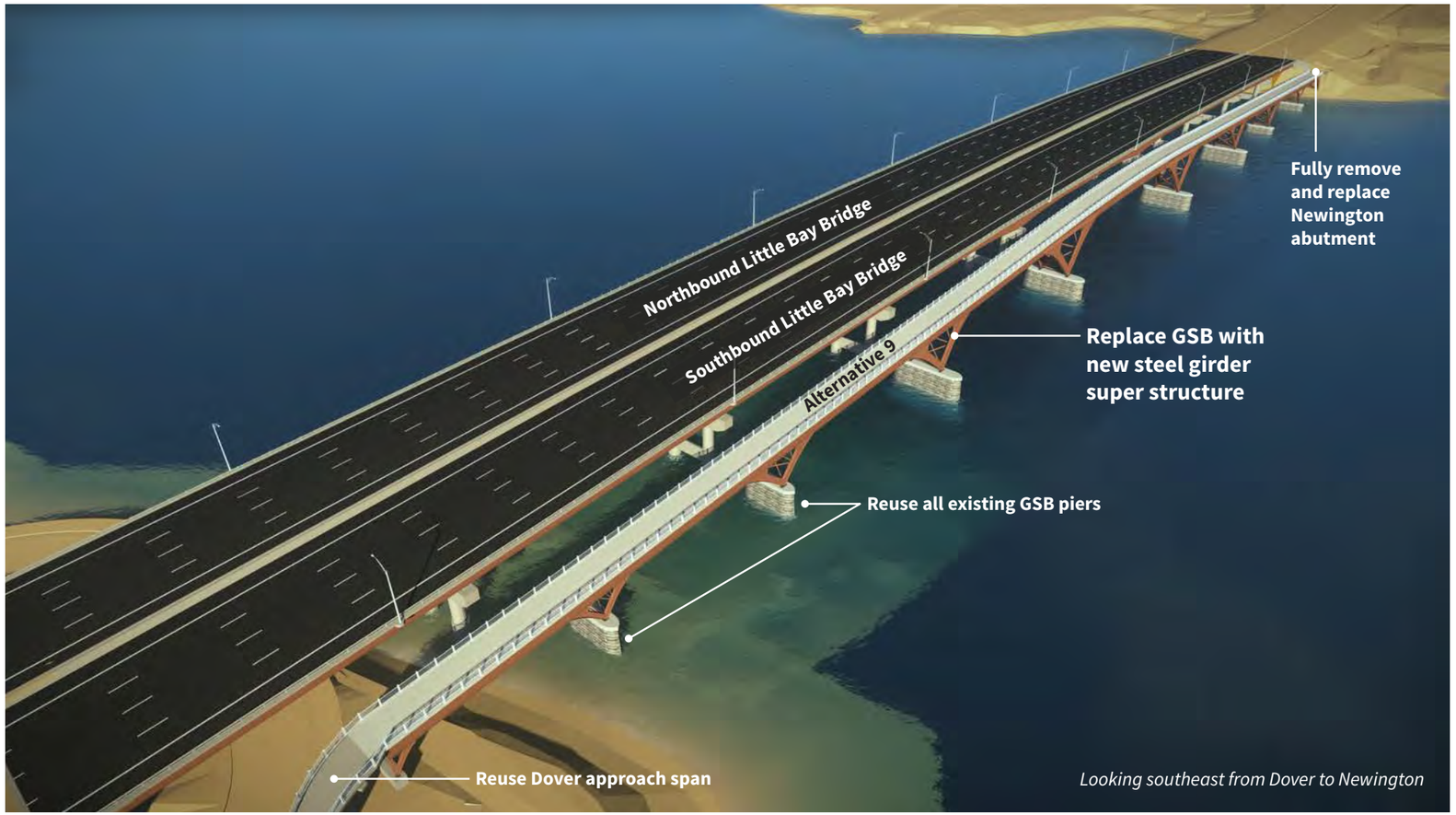
Newington-Dover 11238S | Newington and Dover, NH

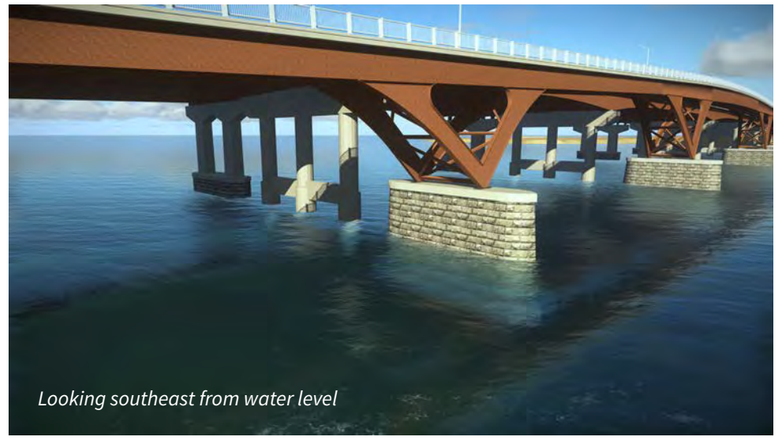
General Sullivan Bridge Supplemental EIS

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Alternative 7:
Southbound Little Bay Bridge—
Independent Deck on Pier Extension
Conceptual Design Renderings





"V-Frame" design option shown. "Super Haunch" similar.

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Alternative 9: Superstructure Replacement—Girder Option (Preferred Alternative) Conceptual Design Renderings

2.4 Other Project Elements

Temporary Bicycle and Pedestrian Detour

A temporary bicycle and pedestrian detour was constructed on the northbound LBB to provide non-motorized connectivity across Little Bay in part due to the closure of the GSB, opening for public use in August 2019, and will remain in place during construction of the Project (refer to **Figure 2.4-1**). This temporary detour would be part of all Action Alternatives. The detour path is 10 feet wide, with a 48-inch tall, 2-foot wide concrete barrier and chain link fencing installed to separate path users and vehicular traffic. To meet pedestrian rail requirements, chain link fencing was installed on the existing northbound LBB railing to address the height and rail gap. The temporary bicycle and pedestrian detour approach from Shattuck Way on the Newington side connects to and utilizes the access road already constructed for the water quality treatment Best Management Practice (BMP) basin located adjacent to the Exit 4 northbound on-ramp from Shattuck Way. The temporary detour approach on the Dover side connects to Wentworth Terrace, adjacent to the eastern side of Hilton Park. Because this temporary detour requires temporary use of one lane of the northbound LBB, it would be removed as soon as possible following completion of the Project to allow the expanded LBB to accommodate vehicular traffic volumes as intended and designed.

Temporary Contractor Construction Access

All Action Alternatives would require temporary occupation of upland areas and surface waters in Newington and Dover throughout the duration of construction. Please see **Appendix D** for a set of drawings depicting temporary construction access plans for each reasonable alternative. These areas include:

- **Construction Access, Laydown, and Staging Areas:** During construction, approximately 2.0 acres total (0.5 acre in Newington and 1.5 acres in Dover) would be temporarily occupied and fenced off for construction access, laydown, and staging. Of the area proposed to be used in Dover, approximately 1.1 acres of Hilton Park would not be publicly accessible. This temporary use would require a pavilion to be replaced or relocated to another location in Hilton Park.
- **Causeways and Trestles Construction:** All Action Alternatives would require the use of two temporary causeways and trestles extending from the Newington and Dover sides of the bay. The causeways would be approximately 260 feet long on the Newington side and 130 feet long on the Dover side. The causeways would provide a top width of 30 feet for construction of the approach spans of the bridge. Placement of the trestles beyond the causeways would extend for approximately 450 to 460 feet in Newington and 470 to 480 feet in Dover. The trestles would be supported by pile bents. While the causeways and trestles are in use, the 200-foot navigational channel would be maintained at its existing location. In addition to the temporary causeway on the Dover side of the bridge, Alternatives 6 and 7 would require the use of a drill rig platform for the removal and replacement of GSB Pier 1.

Figure 2.4-1

\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 2.4-1_Other Project Elements.mxd

0 150 300 600 Feet

Legend

- Town Boundaries
- Temporary Contractor Workspace (Varies by Alternative)
- Temporary Causeway
- Temporary Trestle
- Temporary Bicycle and Pedestrian Detour (Approximate)

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Other Project Elements

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT Department of Transportation

Source: VHB, NH GRANIT

3

Affected Environment and Environmental Consequences

This chapter describes the existing conditions that may be affected by the Project, and analyzes the environmental consequences of the Project, including a comparison of the probable consequences of the five reasonable alternatives and the No-Action Alternative.

Existing conditions are the current natural, cultural, and social conditions of an area that are subject to change, both directly and indirectly, because of a proposed Federal action. The resources and issues analyzed for the Project include:

- Wetlands and Surface Waters
- Water Quality and Pollutant Loading
- Floodplain and Hydrodynamics
- Wildlife and Fisheries
- Threatened and Endangered Species
- Farmlands
- Air Quality
- Noise
- Parks, Recreation and Conservation Lands
- Cultural Resources
- Contamination and Hazardous Materials
- Visual Resources
- Construction Impacts
- Social and Economic Resources
- Navigation
- Relationship of Local Short-term Uses vs. Long-term Productivity
- Irreversible and Irretrievable Commitment of Resources
- Cumulative Impacts

Evaluating and documenting existing conditions is a multi-step process that involves regulatory and data review to describe the existing conditions within the Study Area. Generally, the review of the existing conditions considers the Study Area as defined in **Chapter 1**, *Introduction*, and as depicted in **Figures 1.1-1** and **1.1-2**. However, the analyses of Air Quality, Cultural Resources, Visual and Aesthetic Resources, Environmental Justice, Socio-Economic Conditions, and Cumulative Impacts consider areas outside of the main project Study Area. Each resource-specific Study Area is clearly defined in the sections of this chapter.

Impacts, also known as "*effects,*" may be direct, indirect, temporary, and/or permanent.[20] Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action, are later in time or farther removed in distance, but are still reasonably foreseeable. Temporary impacts are short-term impacts that occur during the construction period. Conversely, permanent impacts are those which permanently change the existing environment.

Impacts may also be beneficial or adverse. Where applicable, each resource section considers the potential need for mitigation measures when adverse impacts are unavoidable. Potential permitting and compliance requirements are described in **Chapter 5**, *Project Commitments* and in **Chapter 6**, *Federal and State Actions Required*.

3.1 Wetlands and Surface Waters

Wetland and surface water resources within the Study Area include Little Bay and several small wetlands. Wetlands are a landform containing features such as surface water or saturation, characteristic wetland plants, and hydric soils which provide evidence for saturated conditions for an extended period of time. The major waterbody within the Study Area is Little Bay at the entrance to the Great Bay Estuary adjacent to the Piscataqua River. No freshwater streams or rivers exist within the Study Area.

Federal protection of wetlands is regulated under Section 404 of the Clean Water Act and Section 10 of the Federal Rivers and Harbors Act. The ACOE is charged with the duty of overseeing and regulating activities in wetlands at the federal level. Under Section 404, the US Environmental Protection Agency and the US Fish and Wildlife Service (USFWS) also review permit applications for wetland impacts.

The State of New Hampshire regulates activities in wetlands under NH Revised Statutes Annotated (RSA) 482-A, which grants regulatory authority to the NH Department of Environmental Services (NHDES) Wetlands Bureau. Under this statute, all proposals to dredge or fill wetlands must be permitted by the NHDES Wetlands Bureau. In accordance with NH RSA 482-A:3(IV)(b), modification of "*man-made non-tidal drainage ditches, roadside and railroad ditches, detention basins, ponds and wetlands that have been legally constructed to collect, convey, treat, or control stormwater and spring run-off*" does not require permitting under most circumstances. The NHDES Wetlands Permit application must also consider impacts below the

[20] Council on Environmental Quality. 1981. *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*. 46 Federal Register 18026. Accessed from https://www.energy.gov/sites/prod/files/G-CEQ-40Questions.pdf. Accessed on October 10, 2018.

highest observable tide line (HOTL) and within the tidal buffer zone (TBZ). The HOTL is defined in Env-Wt 602.23 as "*a line defining the farthest landward limit of tidal flow, not including storm events, that can be recognized by indicators such as the presence of a strand line of flotsam and debris, the landward margin of salt tolerant vegetation, or a physical barrier that blocks inland flow of the tide.*" The TBZ is defined in Env-Wt 602.52 as "*the area identified in RSA 482-A:4, I as bordering on tidal waters within 100 feet of the highest observable tide line, which can contain banks, upland areas, bogs, salt marsh, swamps, meadows, flats, or other lowlands subject to tidal action.*"

The NHDES Shoreland Program regulates construction, excavation, or filling activities within 250 feet of waterbodies protected under the Shoreland Water Quality Protection Act (RSA 483-B). Protected waterbodies include public waters defined under RSA 483-B:4(XVI) including all water subject to the ebb and flow of the tide, which is applicable to Little Bay. Any disturbance proposed within 250 feet from the reference line of protected waterbodies requires permitting through the NHDES Shoreland Program. Communities also have the ability to enact their own ordinances to regulate activities in and surrounding wetlands and surface waters. However, since the Project would be state-funded, local zoning ordinances do not apply.

3.1.1 Affected Environment

A brief description of the wetlands and surface waters documented within the Study Area is provided below. The locations of wetlands and surface waters for the greater Spaulding Turnpike Improvements Project were originally determined using the information contained on NWI and USGS maps. These resources were then delineated by environmental scientists in 2003, with portions of this delineation reviewed in April 2009. Additionally, all wetlands within the Study Area were field verified again on January 20, 2020. The location of existing wetlands and surface waters are identified on **Figure 3.1-1**, *Wetland and Surface Water Resources*. Note that new wetlands delineations as well as function and value assessments will be conducted during final design of the Project in accordance with the NHDES Wetlands Bureau rules in effect at the time of the permit application.

Wetlands

Within Newington, wetlands in the Study Area include a small wetland located immediately south of the pedestrian approach ramp to the GSB and just south of the water crossing which drain via a deeply cut channel to the Little Bay shoreline. This wetland is composed of a series of interconnected palustrine emergent ditches. Principal functions and values of this wetland include floodflow alteration by providing a water conveyance for surface water runoff to enter Little Bay. Additionally, there is a wetland located east of Shattuck Way and north of the Spaulding Turnpike that collects and conveys sheet flow from these roadways. While this wetland intersects the Study Area, it is outside of the location of the Action Alternatives. A non-jurisdictional detention basin has been constructed in Newington between the existing pedestrian approach ramp to the GSB and the Spaulding Turnpike as part of the larger Newington-Dover, Spaulding Turnpike Improvements Project.

A non-jurisdictional drainage area is located within Hilton Park in Dover, southwest of the Spaulding Turnpike. This is a short drainage swale that collects runoff from the pedestrian approach ramp to the GSB and drains to an existing culvert with a stone headwall. The culvert exists under dense invasive vegetation (multi-flora rose and oriental bittersweet).

Surface Waters

The major waterbodies within and adjacent to the Study Area include Little Bay, the Great Bay Estuary, and the Piscataqua River. The Great Bay Estuary is a large tidal embayment covering approximately 17 square miles and contains 144 miles of shoreline. The tidal exchange between the Great Bay and Piscataqua River involves enormous volumes of water and is known to have unusually strong tidal currents.

The Piscataqua River is a major tidally-influenced river system that forms part of the border between Maine and New Hampshire and drains approximately 1,400 square miles of watershed. The Piscataqua River is formed by the confluence of the Cocheco and Salmon Falls Rivers, approximately 12 miles north of the Study Area. Near the Study Area, the Piscataqua River is typically 2,000 to 3,500 feet wide and has a substrate composition of sand and mud.

The Little Bay represents the lower part of the Great Bay Estuary and includes the narrow section between Dover and Newington where it joins the Piscataqua River to the east. The Little Bay receives flow from the Bellamy River to the north, the Oyster River to the west, and Great Bay to the southwest. The watershed of Little Bay is approximately 112 square miles. The substrate of Little Bay is composed of sand and mud. The top-of-bank and ordinary high water of Little Bay within the vicinity of the GSB was delineated as part of the field verification and delineation work conducted in 2003. The functions and values of Little Bay in the Study Area include floodflow alteration, fish and shellfish habitat, sediment/toxicant/ pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization, wildlife habitat, recreation, educational/scientific value, uniqueness/heritage, visual quality/aesthetics, and threatened/endangered species habitat.

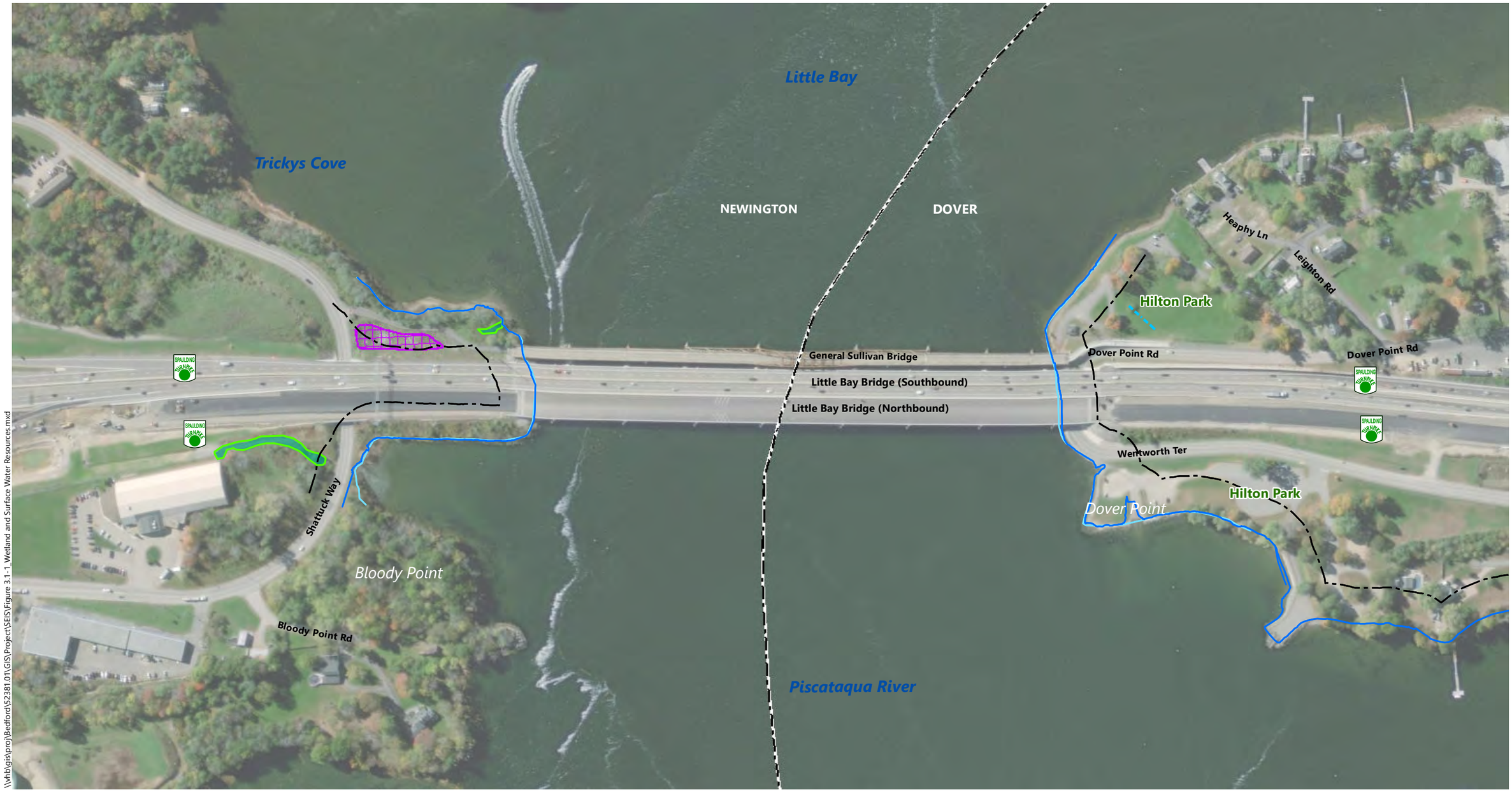
Tidal Habitats

Additional features of the Little Bay include the top-of-bank and ordinary high water of Little Bay, as well as the HOTL and TBZ. The HOTL defines the farthest landward limit of tidal flow, not including storm events. The TBZ is located within 100 feet of the HOTL. Additionally, the Protected Shoreland of Little Bay includes a 50-foot Waterfront Buffer, a 150-foot Natural Woodland Buffer, and a 250-foot Protected Shoreland Buffer.

The Study Area contains a wide diversity of bottom types and habitat types, according to a study of marine intertidal and subtidal habitats and bottom types, as well as areas of submerged aquatic vegetation completed by the University of New Hampshire (UNH).[21] Nine different bottom types were mapped: intertidal hard bottom with rockweed; intertidal mudflat, intertidal rock/algal/abundant mussel; intertidal rock/algal/soft sparse mussel; intertidal salt marsh;

[21] Grizzle, R. and M. Brodeur. 2003. Spaulding Turnpike Environmental Impact Study: Technical Report for Phase 1 – Data Collection and Coordination (Assessment of Existing Conditions in Little Bay). Progress Report on Jackson Estuarine Laboratory Work Tasks 1-4. Jackson Estuarine Laboratory, University of New Hampshire, Durham, NH.

Figure 3.1-1



\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.1-1_Wetland and Surface Water Resources.mxd

0 125 250 500 Feet

Legend

- Town Boundaries
- Wetland Edge
- Top of Bank
- Tidal Buffer Zone
- Non Jursdictional Drainage
- Highest Observable Tide Line
- Wetland Resource Area
- Non Jurisdictional Detention Basin

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Wetland and Surface Water Resources

U.S. Department of Transportation Federal Highway Administration

New Hampshire DOT Department of Transportation

Source: VHB, NH GRANIT

intertidal scattered rock/algal/soft sediment; subtidal kelp bed; subtidal macroalgal (non-kelp) bed; and subtidal mussel reef. See **Figure 3.1-2** for the location of these habitat types.

Intertidal Habitats

Intertidal areas near the bridges consist of peaty deposits in several areas, expansive unvegetated mudflats, and rocky bottoms with scattered patches of soft sediments. Intertidal habitats near the bridges were grouped and mapped by six major types: hard bottom with rockweed; mudflat; rock/algal/abundant mussel; rock/algal/soft sparse mussel; salt marsh; and scattered rock/algal/soft sediment. Salt marsh is restricted to the intertidal zone, forming a narrow fringe along Trickys Cove. Field inspection of the areas under and on both sides of the existing bridges indicates that there is some narrow fringe salt marsh in some places, although only a few feet wide in the immediate vicinity of the bridges.

Salt marsh habitat is dominated by cord grass (*Spartina* spp.). Intertidal mudflats are relatively narrow and only occur in two areas east of the bridges on the Dover Point (north) side. In contrast, there are expansive mudflats on both sides of the bridges on the Newington (south) side. All intertidal mudflat habitat is at least potential clam habitat. Except for a few scattered patches of soft-sediment deposits, the remaining intertidal habitats near the bridges are all on rocky bottoms and vary mainly by the presence or absence of rockweeds and mussels. These habitats grade into similar habitat types sub-tidally.

Subtidal Habitats

Subtidal areas consist mainly of rocky bottom types ranging from small gravel to large boulders interspersed with widely scattered patches of soft sediments. This area is a tidal rapid which regularly experiences tidal currents up to approximately 9 to 10 feet per second on spring tides. Therefore, organisms must be adapted for high-flow conditions or live in micro-environments (*e.g.,* patches of soft sediment) protected from the currents. All four mapped habitat types are ecologically diverse and apparently (based on the numbers of epibenthic organisms observed) very productive. Of note are the kelp (dominated by *Laminaria* spp.) and mussel beds.

3.1.2 Environmental Consequences

Impacts to wetlands and surface waters within the Study Area were initially identified and permitted under the larger Newington-Dover, Spaulding Turnpike Improvements Project. The NHDES issued Wetlands Permit 2006-02007 in June 2009 for the Spaulding Turnpike Improvements Project, which permitted up to approximately 20.4 acres of impact to palustrine, riverine, and estuarine wetlands. Upon completion of the final plans for the proposed GSB Project, a new Wetlands Permit application would be developed for the Project.

Updated impacts to wetland and surface water resources were calculated for each Action Alternative. Further information regarding the anticipated direct and indirect impacts to wetland and surface water resources is provided below. A summary of the proposed permanent and temporary impacts within areas of wetlands jurisdiction is provided in **Table 3.1-2**.

Table 3.1-2 Permanent and Temporary Wetland Impacts

Alternative	Wetland (acres)		Bed/Bank of Little Bay (acres)		Tidal Buffer Zone (acres)	
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
No-Action	0	0	0	0	0	0
Alternative 1	0	0.1	0	0.8	0	0.9
Alternative 3	0	0.1	0	0.8	0	0.9
Alternative 6	0	0.1	0.1	0.8	0	0.9
Alternative 7	0	0.1	0.1	0.8	0	0.9
Alternative 9	0	0.1	0	0.8	0	0.9

3.1.2.1 Direct Impacts

No-Action Alternative

Under the No-Action Alternative, no direct permanent impacts to wetlands, the bed/bank of Little Bay, or the Protected Shoreland of Little Bay are anticipated to occur under the No-Action Alternative since there would be no changes to the existing GSB infrastructure or surrounding area. However, it is important to note that the NHDOT would be required to remove the GSB if it no longer serves a transportation purpose under the terms of USCG permits issued for the LBB construction and expansion. Removal of the GSB would require temporary impacts associated with construction access.

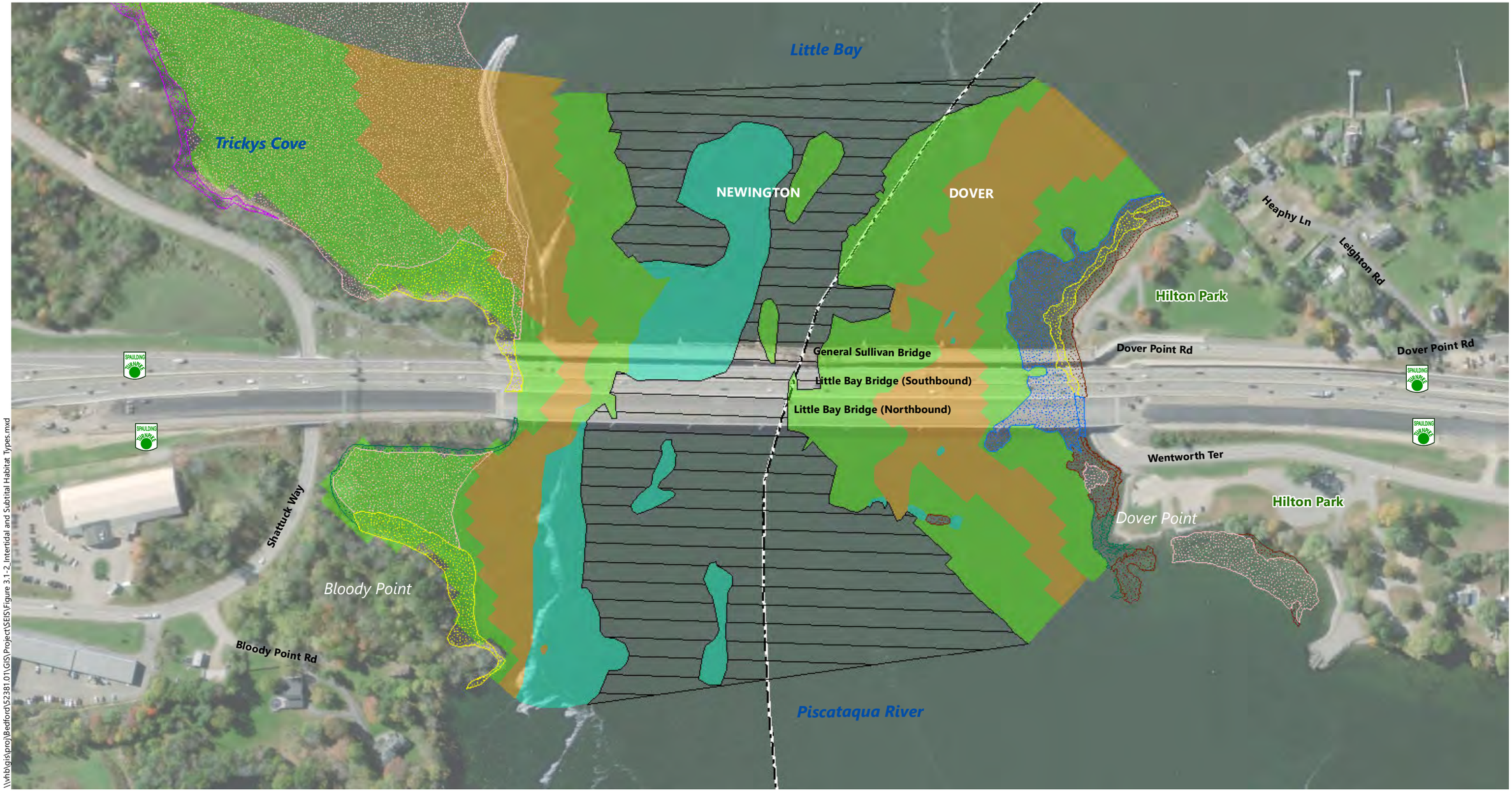
Alternative 1

Alternative 1 would not result in any direct permanent impacts. However, direct temporary impacts to jurisdictional wetlands would result from the placement of construction access causeways and trestle structures within Little Bay (approximately 260 feet long on the Newington side and approximately 130 feet long on the Dover side). Use of the causeway and trestle structures would temporarily impact approximately 0.8 acre within the bed and bank of Little Bay. The trestles would be installed using pile bents and would be approximately 450 to 460 feet long from the Newington side and 470 to 480 feet long on the Dover side.

Installation of the causeways and trestles would affect several functions and values of the Little Bay including fish and shellfish habitat, wildlife habitat, recreation, and visual quality; however, these impacts would be temporary in nature and of a relatively short duration.

Alternative 1 would also temporarily impact the non-jurisdictional drainage area located in Hilton Park south of the Spaulding Turnpike for the full length of the drainage swale during construction. This feature would be restored upon completion of the work. Impacts to this feature would result from construction access and equipment staging. Temporary geotextile fabric and crushed stone would be placed over this swale. If deemed necessary, a temporary culvert would be placed to allow the swale to convey drainage until the work is complete.

Figure 3.1-2



\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.1-2_Intertidal and Subtital Habitat Types.mxd

0 125 250 500 Feet

Legend

Town Boundaries

Intertidal Habitats

- Hard Bottom with Rockweed
- Mudflat
- Rock/Algal Abundant Mussel
- Rock/Algal Sparse Mussel
- Salt Marsh
- Scattered Rock/Algal Soft Sediment

Subtidal Habitats

- Kelp Bed
- Macroalgal (Non-Kelp) Bed
- Mussel Reef
- Other

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Intertidal and Subtidal Habitat Types

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Source: VHB, NH GRANIT

Similarly, the wetland located immediately south of the GSB pedestrian approach ramp in Newington would be temporarily impacted from the placement of geotextile fabric and crushed stone or other means of stabilizing the ground surface.[22] These measures would be removed upon completion of the work and the wetland would be restored to pre-construction conditions. This wetland would still be able to convey stormwater runoff from upland areas into Little Bay throughout the duration of construction since measures would be taken during construction to allow water to continue to flow into the bay.

Temporary impacts within the TBZ of Little Bay would also result from proposed construction access and staging areas in the Study Area of both Newington and Dover. As shown on the Preliminary Construction Impact Plans (**Appendix D**), construction access would generally follow existing paved and previously-developed areas in Newington and Dover.

Direct permanent impacts within the 250-foot Protected Shoreland buffer of Little Bay are not anticipated to occur under Alternative 1 since the existing footprint of the GSB would be retained. Impacts to the Protected Shoreland of Little Bay would be limited to the temporary use of construction access and staging areas. As previously mentioned, the proposed construction access would generally follow existing paved areas adjacent to the GSB.

The temporary causeways and trestles would have direct temporary impact intertidal and subtidal habitats located within Little Bay according to the study conducted by UNH. The study identified rock/algal abundant mussel and rock/algal sparse mussel habitat near the shoreline of Little Bay along the Newington and Dover coastlines, which would be temporarily impacted by the proposed causeways and trestles. Additionally, approximately 30 percent of area proposed to be temporarily filled by the placement of the causeways is mapped as kelp/microalgal beds. The pile bents proposed to support the temporary trestles would result in additional temporary impacts to kelp/macroalgal beds. Impacts to intertidal and subtidal habitats are anticipated to rebound upon removal of the temporary causeways and trestles once construction is complete. The installation of these causeways and trestles would also impact approximately 0.2 acre of blue mussel shellfish bed located under the GSB. Further information regarding impacts to blue mussel shellfish beds are provided in **Section 3.4**, *Wildlife and Fisheries*.

Alternative 3

Impacts to wetlands, surface waters, and tidal habitats under Alternative 3 would be the same as the impacts proposed under Alternative 1.

Alternative 6

Under Alternative 6, direct permanent impacts within the bed/bank of Little Bay would occur due to the removal of GSB Pier 1 and installation of a new pier (likely a drilled shaft pier) within Little Bay to support a new bridge span. This new pier would permanently impact rock/algal habitat located in the area where the GSB Pier 1 is proposed to be removed and replaced. These impacts would be localized to the pier location and are not anticipated to negatively impact the rock/algal habitat type as a whole.

Like Alternative 1, direct temporary impacts within the bed and banks of Little Bay would result from the temporary placement of causeways and trestles used during construction to remove the GSB and construct the new Alternative 6 bridge structure.

Direct permanent impacts within the TBZ and 250-foot Protected Shoreland of Little Bay are similar to Alternative 1. However Alternative 6 would result in additional permanent impacts to the Protected Shoreland because the curved approach span on the Dover end of the bridge would need to be replaced, along with construction of a new pier in within Hilton Park.

Alternative 7

Impacts to wetlands, surface waters, and tidal habitats under Alternative 7 would be the same as the impacts described under Alternative 6.

Alternative 9 (Preferred Alternative)

Impacts to wetlands, surface waters, and tidal habitats under Alternative 9 would be the same as the impacts proposed under Alternative 1. However, note that the temporary effects associated with construction access for Alternative 9 would be shorter in duration than for Alternative 1, since the expected construction duration would be 1.5 years (versus 3 years for Alternative 1).

3.1.2.2 Indirect Impacts

No-Action Alternative

Under the No-Action Alternative, no indirect impacts to wetlands or the bed and bank of Little Bay are anticipated. As noted above, the USCG has required that the GSB be removed if it no longer serves a transportation purpose. If the GSB is removed, including its pier foundations, then potential hydrodynamic effects may occur. This effect has not been fully analyzed. However, based on hydrodynamic modeling previously conducted for other alternatives, this effect is not expected to be adverse.

Action Alternatives

While Alternatives 6 and 7 involve direct wetland impacts from the replacement of GSB Pier 1 and the construction of a new pier within Little Bay near the Dover shoreline, no indirect impacts are anticipated from the pier replacement or construction of a new pier. The replacement pier would be smaller than the existing GSB Pier 1 and would not substantially impair the flow of water within the Little Bay or impact tidal currents or wave energy. The new pier proposed to be installed along the Dover shoreline under Alternatives 6 and 7 would only have a minor impact to the flow of water, tidal currents, or wave energy. The use of BMPs during construction would minimize any indirect impacts to the Little Bay or other jurisdictional wetlands located near the proposed work that could occur (erosion and sedimentation) during construction activities.

[22] Geotextile and crushed stone are proposed to be used within the unpaved staging areas for a safe and reliable construction access and equipment staging while protecting the wetland from rutting and erosion.

3.1.3 Mitigation

Since the Action Alternatives would involve temporary ground disturbance within and directly adjacent to wetlands and the Little Bay, wetland impacts would be avoided or minimized through the implementation of the following environmental commitments:

- NHDOT will submit a permit application to the NHDES Wetlands Bureau for the wetland impacts resulting from the Preferred Alternative. NHDOT will coordinate with state and federal resource agencies, and the communities of Newington and Dover to identify whether project-specific mitigation is required for the GSB Project.
- Applicable erosion and sediment control BMPs would be used throughout construction to protect wetlands and surface waters from sediment, erosion, pollution, and contaminants.
- Unpaved staging areas are to be protected with temporary geotextile fabric under crushed stone.
- Disturbed areas will be restored to as near pre-existing conditions as practicable once construction is complete. All disturbed and graded areas would be seeded and mulched as needed. Disturbed areas that have been seeded and mulched would be considered stable once 85-percent vegetative growth has been achieved.
- Appropriate pollution preventative measures and BMPs as outlined within the *New Hampshire Stormwater Manual Vol. 3 – Erosion Control and Sediment Controls During Construction* (December 2008), available online at NHDES's website, shall be employed to assure that any detrimental impacts are minimized to the extent practicable.

3.2 Water Quality and Pollutant Loading

The 2007 FEIS and final design efforts for the LBBs and overall Spaulding Turnpike improvements included an initial qualitative water quality assessment that was based on a relative comparison of the amount of new impervious area that would be created by each build alternative. New impervious area represents an indicator of the amount of potentially added stormwater volume and associated pollutant load that may be discharged to area water bodies.

Subsequent to the 2007 FEIS and in response to the 401 Water Quality Certificate issued for the LBBs and Spaulding Turnpike Improvements, more detailed pollutant loading analyses were completed to assess whether the Spaulding Turnpike Improvements would meet the anti-degradation provisions of the New Hampshire surface water quality standards (Env-Wq 1708). Specifically, the pollutant loading analyses were used to assess whether any increased discharge of stormwater would result in an increase in pollutant loads, specifically total suspended solids, total phosphorus and total nitrogen that would result in a substantial lowering of the water quality conditions in the receiving water consisting of the Little Bay, Piscataqua River and other tributaries.

These pollutant loading analyses focused primarily on the proposed roadway mainline and LBB expansion and accounted for pre and post-development conditions including existing and proposed impervious areas and the anticipated treatment effects of planned stormwater BMPs included in the 2007 Preferred Alternative design.

The previous pollutant loading analyses indicated that the average annual pollutant loads of total suspended solids, total phosphorus and total nitrogen discharged to the Little Bay and Piscataqua River from the project area would be reduced by approximately 5,580, 6.2 and 44.5 pounds, respectively, under post-development conditions compared to the estimated pre-development loads due to the proposed stormwater BMP treatment included in the roadway improvement design.[23] In other words, there would be a net water quality benefit with respect to future stormwater volumes discharged from the project area. In fact, based on the NHDES pollutant loading methodology, these pollutant load reductions are essentially equivalent to eliminating approximately two acres of existing impervious area within the project area even with the added lanes and roadway width resulting from the project.[24]

Even though the planned GSB improvements were not included in the pollutant loading analyses discussed above, no substantial increases in impervious area or stormwater volumes are anticipated with the proposed GSB design alternatives, discussed herein. In fact, a narrower bridge deck is anticipated compared to the existing GSB since the project seeks to accommodate only pedestrian and non-motor vehicle uses. A narrower bridge deck would result in less impervious area compared to the existing GSB, which would only add to the water quality benefits that are already anticipated with the stormwater treatment BMPs included in the mainline roadway and LBB improvements.

Given the results of the previous pollutant loading analyses, additional stormwater treatment would only be considered necessary if the proposed GSB design alternatives would potentially increase the amount of impervious area and related stormwater volumes relative to existing conditions. Stormwater generated from the proposed GSB design alternatives would be discharged through bridge scuppers to the Little Bay similar to the existing GSB.

A qualitative water quality assessment was conducted for the various GSB design alternatives to compare differences in the planned bridge deck widths and associated impervious area for each of the proposed design alternatives relative to the existing GSB deck area. This analysis was used to assess whether the proposed GSB design alternatives would potentially increase or decrease the future impervious and stormwater volumes relative to existing conditions and to identify which of the alternatives would have the least or greatest amount of impervious area associated with the planned bridge deck. Since the proposed replacement alternatives are essentially

[23] CHA. 2013. Spaulding Turnpike Contract #M, Stormwater Management Report, Volume 1, Slope and Drain, Newington prepared by VHB and Contract #L Stormwater Management Report, Slope and Drain. Technical Report prepared by CHA, dated February 11, 2013.

[24] The NHDES Simple Method Pollutant Loading Model used in the previous analyses indicates that 1.0 acre of roadway area would generate approximately 20.4 lbs. of nitrogen per year if left untreated and discharged directly to the water body. Thus, 2.0 acres of additional, untreated impervious area would generate approximately 40.8 lbs. of nitrogen per year, which is nearly equivalent to the estimated net reduction resulting from the stormwater treatment proposed for the portion of the project draining to the Little Bay.

located along the same alignment as the existing GSB, the proposed GSB bridge length is assumed to essentially be the same as the existing GSB.

3.2.1 Affected Environment

The primary water body directly beneath the GSB is considered to be the lower Little Bay or the mouth of the Little Bay, which connects to the Piscataqua River to a large tidal estuary known as the Great Bay Estuary. Due to the large tidal volume exchange between the Great Bay and the Piscataqua River, the tidal currents at this Little Bay location are considered to be some of the strongest tidal currents in the world. The Little Bay and associated Great Bay support a diverse and rich ecosystem of various plant and aquatic species that are essential to the marine environment as well as the fishing, shell fishing and tourism industry.

New Hampshire's 2016 303 (d) list of water quality impairments for the Little Bay (Assessment Unit # NHEST600030904-06-15), beneath the GSB and part of the lower Little Bay, indicates the water body is impaired due to previously observed elevated levels of Polychlorinated biphenyls (PCBs) and Dioxin that presumably are legacy pollutants from past industrial activities in marine and waterfront areas. Other listed water quality impairments include elevated light attenuation coefficient readings and poor estuarine bioassessment results. Diminished light penetration in the water column can impede eelgrass growth and is usually caused by phytoplankton blooms, suspended non-algal material or colored dissolved organic matter. These potential causes are generally influenced by multiple sources and activities that occur on a more continuous basis in the bay and greater watershed area.

3.2.2 Environmental Consequences

None of the Action Alternatives are anticipated to contribute to the known primary water quality impairments associated with elevated PCBs or Dioxin as neither of these pollutants are typically found in stormwater runoff from road surfaces. The proposed GSB design alternatives could have the potential to adversely affect the existing poor light attenuation impairment, if the Project were to result in an increase in stormwater volumes or impervious area and more specifically in nitrogen loads associated with stormwater.

Each of the alternatives were evaluated to assess how impervious area would change relative to the No-Action Alternative (*i.e.,* existing conditions). This comparison provides a means to assess whether future stormwater volumes or nutrient loads are likely to increase with any of the proposed GSB alternatives in comparison to current conditions.

3.2.2.1 Direct Impacts

The potential for permanent, direct water quality impacts primarily relates to whether any of the alternatives would substantially increase the amount of impervious area and related stormwater volumes discharged to the Little Bay compared to existing conditions.

Additionally, temporary water quality impacts could result from excavation or construction within water or below the tide line. Only two proposed design alternatives (Alternatives 6 and 7) would involve construction of a new bridge pier in the Little Bay. Due to a slight shift in the proposed bridge alignment bringing the proposed GSB closer to the LBB, these alternatives would require a new bridge pier to replace the first bridge pier from the Dover side. A temporary fill causeway would also likely be required to provide access and a working platform for construction equipment during the pier construction. Each of the proposed alternatives, except the No-Action Alternative, also have some level of demolition and construction work to rehabilitate and/or replace various bridge components. Potential temporary impacts related to construction activities are included in **Section 3.13**, *Construction Impacts*.

No-Action Alternative

Under the No-Action Alternative, the GSB would continue to discharge stormwater to the Little Bay through existing bridge scuppers. The bridge deck is approximately 1,530 feet long and 24 feet wide along the entire bridge length and, thus, comprises approximately 36,720 square feet of impervious area. This does not include the surface area associated with metal support beams extending above or adjacent to the bridge deck.

Alternative 1

Alternative 1 would involve rehabilitation of the GSB, including replacement of the bridge deck. The new bridge deck would provide a multiuse path approximately 16 feet wide. This deck would be approximately 33 percent narrower than the existing 24 feet width associated with the existing GSB. The narrower bridge deck would result in a corresponding reduction in future stormwater volumes discharged from the GSB bridge deck compared to existing conditions. No meaningful changes in impervious area would result from modifications of either supporting bridge piers or abutments.

Alternative 3

Alternative 3 would also create a 16-foot-wide multiuse path; this narrower bridge deck would result in an estimated 33 percent reduction of future stormwater volumes compared to existing conditions. No meaningful changes in impervious area would result from modifications of either supporting bridge piers or abutments.

***Alternative* 6**

Alternative 6 involves removal of the GSB and construction of a new bridge closer to the LBB using pier extensions that extend from the existing GSB piers foundations to the existing LBB piers. Due to the minor shift in the bridge alignment, the bridge length would be extended by approximately 50 feet to accommodate new abutment on the Newington side. The curb to curb bridge deck width would be 16 feet. The estimated bridge deck area would be approximately 28,280 square feet or slightly more than Alternatives 1, 3 and 9 due to the added bridge length, but still approximately 23 percent less than the existing bridge. The existing Pier 1 within Little Bay closest to the Dover side would also have to be replaced with a new pier that would result in direct impacts to the marine aquatic habitat. The GSB superstructure would be demolished but seven of the eight GSB piers would remain in place to support the pier extensions. No major changes to the other bridge piers or abutments are proposed.

Alternative 7

Under Alternative 7, the potential for water quality impacts would be the same as Alternative 6.

Alternative 9 (Preferred Alternative)

Under Alternative 9, the potential for water quality impacts would be the same as Alternative 1, with an anticipated 33 percent reduction in impervious area compared to existing conditions.

3.2.2.2 Indirect Impacts

No-Action Alternative

No indirect water quality impacts are expected to result from the No-Action Alternative.

Action Alternatives

No indirect water quality impacts are expected to result from any of the Action Alternatives. Indirect impacts typically relate to other ancillary activities or physical changes that may occur as a result of a project that may affect water quality. If anything, the increased capacity to accommodate alternatives modes of travel via bicycling or walking as result of the Project may reduce the number of vehicle miles traveled for local commuters and, thus, reduce the related vehicle exhaust emissions that have been shown to contribute to the pollutant levels contained in rainwater.

3.2.3 Mitigation

The GSB Project is located within an Urbanized Area that is subject to the 2017 EPA MS4 Permit; however, since the Action Alternatives would reduce impervious area relative to what currently exists today, less stormwater would be generated and discharged to the Little Bay. In fact, the pollutant load calculations associated with the stormwater treatment measures (*e.g.*, gravel wetlands and extended wet detention ponds) included in the larger Newington-Dover, Spaulding Turnpike Improvements Project indicate that the overall project is expected to result in a pollutant load reduction, which exceeds the requirements of the antidegradation provisions of the state surface water quality regulations and the MS4 Permit. No additional mitigation measures are considered necessary with respect to post-construction stormwater discharges under future conditions.

During the construction period, the project will need to address the provisions of EPA's Construction General Permit (CGP) as more than 1 acre of disturbance is expected, including the anticipated construction laydown areas. NHDOT will require contractors to submit a Notice of Intent (NOI) and develop a Stormwater Pollution Prevention Plan (SWPPP) outlining the various protective and containment measures that will be deployed to limit any land-based erosion or discharge of stormwater and minimize potential temporary water quality impacts associated with the construction activities. NHDOT will also require contractors to describe the construction methods that will be used to minimize the disturbance of marine sediments during construction of the temporary causeways or, if necessary, installation of temporary coffer dams, including any potential dewatering activity. NHDOT will require contractors to have a qualified environmental and erosion control monitor onsite to inspect, document and report on daily activities within the proposed project limits and construction staging areas.

Where dewatering activity may be needed, NHDOT will require contractors to provide a dewatering and erosion control plan that is consistent with NPDES Remedial Permit for Dewatering Activity in New Hampshire including contingency measures for extreme wet weather events.

3.3 Floodplain and Hydrodynamics

Floodplains are a vital part of riverine and coastal systems by providing areas for flood storage during storms including tidal events. Floodplains are defined as, "the lowland and relatively flat areas adjoining inland and coastal waters, including, at a minimum that area subject to a one percent or greater chance of flooding in any given year" (44 CFR 9).

All federally funded projects are required to evaluate the potential impact on floodplains, per Executive Order (EO) 11988, *Floodplain Management* (May 24,1977). The regulation that sets forth the policy and procedures of this order is titled *Floodplain Management and Protection of Wetlands* (44 CFR 9) which is administered by the Federal Emergency Management Agency (FEMA). The New Hampshire Office of Strategic Initiatives (OSI) has developed three state model floodplain ordinances which require communities to (at a minimum) adopt the National Flood Insurance Program outlined in 44 CFR.

The City of Dover Code for Floodplain Development (Chapter 113-3) recognizes floodplain elevations as those delineated in the FEMA "Flood Insurance Study (FIS) for the County of Strafford, NH," dated May 17, 2005, with the accompanying series of Flood Insurance Rate Maps (FIRMs). The City of Dover Code prohibits building, encroachment, or other development within the floodplain along watercourses that have been designated as Regulatory Floodways. For watercourses not designated as Regulatory Floodways, the City of Dover permits development if it is demonstrated that such development will not increase the base flood elevation more than one foot at any point within the community.

Since the publication of the 2007 FEIS, the Town of Newington has published information on floodplains, Article 17: Floodplain Management in April 2016. The Town of Newington adopted the requirements in the National Flood Insurance Program (44 CFR 59). The Newington zoning ordinance recognizes the lands designated as flood hazard areas defined in the FEMA FIS for the County of Rockingham, NH (dated May 17, 2005).

3.3.1 Affected Environment

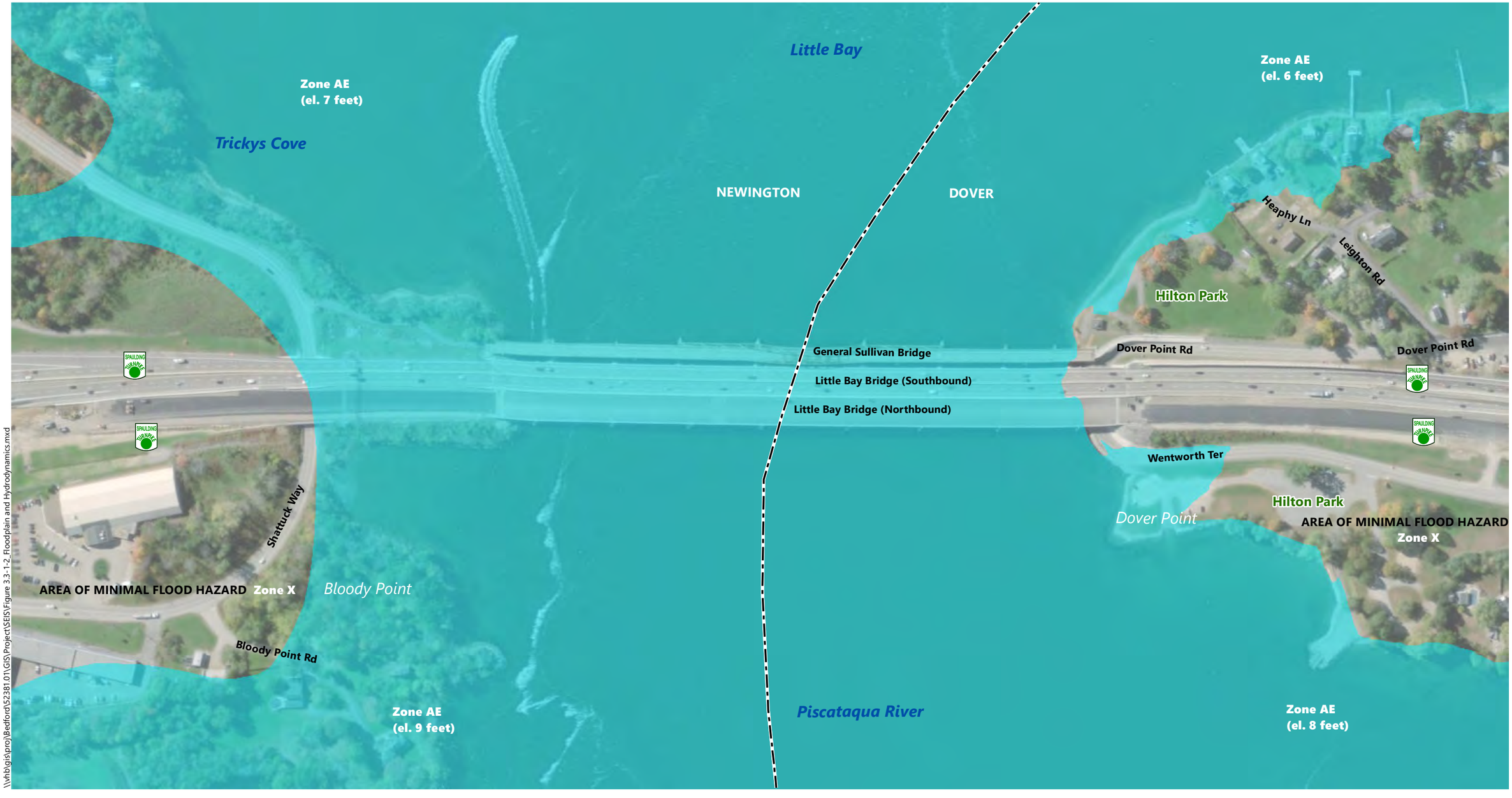
3.3.1.1 Floodplains

Floodplain elevation data was examined for Dover and Newington, the two municipalities within the Study Area. Floodplain boundaries were determined using the FEMA FIRM for Dover and Newington which are derived from the FIS used in the 2007 FEIS. These maps show areas of potential risk from a 1-percent-annual-chance flood event, or also referred to as Zone AE (see **Figure 3.3-1**).

Newington

Based on the FEMA FIRM maps for Rockingham County updated in 2005, there are two AE flood zones within the Study Area in Newington. 100-year flood elevations were determined in the FIS

Figure 3.3-1



\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.3-1-2_Floodplain and Hydrodynamics.mxd

0 125 250 500 Feet

Legend

Town Boundaries

1% Annual Chance Flood Hazard (FEMA)

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Floodplain and Hydrodynamics

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Source: VHB, NH GRANIT

and confirmed in the 2007 FEIS. The Piscataqua River 100-year flood zone along the entire Newington shoreline has an elevation of 9 feet (NGVD29). This flood zone extends from the City of Portsmouth boundary north around Bloody Point and ending just east of the northbound LBB. The remaining portion of the flood zone along Newington's shoreline extends west from the northbound LBB to Trickys Cove and eventually into Great Bay; this area has a 100-year flood elevation of 7 feet (NGVD29).

Dover

Based on the FEMA FIRM maps for Strafford County updated in 2005, there are two AE flood zones within the Study Area in Dover. The two zones in Dover include the area running south along the Piscataqua River and the shoreline along the Little Bay. The flood zone along the Piscataqua River begins at the southern portion of Pomeroy Cove and runs south around Hilton Park ending east of the LBB, this zone has an elevation of 8 feet (NGVD29). The other flood zone in Dover begins just east of the LBB and extends west along the Dover coastline eventually turning north and ending on the opposite shoreline to Pomeroy Cove, this area has an elevation of 6 feet (NGVD29).

3.3.1.2 Hydrodynamics

The UNH developed a hydrodynamic model of the Great Bay - Piscataqua River Estuarine System which was presented in the 2007 FEIS. This hydrodynamic model predicted currents and tidal elevations in the Great Bay and Little Bay, including the areas around the LBB and GSB.[25] The model was used to predict the effects of changes to the bridge pier system on tidal dynamics in the area. In 2010, this model was revised to assess the proposed final design of the piers for the southbound LBB, which involved installation of drilled shaft piers rather than the connected pier foundations presented in the FEIS.[26] The 2010 modeling effort verified that the drilled shaft pier configuration was consistent with hydrodynamic effects presented in the 2007 FEIS.

The hydrodynamic models predicted that the construction of new piers for the LBB would result in a negligible increase in tidal maxima of 0.00 feet (0.1 inches) to 0.02 feet (0.24 inches) across the entirety of the Little Bay/Great Bay Estuary system. The completed conditions of the Spaulding Turnpike Improvements Project equaled a slight increase in current velocity within the 200-foot-wide navigation channel (between Piers 4 and 5) by a maximum of 5 percent. Data published in both analyses show the currents in the area of the LBBs are in the range of 10 to 12 feet per second at maximum values during both the ebb and flood tides, with the ebb values slightly greater than the flood values.

3.3.2 Environmental Consequences

For the GSB Project, impacts to floodplains and hydrodynamics were evaluated using data published by the UNH, State of New Hampshire, and FEMA. Potential impacts to floodplains and hydrodynamics would relate to the possible installation of new structures (*e.g.*, new piers) within Little Bay that would impact floodwater storage potential, tidal maxima, currents, and wave patterns.

3.3.2.1 Direct Impacts

Permanent direct impacts to floodplains and hydrodynamics would occur where new substructures are proposed in the tidal zone (*i.e.*, Alternatives 6 and 7). The removal and replacement of GSB Pier 1 would permanently alter conditions within Little Bay and placement of this structure would result in changes to the hydrodynamic conditions. Alternatives 1, 3, and 9 do not propose permanent changes to structures below the highest observable tide line; therefore, these three Action Alternatives would not permanently impact hydrodynamics within the Study Area.

Under all Action Alternatives, temporary direct impacts would occur due to the installation of structures needed to support access the GSB during construction (**Appendix D**). In Newington, the temporary causeway would extend approximately 260 feet north into Little Bay, adjacent to GSB piers and covering a total area of approximately 22,000 square feet. In Dover, the temporary causeway would extend south about 130 feet into Little Bay, also adjacent to GSB piers. The total area of this second causeway would be approximately 9,000 square feet. Trestles beyond the causeways would extend approximately 450 to 460 feet on the Newington side and 470 to 480 feet on the Dover side and would be held in place by piers.

The placement of causeways and trestles would temporarily alter floodplains and hydrodynamics on a localized scale in the Study Area, both at and directly adjacent to the temporary structures (*i.e.*, there would be no widespread impacts across Little Bay or Great Bay Estuary).[27] For the larger Spaulding Turnpike Improvements Project, the hydrodynamic models predicted a minor increase in tidal maxima of 0.00 feet (0.02 inches) to 0.03 feet (0.35 inches) across the entirety of Little Bay and Great Bay Estuary from the placement of temporary structures. The temporary structures would increase the current velocity (in feet per second) at a maximum of 10 percent through the main navigational channel (between GSB Piers 4 and 5).

During construction of any of the Action Alternatives, the causeways and trestles would divert floodwaters, tidal maxima, currents and wave patterns to other areas of the Little Bay/Great Bay Estuary. However, these temporary direct impacts would be minor due to the extensive area of the Little Bay and Great Bay Estuary, which has the ability to disperse the minor amount of displaced waters or waves over an expansive system of salt marsh, mud flat, and riverine habitat. The Great Bay National Estuarine Research Reserve (part of the Great Bay Estuary) encompasses 10,235 total acres, approximately 7,300 acres of open water and wetlands, the approximate areas occupied by the temporary causeways and trestles would equal 0.72 acre, or 0.007 percent of the total area of Great Bay National Estuarine Research Reserve. Post construction, coastal and

[25] Celikkol, B., T. Shevenell, Z. Aydinoglu, and J. Scott. 2006. *Hydrodynamic Computer Model Study of the Great Bay Estuarine System, New Hampshire, In Support of the Little Bay Bridge Project*. Computer Modeling Group, Ocean Engineering, University of New Hampshire, Durham, NH.

[26] AECOM. 2010. Hydraulic Modeling Analysis – Spaulding Turnpike Improvements, Little Bay Bridges Newington to Dover, New Hampshire. Prepared for VHB.

[27] It is important to note that the causeway and trestle structures are conceptual and will be finalized as the Project progresses to final design. As stated on the Preliminary Construction Impact Plans (**Appendix D**), temporary structures will be based on contractor means and methods for access.

marine habitats would be restored to pre-construction sloping and grading; conditions are anticipated to rebound to existing conditions.

No-Action Alternative

Under the No-Action Alternative, the existing conditions of floodplains and hydrodynamics in the Great Bay Estuary system would be unaltered. No permanent impacts would result from pier configuration changes, and there would be no temporary direct impacts from the causeway and trestle structures necessary for construction.[28]

Alternative 1

Permanent direct impacts to floodplains and hydrodynamics would not occur as part of Alternative 1 due to the lack of new or replacement infrastructure in the floodplain and tidal zone. Alternative 1 does not require the removal or replacement of pier structures in Little Bay.

Construction of Alternative 1 is expected to take approximately 3 years, the longest construction timeframe of the Action Alternatives. Minor temporary impacts to floodplains and hydrodynamics would occur from the installation of causeways and trestles which would remain in place through the duration of construction. The placement of causeways and trestles would result in minor changes in local tidal conditions during construction.

Alternative 3

Permanent direct impacts under Alternative 3 are the same as described in Alternative 1. Alternative 3 does not require the removal and replacement of pier structures in Little Bay; therefore, Alternative 3 would not result in any permanent impacts to floodplains or hydrodynamics.

Temporary impacts to floodplains and hydrodynamics would be similar to the impacts described in Alternative 1 (*i.e.*, shifts in flood storage potential and temporary changes to tidal maxima, currents and wave patterns at or directly adjacent to the temporary structures). However, the estimated timeframe to complete construction of Alternative 3 is less than the timeframe estimated to complete Alternative 1; Alternative 3 is estimated to take 2 years to construct.

Alternative 6

Alternative 6 would result in permanent direct impacts to floodplains and hydrodynamics in Little Bay and Great Bay Estuary system. Impacts to these resources would result from the removal of GSB Pier 1 and installation of a new pier to support the reconfigured approach span. GSB Piers 2 through 8 would be reused.

Temporary impacts to floodplains and hydrodynamics would be similar to the impacts described in Alternative 1 (*i.e.*, shifts in flood storage potential and temporary changes to tidal maxima, currents and wave patterns at- or directly adjacent to the temporary structures). However, the estimated timeframe to complete construction of Alternative 6 is 1.5 years - less than the timeframes estimated to complete Alternatives 1 and 3.

Alternative 7

Permanent direct impacts resulting from Alternative 7 on floodplains and hydrodynamics are the same as described in Alternative 6, from the removal of GSB Pier 1 and installation of a new pier. Temporary direct impacts on floodplains and hydrodynamics from Alternative 7 are also the same as described in Alternative 6. The estimated construction timeframe of Alternative 7 is 1.5 years.

Alternative 9 (Preferred Alternative)

Permanent direct impacts from Alternative 9 are the same as described in Alternative 1. Alternative 9 does not require the removal or replacement of pier structures in Little Bay.

Temporary direct impacts to floodplains and hydrodynamics are identical to the impacts described in Alternative 1 (*i.e.,* shifts in flood storage potential and temporary changes to tidal maxima, currents and wave patterns at or directly adjacent to the temporary structures). However, the estimated timeframe to complete construction of Alternative 9 is less than the timeframes estimated to complete Alternatives 1 and 3. The estimated construction timeframe is 1.5 years – equivalent to the estimated construction timeframes of Alternatives 6 and 7.

3.3.2.2 Indirect Impacts

Indirect impacts on floodplains and hydrodynamics are not anticipated as part of the Project. It is assumed that impacts occurring from any unforeseen future development within the Study Area would not impact floodplains or hydrodynamics because of federal and state regulations, and local policies and ordinances. Both the City of Dover and Town of Newington have adopted local policies aligned with FEMA policies.

3.3.3 Mitigation

The potential impacts to floodplains and hydrodynamics are considered minor in the context of the extensive volume of Little Bay, Piscataqua River and Great Bay. Direct impacts to the 100-year floodplain have been minimized in the conceptual designs developed to date and would continue to be considered as the Project progresses to final design.

Under all Action Alternatives, temporary direct impacts would result from the placement of the temporary stone causeways and trestles in Little Bay during construction. As the Project progresses into final design, the details on installation of the temporary structures would be determined and efforts would be made to further minimize the minor temporary impacts, where applicable.

[28] Note, however, that the USCG would require removal of the GSB if it is no longer used for transportation purposes. Removal of the bridge would require at least temporary impacts.

3.4 Wildlife and Fisheries

Wildlife habitat in New Hampshire is highly valuable to sustaining native large and small mammals, as well as invertebrate, avian, and aquatic species. Each wildlife species requires a unique habitat type or set of habitat types to be sustained, reproduce, and survive. Additionally, habitat size requirements are different for each species, since some species require large tracts of undisturbed land to thrive, while others can survive in more built, urbanized environments.

The NH Fish & Game Department (NHF&GD) is responsible for managing and protecting native wildlife species within New Hampshire, as authorized by RSA 212-A, including threatened and endangered species. This statute also authorizes the NHF&GD to gather information about wildlife species in general and determine types of conservation needs each species has to be sustained. To help accomplish this mission, the NHF&GD developed the New Hampshire Wildlife Action Plan to assist with conserving and protecting wildlife species and habitat types throughout the state.

On a national scale, the USFWS is responsible for the protection and management of migratory species in the United States. Except for threatened and endangered species and their associated "critical habitats," federal protection of wildlife on private property is confined to regulations regarding the exploitation of species and is not extended to wildlife habitat, except for the designation of critical habitat under the Endangered Species Act (ESA) of 1973. Both wildlife species and wildlife habitats are generally protected on Federal lands, including National Wildlife Refuges, National Parks and Monuments, and National Forests.

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) established a requirement to describe and identify Essential Fish Habitat (EFH) in each federal fishery management plan. The Magnuson-Stevens Act defines EFH as "*those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity*" (50 CFR 600.920). Under these regulations, FHWA is required to coordinate with the National Oceanic and Atmospheric Administration (NOAA) regarding the potential effect of the Project on EFH.

3.4.1 Affected Environment

The Project is at the entrance of the Great Bay, located in the lower part of Great Bay called Little Bay, which includes the narrow section between Dover and Newington where it joins the Piscataqua River. The Great Bay estuary provides unique habitat opportunities in coastal New Hampshire since the bay is a large tidal embayment that covers over 17 square miles and contains 144 miles of shoreline. Strong tidal currents exist in Little Bay near the Piscataqua River.

The following sections summarize known wildlife and fish habitats within the Study Area, as well as coordination conducted with the NHF&GD and NOAA. There are no Federal lands, including National Wildlife Refuges, National Parks and Monuments, or National Forests, within the Study Area.

3.4.1.1 Wildlife and Habitat

The Wildlife Action Plan emphasizes the conservation of Species of Greatest Conservation Need and the habitats these species use. The condition of wildlife habitat resources within the Study Area was evaluated based on maps created from the 2015 Wildlife Action Plan habitat type locations and habitat tier information.

Wildlife Habitat Types

Because the Study Area is largely developed as residential, commercial, and park land uses, the Wildlife Action Plan does not identify any habitat type for much of the upland areas around the GSB. Small areas of salt marsh habitat are identified along the shoreline of Great Bay within the Study Area. As shown in **Figure 3.4-1** south of the GSB in Newington are sparse areas of salt marsh, wet meadow/shrub wetland, and hemlock-hardwood-pine to the east, with larger areas of Appalachian oak-pine to the west.

The following dominant habitat types are found within the Study Area:

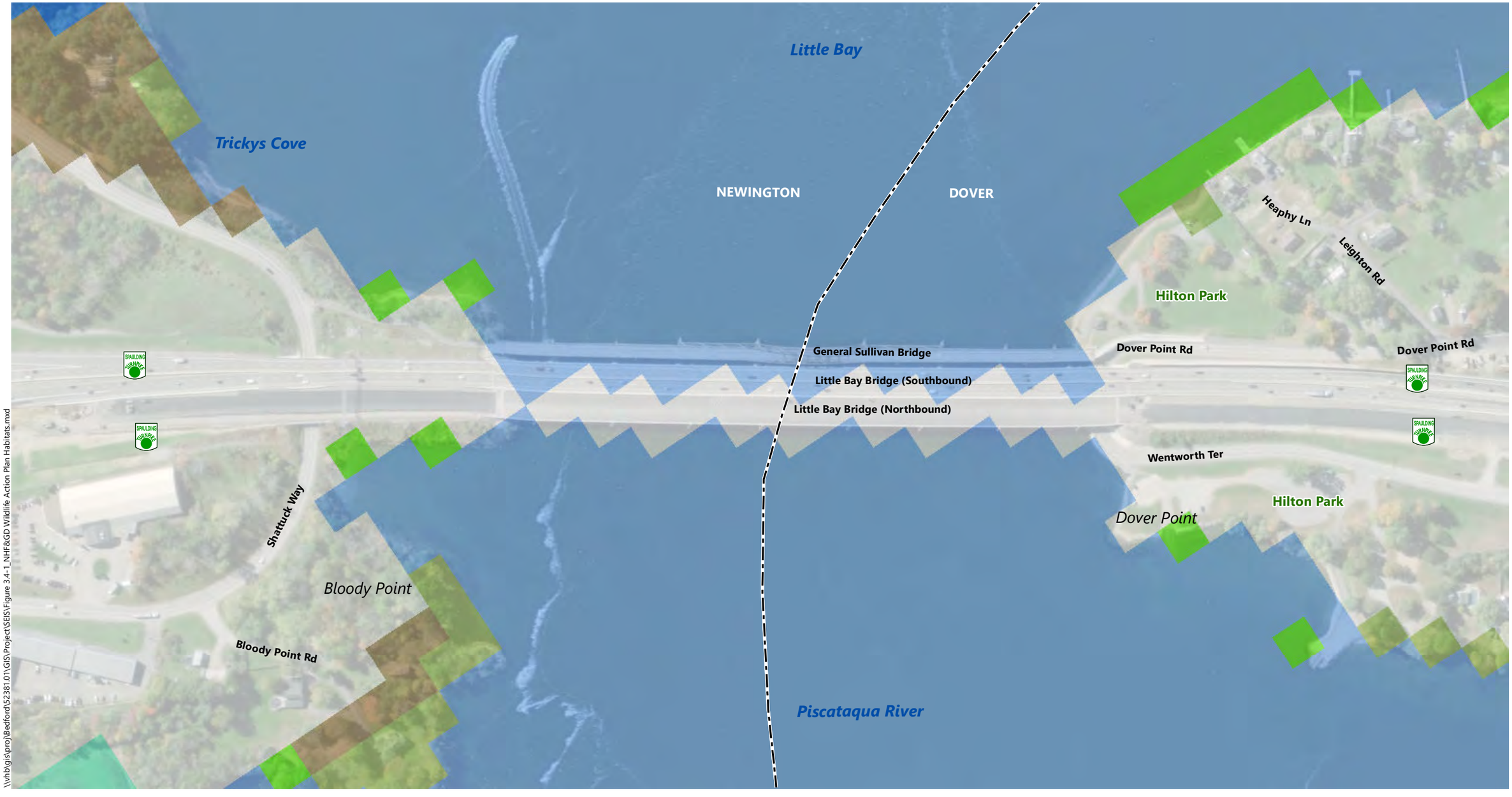
- **Salt Marsh**. Salt marshes are present between ocean and upland and are highly productive habitats, containing plant species that are tolerant of salt and frequently changing water levels.
- **Hemlock-Hardwood-Pine**. This is a transitional forest community between hardwood conifer forests in higher elevations and oak-pine forests in lower elevations. This habitat type has dry, sandy soils with dominant tree species of red oak and white pine, often transitioning to a dominance of hemlock and beech.
- **Appalachian Oak-Pine**. Forests designated as Appalachian Oak-Pine forests contain plant species characteristic of the central Appalachian states.
- **Wet Meadow/Shrub Wetland**. These wetlands are emergent marshes, wet meadows, or scrub-shrub wetlands and are mostly controlled by groundwater. These habitats have poorly-drained muck and mineral soils that are often saturated, but rarely permanently flooded.

Wildlife Habitat Tiers

The NHF&GD identifies ranked habitat tiers via a ranking system which identifies terrestrial and wetland habitats that are in the best condition to meet the needs of wildlife. These ranked habitats are especially considered important for species of greatest conservation need. Habitat tiers are separated into three tier rankings, which are 1) Top Ranked Habitat in the State, 2) Top Ranked Habitat in Biological Region, and 3) Supporting Landscape. The first tier, Top Ranked Habitat in the State, includes the top 15 percent habitat areas, which are known critical habitats of state-listed species and all known alpine, dune, saltmarsh, and rocky shore habitats. The State was then divided into regions to designate the top 30 percent of each habitat type within each region, thus creating the second tier, Top Ranked Habitat in Biological Region. The remaining top 50 percent habitat areas are designated to the Supporting Landscape tier, as well as large continuous tracts of forestland.

The Great Bay is identified as a Tier 1, *Top Ranked Habitat* starting at the GSB and extending west. This Tier 1 habitat includes a small portion of shoreline along the Great Bay in the Study Area. There are additional select areas of Tier 1 habitat along the shoreline of the Piscataqua River in the southeast corner of the Study Area. The Great Bay is ranked as a Tier 1 habitat since the bay is a unique coastal habitat in the State. No Tier 2, *Top Ranked Habitat in Biological*

Figure 3.4-1



\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.4-1_NHF&GD Wildlife Action Plan Habitats.mxd

0 125 250 500 Feet

Legend

Town Boundaries

NHF&GD Wildlife Action Plan Habitats

- Appalachian oak-pine
- Hemlock-hardwood-pine
- NLCD Developed or Barren
- Open water
- Salt marsh
- Temperate swamp
- Wet meadow/shrub wetland

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

NHF&GD Wildlife Action Plan Habitats

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT Department of Transportation

Source: NHGRANIT, NHF&GD WAP

Region, or Tier 3, *Supporting Landscape* habitat rankings are located in the Study Area. Refer to **Figure 3.4-2** for more information.

Land uses within the Study Area include residential, with small areas of commercial. The Dover shoreline in the Study Area is largely disturbed. Hilton Park is located on both the east and west sides of the Spaulding Turnpike, with Dover Point Road and Wentworth Terrace running in a "U" shape underneath the Spaulding Turnpike near the Great Bay. This area lacks dense vegetation near the shoreline. The southern portion of the Study Area in Newington is more vegetated than disturbed; however, similar to Dover Point Road and Wentworth Terrace, Shattuck Way runs in a "U" shape under the Turnpike along the point within close proximity to Great Bay, fragmenting this otherwise vegetated coastal habitat.

3.4.1.1 Essential Fish Habitat and Designated Critical Habitat

The ESA Section 7 Mapper was used to determine the presence of ESA-listed species, EFH, and critical habitat for NOAA-managed fish species in the Study Area. Little Bay is designated as EFH for several fish species: Atlantic sturgeon (*Acipenser oxyrhynchus ocyrhynchus*) and shortnose sturgeon (*Acipenser brevirostrum*). Atlantic sturgeon travel into Great Bay and points beyond from the Piscataqua River through Little Bay. Because the Project involves in-water work within Little Bay, an EFH Assessment Worksheet and an Appendix A Verification Form were completed and submitted to NOAA for review. The assessments evaluated the impacts associated with Alternative 9 (Preferred Alternative) as the proposed temporary impacts would be similar under all alternatives. The minor permanent impact differences are noted below in **Section 3.4.2**. A summary of these two assessments is provided below.

Essential Fish Habitat Assessment Worksheet

The 2006 EFH Assessment prepared for the Newington-Dover, Spaulding Turnpike Improvements Project was updated in January 2019 (**Appendix E**). The 2019 EFH Assessment evaluated habitat characteristics of Little Bay and described the anticipated impacts to sediment composition, water salinity, depth, and temperature, as well as aquatic vegetation. The 2019 EFH Assessment also evaluated impacts on the different life stages of species known to occur within the Study Area and depicts the existing types of intertidal and subtidal habitats. The portion of Little Bay in the Study Area is designated EFH habitat for eggs, larvae, juveniles, and spawning adults for several species.[29]

The 2019 EFH Assessment also evaluated the presence of shellfish habitat. The NH Coastal Viewer identified a ±2.8-acre blue mussel shellfish bed in Little Bay along the Dover coastline underneath the GSB in the northern portion of the Study Area. This bed was identified by the NHDES Shellfish Program in 2013.[30]

Atlantic Sturgeon and Shortnose Sturgeon Consultation

The Little Bay is designated critical habitat for Atlantic sturgeon (*Acipenser oxyrhynchus ocyrhynchus*) and shortnose sturgeon (*Acipenser brevirostrum*). The Project was determined to be eligible under the Programmatic ESA Section 7 Consultation since the Project involves work to the bridge structure and meets the applicable project design criteria included in the FHWA Greater Atlantic Regional Fisheries Office 2018 *Not Likely to Adversely Affect Program Appendix A Verification Form* (see **Appendix E**). Atlantic sturgeon is an ESA-listed species, and Little Bay is within a distinct population segment for Atlantic sturgeon. On June 18, 2019 NOAA concurred that the project "*may affect but is not likely to adversely affect*" Atlantic/shortnose sturgeon critical habitat.

3.4.2 Environmental Consequences

This section discusses the anticipated direct and indirect impacts to wildlife habitat types and tiers as identified by the 2015 Wildlife Action Plan, as well as anticipated direct and indirect impacts to EFH and critical habitat for Atlantic sturgeon and shortnose sturgeon. The Project would not impact the Great Bay National Wildlife Refuge nor the Great Bay National Estuarine Research Reserve because of their distance from the Study Area.

3.4.2.1 Direct Impacts

No-Action Alternative

No direct or indirect impacts to wildlife or fishery habitat, EFH, or designated critical habitat would occur under the No-Action Alternative.

Alternative 1

Wildlife Habitat Types and Tiers

Under Alternative 1, direct, temporary impacts would result from the installation of temporary construction access within and adjacent to Little Bay. A minor amount of shoreland habitat would be impacted; generally, this shoreland habitat impact would be limited to previously disturbed areas. Some of this habitat is identified as Tier 1 wildlife habitat, which is part of the greater habitat area of Great Bay, beginning at the GSB and continuing west. Specifically, Alternative 1 would involve minor tree and shrub clearing along the shoreline within the Study Area along the Newington side. Disturbed areas along the shoreline would be restored and plantings would be added upon completion of construction; therefore, these impacts are not anticipated to result in permanent, direct impacts to the habitat of Great Bay or adjacent shoreline.

Essential Fish Habitat

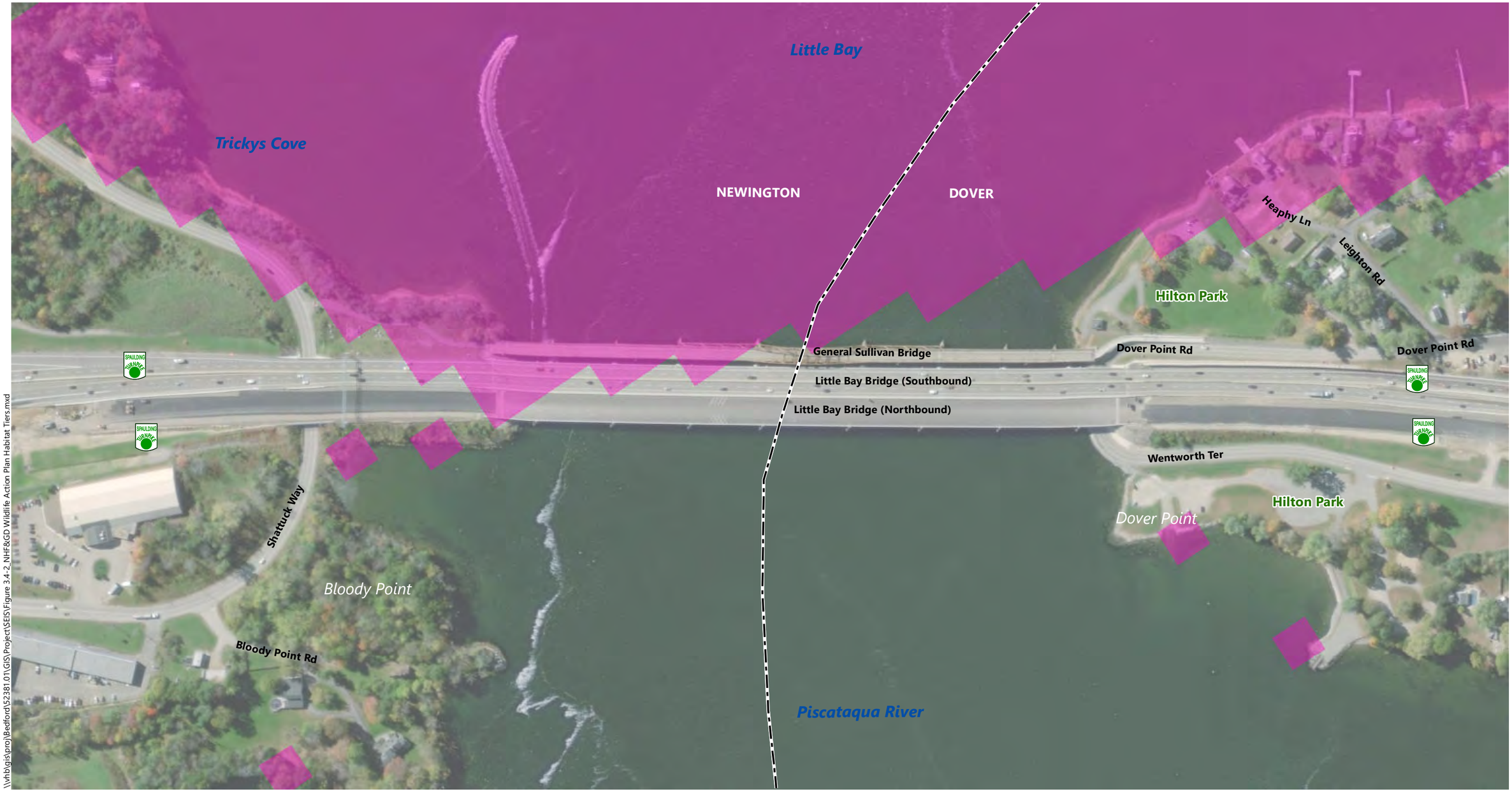
Like the evaluation of Alternative 9 (Preferred Alternative) described below, Alternative 1 would not have a substantial effect on EFH. No permanent impacts to EFH are anticipated under Alternative 1. Direct temporary impacts under Alternative 1 would result from the placement of causeways and trestles which would have localized impacts to the bed, current flows, and

---

[29] A breakdown of species located in the Great Bay at a particular life stage is provided in **Appendix E**, Table 1.

[30] Morrissey, E., and C. Nash. 2013. *Identifying Blue Mussel* (Mytilus edulis) *Resource in Coastal New Hampshire*. NH Department of Environmental Services' Shellfish Program. Accessed from https://www.des.nh.gov/organization/divisions/water/wmb/shellfish/ redtide/aquaculture.htm. Accessed on January 14, 2019.

Figure 3.4-2



\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.4-2_NHF&GD Wildlife Action Plan Habitat Tiers.mxd

0 125 250 500 Feet

Legend

Town Boundaries

NHF&GD Wildlife Action Plan Habitat Tiers

Highest Ranked Habitat in New Hampshire

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

NHF&GD Wildlife Action Plan Habitat Tiers

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Source: NHGRANIT, NHF&GD WAP

acoustic effects within Little Bay. These temporary impacts would be similar under all alternatives.

Temporary impacts under Alternative 1 would occur due to in-water disturbance from the causeways and trestles. The installation and removal of these structures over a one- to two-month period could cause sedimentation, acoustic effects, and habitat disturbance. Direct temporary impacts to EFH would occur under Alternative 1 from the placement of the causeways and trestles involve temporary alterations to the currents of Little Bay at a localized scale and would cause minor changes in tidal velocities. Current flows in the Study Area are complex and have a wide range of directional components and speeds during the tidal cycle. These tidal flow characteristics were studied during the preparation of the 2007 FEIS. Tidal flows, currents, and wave patterns are not expected to be permanently altered as a result of the temporary impacts associated with construction access. Any changes to tidal flow, currents, and wave patterns due to the placement of the causeways and trestles would be temporary and minor.

ESA Designated Critical Habitat

Like the evaluation of Alternative 9 (Preferred Alternative), Alternative 1 is anticipated to have minor impacts to designated critical habitat for Atlantic sturgeon and shortnose sturgeon that may occur within Little Bay. Resources that contribute to known designated critical habitat within the project area include the following: hard bottom substrate; water temperature, flow, salinity, and dissolved oxygen; submerged aquatic vegetation and oyster reefs; noise environment; and aquatic species movement.

Temporary impacts to designated critical habitat under Alternative 1 would include temporary disturbance to the bed of Little Bay from the use of cofferdams and turbidity curtains, and temporary placement of fill from the causeways within the Little Bay. Additionally, temporary noise impacts within this designated critical habitat would occur under Alternative 1 due to pile driving from the temporary causeways and the installation of the temporary trestle. An *Hydroacoustic Impact Assessment* evaluated the potential for noise impacts on Atlantic sturgeon and shortnose sturgeon due to pile driving to install the temporary trestles. The findings of the *Hydroacoustic Impact Assessment* determined that there would be no injury to Atlantic sturgeon or shortnose sturgeon as a result of the installation of the temporary causeways and trestles. These impacts would be similar under all Action Alternatives. No permanent impacts to designated critical habitat would occur under Alternative 1.

Shellfish Habitat

Alternative 1 would result in temporary, direct impacts to about 0.2 acre of the blue mussel shellfish bed due to the installation of causeways and trestles. These temporary structures would be in place throughout the duration of construction. Standard marine construction BMPs would be implemented wherever feasible to mitigate the potential for suspension of sediments and consequent siltation.

Alternative 3

Impacts to wildlife, EFH, designated critical habitat, and shellfish habitat under Alternative 3 would be similar to the impacts described under Alternative 1.

Alternative 6

Wildlife Habitat Types and Tiers

Temporary direct impacts to wildlife habitats and wildlife tiers under Alternative 6 would be similar to those described under Alternative 1. However, Alternative 6 would result in minor additional direct permanent impact to open water habitat due to the removal of the existing GSB Pier 1 and the construction of a new approach span pier in Little Bay near the Dover shoreline. The approach span pier would permanently impact approximately 50 square feet of blue mussel shellfish bed.

Essential Fish Habitat

Temporary impacts to EFH habitat under Alternative 6 would be similar to those described under Alternative 1.

Alternative 6 would result in direct permanent impacts to EFH within Little Bay from the removal and construction of GSB Pier 1. Permanent impacts from the pier removal and construction of a new approach span pier would have a negative effect on EFH habitat because of the addition of a permanent structure, which would result in permanent impacts to the bed and localized currents of Little Bay. Additionally, the new pier would be located within the blue mussel shellfish bed, therefore resulting in approximately 50 square feet of permanent impacts to shellfish habitat (see below).

ESA Designated Critical Habitat

Impacts to designated critical habitat for Atlantic and shortnose sturgeon would be similar as those described in Alternative 1 with the exception of the additional direct permanent impacts proposed within Little Bay from the removal of the existing GSB Pier 1 and construction of a new approach span pier. It is anticipated that the removal and construction of this pier would result in additional noise impacts that would not occur under Alternative 9.

Shellfish Habitat

Like Alternative 1, Alternative 6 would result in temporary, direct impacts to about 0.2 acre of the blue mussel shellfish bed due to the installation of causeways and trestles. Alternative 6 would also result in permanent, direct impact to the blue mussel shellfish bed from the removal of the existing GSB Pier 1 and construction of a new approach span pier.

Alternative 7

Impacts to wildlife, EFH, designated critical habitat, and shellfish habitat under Alternative 7 would be similar to the impacts described under Alternative 6.

Alternative 9 (Preferred Alternative)

Impacts to wildlife and shellfish habitat under Alternative 9 would be similar to the impacts described under Alternative 1.

Essential Fish Habitat

An analysis of impacts to EFH was completed for Alternative 9 (**Appendix E**). The Worksheet concluded that Alternative 9 would not have a substantial effect on EFH. NOAA reviewed this assessment on May 17, 2019 and indicated that the impacts are temporary and minor in nature; NOAA did not have any EFH conservation recommendations (**Appendix E**). Temporary impacts under Alternative 9 would occur due to in-water disturbance from the causeways and trestles. The installation and removal of these structures over a one- to two-month period could cause sedimentation, acoustic effects, and habitat disturbance.

Direct temporary impacts to EFH under Alternative 9 would result from the placement of the causeways and trestles involve temporary alterations to the currents of Little Bay at a localized scale and would cause minor changes in tidal velocities. Current flows in the Study Area are complex and have a wide range of directional components and speeds during the tidal cycle. These tidal flow characteristics were studied during the preparation of the 2007 FEIS. Tidal flows, currents, and wave patterns are not expected to be permanently altered as a result of the temporary impacts associated with construction access. Any changes to tidal flow, currents, and wave patterns due to the placement of the causeways and trestles would be temporary and minor.

ESA Designated Critical Habitat

The Appendix A Verification Form was used to evaluate proposed impacts to ESA-listed species and critical habitat within the Study Area under Alternative 9. Resources evaluated for impacts in the Appendix A Verification Form included: hard bottom substrate; changes in water temperature, flow, salinity, and dissolved oxygen; and submerged aquatic vegetation and oyster reefs. Additionally, under the Appendix A Verification Form the Project was evaluated for noise impacts, impacts from marine vessels, aquatic species movement, use of cofferdams and turbidity curtains, and temporary placement of fill from the causeways within the Little Bay. Further information regarding the impact evaluation can be found in **Appendix E**.

A *Hydroacoustic Impact Assessment* (**Appendix E**) evaluated the potential for noise impacts on Atlantic sturgeon and shortnose sturgeon due to pile driving to install the temporary trestle. The hydroacoustic assessment determined that a sturgeon would need to be within approximately 190 feet (58 meters) of a pile for a prolonged period of time to be exposed to potentially injurious sound levels. If any sturgeon are within 190 feet of a pile at the time pile driving commences, it is expected that sturgeon would leave the area in a matter of seconds. The utilization of a soft start technique would also give any sturgeon in the area time to move out of the range of potential injury causing noise; therefore, no injury to Atlantic sturgeon or shortnose sturgeon is anticipated.

Additionally, underwater sound levels would be below 150 dBRMS[31] at distances beyond approximately 256 feet (78 meters) from the pile being installed. If sturgeon were to go into the area where sound levels exceed 150 dBRMS, it is reasonable to assume that a sturgeon would redirect its course of movement away from the area where pile driving is occurring. Given the small distance a sturgeon would need to move to avoid disturbances, these temporary noise impacts would not result in substantial, adverse impacts to sturgeon.

Upon completion of the Appendix A Verification Form, NHDOT and FHWA determined that Alternative 1 "*may affect but not likely to adversely affect*" Atlantic sturgeon and shortnose sturgeon, or their critical habitat.[32] Applicable minimization and mitigation measures would be followed during construction to ensure impacts to these species would be minimized to the greatest extent practicable. Additionally, the Project would comply with the *NMFS/FHWA Best Management Practices Manual for Transportation Activities in the Greater Atlantic Region* (April 2018).

3.4.2.2 Indirect Impacts

No-Action Alternative

No indirect impacts to wildlife habitat, EFH, designated critical habitat, or shellfish habitat are anticipated to occur under the No-Action Alternative, since there would not be any changes to the existing GSB infrastructure or surrounding area.

Action Alternatives

Potential indirect impacts of the Action Alternatives to wildlife habitat, EFH, designated critical habitat, and shellfish habitats are described below.

Wildlife Habitat Types and Tiers

None of the Action Alternatives would cause temporary or permanent indirect impacts to wildlife habitat types or tiers within the Study Area.

Essential Fish Habitat

The in-water work of all Action Alternatives has the potential to cause temporary, indirect impacts to prey species of federally managed fish species. No measurable indirect impacts to these species' populations are anticipated; prey species are expected to return to existing conditions once in-water work is complete and all disturbed areas have been restored.

ESA Designated Critical Habitat

Under all Action Alternatives, indirect impacts to Atlantic sturgeon and shortnose sturgeon are similar to potential indirect impacts to EFH, including temporary alterations to the currents of Little Bay at a localized scale and minor changes in tidal velocities. Since these changes to tidal flow, currents, and wave patterns are expected to be temporary and minor in nature, any indirect impacts are not anticipated to adversely affect Atlantic sturgeon or shortnose sturgeon.

Shellfish

All Action Alternatives would result in minor, temporary, indirect impact to shellfish habitat from the proposed in-water work. Impacts under Alternatives 6 and 7 would result in the greatest indirect impacts to shellfish habitat due to the additional work of removing and reconstructing

[31] "RMS" sound level (dBRMS) represents the root-mean squared sound pressure over a duration (typically 50 to 100 milliseconds).

[32] Johnson, Mike. US Department of Commerce, NOAA Fisheries, Greater Atlantic Regional Fisheries Office, Habitat Conservation Division. Personal communication, May 17, 2019. (Refer to **Appendix E**).

GSB Pier 1, since there would be a greater disturbance within the bed of Little Bay. Upon completion of construction, areas indirectly disturbed would become re-established over time.

3.4.3 Mitigation

Because wildlife impacts are considered minor, no specific mitigation is proposed. However, the following list of environmental commitments would minimize potential impacts to wildlife:

- Erosion and sediment control BMPs composed of wildlife friendly materials such as woven organic material would be used during the construction period, as recommended by the NHF&GD.
- Tree and shrub clearing and ground disturbing impacts would be reduced to the extent practicable during design and construction to limit unnecessary impacts on wildlife habitat.
- Areas of disturbance along the shoreline of Little Bay would be stabilized and plantings installed as appropriate as part of site restoration.

No compensatory mitigation for the proposed permanent and temporary impacts within EFH habitat is required. All impacts to EFH and designated critical habitat would be temporary (except for the minor permanent impact associated with the replacement pier required by Alternatives 6 and 7) and standard BMPs for marine construction would be used for the Project, wherever feasible. BMPs would be implemented to mitigate the potential for suspension of sediments and consequent siltation during in-water construction.

Based on correspondence with NOAA's Greater Atlantic Regional Fisheries Office, the following list of environmental commitments would be implemented to protect the water quality and aquatic habitat of Great Bay, and reduce risk of impact to aquatic species:

- A drainage and erosion control plan for all shoreside construction would be implemented, including BMPs to control and capture silt-laden stormwater runoff.
- Standard marine construction BMPs would be implemented wherever feasible to mitigate the potential for suspension of sediments and consequent siltation.
- The contractor would be directed to divert runoff to temporary erosion check dams or to capture runoff using silt fences, hay bales, silt socks, mulch filter berms, or temporary detention basins.
- Areas of soil disturbance would be seeded and mulched as quickly as possible after initial grading.
- The contractor would be required to inspect all construction BMPs on a daily basis to ensure that they are properly installed and maintained.
- Standard BMPs will be used for in-water and shoreside construction to address potential fuel or oil spills from the construction equipment, and to mitigate the potential for suspension of sediments and consequent siltation.
- An emergency response plan for all spills would be in place prior to construction.
- The Project would comply with the *NMFS/FHWA Best Management Practices Manual for Transportation Activities in the Greater Atlantic Region* (April 2018).
- Care will be taken to minimize impacts to shellfish beds, particularly those adjacent to Dover Point. If needed and determined practical, shellfish may be relocated outside of the temporary impact area associated with the temporary construction causeway.

3.5 Threatened and Endangered Species

Threatened, endangered, and special concern species and exemplary natural communities are natural resources that are historically known to occur within New Hampshire but are protected and given special consideration due to their declining presence in the State. The NH Endangered Species Conservation Act (RSA 212-A) delegates authority and responsibility for the listing and protection of threatened and endangered wildlife species in New Hampshire to the NHF&GD. The NHF&GD developed the *Nongame and Endangered Wildlife Program* in 1988 to manage and steward these species. The NHF&GD manages threatened and endangered species cooperatively with the New Hampshire Natural Heritage Bureau (NHNHB). The *New Hampshire Plant Protection Act of 1987* (RSA 217-A), enacted by the New Hampshire Legislature in 1987, established the authority for the State to develop a list of rare plant species. The NHNHB was designated this authority and developed the list in NH Administrative Rules Res 1100, *et seq*.

The federal ESA (P.L. 93-205), as amended in 1978, 1982, and 1988, recognizes the need and provides the means to protect rare plants and invertebrate and vertebrate species of fish and wildlife, and provides for the protection and/or acquisition of critical habitats and the management of endangered species. Section 7(a)(2) of the ESA dictates that all Federal agencies must consult the US Department of the Interior to ensure that actions taken under federal funding, federal assistance, or federal permits (*e.g.*, Section 404 Wetland Fill Permits) do not jeopardize the existence of threatened or endangered species. Jurisdiction is given to US Department of the Interior to recommend changes to the Project to avoid such jeopardy (including impacts to the habitat as well as to the plants or animals themselves).

3.5.1 Affected Environment

Determining the presence of State rare, threatened, and endangered plant, animal, and natural communities within or near the Study Area was determined by consultation through letters and email with Amy Lamb (NHNHB), Carol Henderson (NHF&GD), and Cheri Patterson (NHF&GD).

The presence of federally listed or proposed, threatened, or endangered species, designated critical habitat, or other natural resources of concern within or near the Study Area was determined using the USFWS Information Planning and Conservation (IPaC) System. The IPaC tool streamlines the USFWS coordination process regarding potential impacts to federally threatened or endangered species by producing a report of the known occurrences of federally threatened or endangered species that may be present within one mile of the Project Footprint, and then providing opportunities for online consultation for certain species rather than contacting the local USFWS office. In New Hampshire, state agencies may conduct consultation with the USFWS through the IPaC tool regarding potential impacts to certain species such as the Northern Long-eared bat (NLEB).

In addition to the species managed under the NHNHB, NHF&GD, and USFWS, ESA-listed species managed under NOAA were identified using the ESA Section 7 Mapper. The Mapper identified

Great Bay as a distinct population segment (DPS) for Atlantic sturgeon, an ESA-listed species. Information about this species and impacts anticipated as a result of the Project were previously discussed in **Section 3.4**, *Wildlife and Fisheries*.

Below is a discussion of the rare, threatened, or endangered species identified by the NHNHB and USFWS that are known to occur within or near the Study Area.

3.5.1.1 State-Listed Species Occurrences

A search for the occurrence of state-listed rare, threatened, or endangered plant or animal species or natural communities within the vicinity of the Study area was completed using the NHNHB online DataCheck tool. A report dated February 8, 2021 indicated the presence of prolific yellow-flowered knotweed (*Polygonum ramosissimum spp. prolificum*), smooth black sedge (*Carex nigra*), eelgrass beds (*Zostera marina*), Atlantic sturgeon (*Acipenser oxyrinchus*), shortnose sturgeon (*Acipenser brevirostrum*), and cliff swallow (*Petrochelidon pyrrhonota*) within the Study Area, as well as a sparsely vegetated intertidal system and subtidal system (see **Appendix F**).

The NHNHB report indicates prolific yellow-flowered knotweed under the GSB and LBBs in Hilton Park, as well as smooth black sedge south of the GSB in Newington. Coordination with the NHNHB initially occurred in 2012, at which time NHNHB conducted surveys within wetland areas along the Spaulding Turnpike south of the GSB. During the 2012 surveys, smooth black sedge was found within five wetlands along the Turnpike. An additional survey conducted by NHNHB in October 3, 2019 did not identify prolific yellow-flowered knotweed or smooth black sedge in areas where is has historically been known to occur.

The NHNHB report identified three locations where eelgrass beds have been documented in the general vicinity of the GSB. The eelgrass beds are located downstream (easterly) in the Piscataqua River and upstream (westerly) in Little Bay. The nearest westerly population is approximately 2,800 feet away from the GSB, and the nearest easterly population is approximately 1,700 feet away from the GSB.

The report also indicated the presence of cliff swallow near the Study Area; upon consultation with Pamela Hunt at NH Audubon (refer to **Appendix G**), cliff swallows are not currently known to be nesting on the GSB, having abandoned the site around 2012 or 2013. In addition to these species, the NHNHB report indicated that the project spans a sparsely vegetated intertidal system and subtidal system.

3.5.1.2 Federally-Listed Species Occurrences

The USFWS IPaC tool was used to confirm the presence of any federally listed or proposed, threatened, or endangered species, designated critical habitat, or other natural resources of concern within the Study Area. The IPaC results letter dated July 12, 2019 indicated that NLEB (*Myotis septentrionalis*) may occur within the Study Area (refer to the IPaC report in **Appendix H**). The IPaC official species list was updated on January 19, 2021 and confirmed that the only federally listed species potentially within the project area is the NLEB. No known hibernacula exist within 0.5 miles of the Study Area, and no known roost trees exist within 0.25 miles of the Study Area. One roost location is present in Newington; however, this roost site is greater than 0.25 miles from the Study Area. Although no known hibernacula or roost trees exist in the vicinity of the Study Area, there are small areas of habitat that would support NLEB species.

The NHNHB report identified Atlantic sturgeon and shortnose sturgeon within the vicinity of the Project, which is consistent with the mapping of designated critical habitat for these species according to the ESA Section 7 Mapper.[33]

3.5.2 Environmental Consequences

Below is a discussion of the anticipated impacts the Project would have on the rare, threatened, or endangered species identified within the Study Area.

3.5.2.1 Direct Impacts

No-Action Alternative

No direct impacts to threatened or endangered species are anticipated as a result of the No-Action Alternative since there would not be any changes to the existing GSB infrastructure or surrounding area.

Alternative 1

State-Listed Species

The NHNHB report dated February 8, 2021 indicated the presence of prolific yellow-flowered knotweed and smooth black sedge in the vicinity of the Study Area (see **Appendix F**). Specifically, the NHNHB report indicates prolific yellow-flowered knotweed under the GSB and LBBs in Hilton Park, and smooth black sedge south of the GSB in Newington. The NHDOT has consulted with the NHNHB since 2012 regarding these species. The NHNHB conducted surveys for these plants in 2012, during which smooth black sedge was found within five wetlands along the Turnpike. When an additional survey was conducted by NHNHB in October 3, 2019, no prolific yellow-flowered knotweed or smooth black sedge were identified in areas where they were historically known to occur. Therefore, the NHNHB does not anticipate any negative impacts to these species as a result of the proposed project. **Appendix F** provides the email correspondence and associated photographs from NHNHB relaying this information.

The NHNHB report identified eelgrass beds in the Piscataqua River and Little Bay. The potential impacts of the Project primarily relate to possible sedimentation at these eelgrass beds. All of the Action Alternatives (Alternatives 1, 3, 6, 7, and 9) will cause temporary, in-water disturbance from installation and removal of the proposed causeways and trestles for construction access. The installation and removal of these structures over a one- to two-month period may cause limited

[33] National Oceanic and Atmospheric Administration Fisheries. 2018. *Section 7 Mapper*. Greater Atlantic Region. Accessed from https://noaa.maps.arcgis.com/apps/webappviewer/ index.html?id=1bc332edc5204e03b250ac11f9914a27. Accessed on January 11, 2019. See **Section 3.4** for further discussion.

sedimentation. Any impacts are likely to be limited to a temporary increase in turbidity and suspended solids. Because of substantial tidal exchange and normal river flows, water quality at the project site is expected to return quickly to its pre-disturbance condition. BMPs would be implemented to mitigate the potential for suspension of sediments and consequent siltation during in-water construction.

Based on the distance to the nearest eelgrass bed (approximately 1,700 feet to the east and 2,800 feet to the west) and the limited impacts and duration of the in-stream work, NHDOT has concluded that the potential impacts to eelgrass beds is unlikely. As documented in an email dated March 31, 2021, the NHNHB also does not expect impacts to eelgrass beds as a result of the Project. **Appendix F** provides the correspondence between NHDOT and NHNHB.

The NHNHB report identified Atlantic sturgeon and shortnose sturgeon within the vicinity of the Project, which is consistent with the mapping of designated critical habitat for these species according to the ESA Section 7 Mapper.[34] Based on the work that would be anticipated to be completed to rehabilitate or replace the bridge for Alternative 9 (Preferred Alternative), NOAA concurred that the project "*may affect but is not likely to adversely affect*" Atlantic/shortnose sturgeon critical habitat per correspondence with William Barnhill, NOAA, June 18, 2019 (refer to **Section 3.4**, *Wildlife and Fisheries*, as well as **Appendix E**). The proposed temporary impacts would be similar under Alternative 1.

As previously mentioned, cliff swallows have historically used the GSB for nesting; however, cliff swallows have not been documented using the bridge since 2012 or 2013. The NHF&GD and NH Audubon coordinated with the NHDOT regarding possible mitigation opportunities that could be incorporated with the new bridge. The NHF&GD recommended installing clay nests along the bridge to attract cliff swallows due to their historic use of the bridge, however NHDOT is opposed to using clay nests because of anticipated compromising bridge maintenance efforts. Communications with the NHF&GD and NH Audubon is provided in **Appendix G**.

The NHNHB report indicated that the project spans a sparsely vegetated intertidal system and subtidal system. The proposed in-water work would impact both of these systems. The NHDOT has coordinated with NOAA regarding the proposed impacts to fish and marine habitat. Additionally, coordination with the NHF&GD Marine Program is ongoing. As previously described in **Section 3.1**, *Wetlands and Surface Waters*, the temporary causeways and trestles would have a direct temporary impact on intertidal and subtidal habitats within Little Bay, including impacts to a blue mussel shellfish bed located under the GSB and along the shoreline extending to the west. Impacts to intertidal and subtidal habitats are anticipated to rebound upon removal of the temporary causeways and trestles once construction is complete.

Federally-Listed Species

Construction impacts for Alternative 1 would involve minor tree and shrub clearing to make room for the temporary construction access and causeways. All tree clearing would occur within 300 feet of existing roadways. Additionally, a survey for the presence of NLEB on the GSB structure was completed on September 26 and 27, 2018. During the survey no signs of NLEB roosting locations were detected on or under the bridge structure. Since there is the potential for NLEB species to be present within the vicinity of the Project and the Project would impact the bridge structure and trees in the Project's limit of disturbance, coordination with the USFWS was required to assess potential impacts to the NLEB.

Based on this information, a determination key was completed for the Project through the USFWS IPaC system. In response to the determination key, the USFWS provided a concurrence verification letter (Consultation Code 05E1NE00-2019-F-2285), stating that the Project adheres to the criteria of the *Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat* (revised February 5, 2018), and therefore satisfies the requirements under Section 7(a)(2) of the ESA of 1973 (refer to **Appendix H**). The official effect determination of "*may affect - likely to adversely affect*" is valid as long as applicable Avoidance and Minimization Measures (AMMs, provided in **Appendix H** and **Section 3.5.3**) are adopted into the final plans and are implemented during construction. Additionally, a survey for the presence of NLEB on the GSB structure will need to be done prior to construction in accordance with the Programmatic Biological Opinion. While the Project may affect the NLEB, the resulting incidental take of the NLEB is not prohibited by the final 4(d) rule.

Alternative 3

Impacts to threatened and endangered species under Alternative 3 would be the same as the impacts described under Alternative 1.

Alternative 6

Under Alternative 6, impacts to threatened or endangered species would be similar to that described under Alternative 1 with the exception of the additional direct, permanent impacts to subtidal and intertidal systems from the removal of the existing GSB Pier 1 and construction of a new pier within Little Bay to support a new bridge span, as described in **Section 3.1**, *Wetlands and Surface Waters*. The replacement pier would have slightly greater temporary impacts on Atlantic and shortnose sturgeon, as described in **Section 3.4**, *Wildlife and Fisheries*. Under Alternative 6, the potential for suspension of sediments and consequent siltation during in-water construction is greater than Alternatives 1, 3, and 9 due to the construction of a new pier within Little Bay.

Alternative 7

Impacts to threatened or endangered species under Alternative 7 would be the same as the impacts described under Alternative 6.

Alternative 9 (Preferred Alternative)

Impacts to threatened or endangered species under Alternative 9 would be the same as the impacts described under Alternative 1.

[34] National Oceanic and Atmospheric Administration Fisheries. 2018. *Section 7 Mapper*. Greater Atlantic Region. Accessed from https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e03b250ac11f9914a27. Accessed on January 11, 2019.

3.5.2.2 Indirect Impacts

No-Action Alternative

No indirect impacts to threatened or endangered species are anticipated as a result of the No-Action Alternative since there would not be any changes to the existing GSB infrastructure or surrounding area.

Action Alternatives

While Alternatives 6 and 7 involve direct permanent impact to intertidal and subtidal systems and a greater degree of temporary impact to Atlantic and shortnose sturgeon, no indirect impacts to threatened or endangered species are anticipated to occur as a result of any of the Action Alternatives.

3.5.3 Mitigation

In addition to the environmental commitments in **Section 3.4.3**, *Wildlife and Fisheries*, the following mitigation measures would be implemented during construction to reduce or eliminate potential impacts to threatened and endangered species and natural communities.

- If a threatened, endangered, or rare plant species is encountered during construction that was not documented prior to construction, construction activities in that area would temporarily cease until the plant has been relocated.
- The existing bridge structure will be re-surveyed to identify any use by NLEB following the procedures in Appendix D of the *Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat* (revised February 5, 2018).
- The following AMMs shall be followed to comply with the NLEB effect determination (refer to the USFWS concurrence letter in **Appendix H**).
  - 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.
  - Direct temporary lighting away from suitable habitat during the active season.
  - When installing new or replacing existing permanent lights, use downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting).
  - Modify all phase/aspects of the project (*e.g.*, temporary work areas) to minimize tree removal.
  - Ensure tree removal is minimized to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field.
- Wildlife friendly erosion control methods shall be implemented during construction such as woven organic material for erosion control blankets. Welded plastic, biodegradable plastic, or threaded erosion control materials shall not be used as part of construction.
- Since soil disturbance is anticipated to occur as part of the Project, the contractor(s) shall be required to develop and implement an appropriate Invasive Species Control and Management Plan which adheres to NHDOT's publication *Best Management Practices for the Control of Invasive and Noxious Plant Species* (2018) during construction to minimize the spread of invasive plant species within the area of ground disturbance. Only clean equipment that is free of plant material and debris shall be delivered to the Project site and utilized during construction. All machinery entering and leaving any area containing invasive plants will be inspected for foreign plant matter (stems, flowers roots, etc.) and embedded soil. If foreign plant matter/soil is present, the operator shall remove the plant material and soil from the machine using acceptable methods.

3.6 Farmlands

The identification and protection of farmlands is important to the national, regional and local economies; therefore, consideration of potential impacts from federal activities on- or adjacent to prime or unique farmlands is necessary. The Farmland Protection Policy Act (FPPA) of 1984 (7 USC 4201) provides guidelines to Federal agencies involved in projects that may convert existing or potential farmland areas to non-agricultural uses. The FPPA directs Federal agencies to *"…(a) identify and take into account the adverse effects of their programs on the preservation of farmland, (b) to consider alternative actions, as appropriate, that could lessen adverse effects, and (c) to ensure that their programs, to the extent practicable, are compatible with State and units of local government and private programs and policies to protect farmland…"* (7 CFR 658.1). FHWA's Technical Advisory T6640.8A (October 30, 1987) further directs that impacts on farmlands be assessed as part of the environmental assessment for all transportation projects.

The FPPA outlines several exemptions which apply to projects that occur within urbanized areas as identified by the US Census Bureau or areas already in development. Farmlands are defined as *already in* areas of development in the FPPA as, *Farmland "already in" urban development or water storage includes all such land with a density of 30 structures per 40-acre area. Farmland already in urban development also includes lands identified as "urbanized area" (UA) on the Census Bureau Map* (7 CFR 658.2).

3.6.1 Affected Environment

Urbanized areas maps are available by the US Census Bureau from the 2010 Census.[35] Review of urban area reference maps determined that the Study Area occurs entirely within the following two UAs: Dover – Rochester, NH – ME 24607 on the Dover side of the Study Area and Portsmouth, NH – ME 71506 on the Newington side of the Study Area.

[35] US Census Bureau. *2010 Census Urban Area Reference Maps*. Revised October 16, 2019. Accessed from https://www.census.gov/geographies/reference-maps/2010/geo/2010-census-urban-areas.html. Accessed on June 25, 2019.

3.6.2 Environmental Consequences

Impacts to farmlands result from the conversion or loss of undeveloped properties and prime or unique farmlands (as defined by the FPPA or the US Department of Agriculture) to paved or disturbed surfaces. Due to the Project occurring entirely with areas exempt from the FPPA, prime farmlands were not evaluated.

3.6.2.1 Direct Impacts

Due to the location of the Project within UAs it is exempt from the FPPA. Additionally, the Study Area lies entirely within State of New Hampshire parcels and bridge piers or abutments. Parcels where construction access and laydown would occur are parklands (on the Dover side of the Study Area) and State Highway right-of-way (on the Newington side of the Study Area). During construction, activities would occur in the areas leading up to the bridge abutments in Newington and Dover, as illustrated in the Preliminary Construction Impact Plans (**Appendix D**). Disturbed areas would be restored to existing conditions after construction. It is anticipated that any disturbed areas would rebound after construction.

3.6.2.2 Indirect Impacts

The Project would not result in indirect impacts on farmlands as the induced growth impacts from land conversion were evaluated in the 2007 FEIS.

3.6.3 Mitigation

No mitigation is required because the Project would have no impacts to farmlands.

3.7 Air Quality

The Clean Air Act, as amended, protects the quality of the nation's air resources at both the federal and state level. It established the National Ambient Air Quality Standards (NAAQS) for various criteria pollutants in order to protect the health and welfare of the general public. From a transportation perspective, the primary pollutants of concern are carbon monoxide, volatile organic compounds, and oxides of nitrogen, which are emitted from gasoline and diesel engines. Highway agencies are required to consider the impacts of their projects on a local and a regional level.

3.7.1 Affected Environment

The Project is located in both the Town of Newington and City of Dover, in Rockingham and Strafford County, respectively. The Clean Air Act, as amended divided the State into attainment and non-attainment areas with classifications based upon the severity of the air quality problems. A nonattainment area is an area that has had measured pollutant levels that exceed the NAAQS and that has not been designated to attainment. The Clean Air Act, as amended, established emission reduction requirements that vary depending on an area's classification.

Based on the US Environmental Protection Agency's (EPA) Green Book[36], both Rockingham and Strafford Counties were designated as nonattainment areas for 1-hour (1979-Revoked) and 8-hour (1997-Revoked) Ozone standards. Rockingham County is also designated as nonattainment for Sulfur Dioxide, but Sulfur Dioxide is not a pollutant of transportation concern due to the restriction of sulfur content in on-road diesel fuels. These counties are in attainment for all other criteria pollutants.

3.7.2 Environmental Consequences

The Project is not expected to result in substantial direct or indirect, permanent or temporary, impacts on air quality. The 2007 FEIS evaluated air quality associated with the GSB and LBBs. The analyses in the 2007 FEIS considered both regional and local air quality associated with motor vehicle traffic traveling over the LBBs. The larger Newington-Dover, Spaulding Turnpike Improvements Project was incorporated into the State Transportation Improvement Plan and associated Conformity analysis and no regional impacts were found. The 2007 FEIS also evaluated local air quality by conducting microscale "hotspot" modeling that determined that all pollutant concentrations would be below the NAAQS, meaning no local air quality impact was anticipated.

During operations, the GSB would not be a substantial source of pollutant emissions since it would carry pedestrian and bicycle traffic and would not affect motor vehicle traffic on the LBB. Since the Project would not change the design of the roadway or result in changes to traffic volumes, it is assumed that there would be no long-term change in air quality impacts relative to the impacts discussed in the 2007 FEIS. The following sections consider both the direct and indirect impacts associated with the construction and operations of the Project.

3.7.2.1 Direct Impacts

Direct impacts are evaluated for both the operational period (*i.e.,* open for public use) and construction period of the Project. This section is organized by alternative, discussing direct impacts resulting from each alternative individually. However, none of the Action Alternatives (Alternatives 1, 3, 6, 7, and 9) would cause a substantial source of pollutant emissions since the bridge would carry pedestrians and bicyclists and would not affect motor vehicle traffic on the LBBs.

Construction of the Project would temporarily result in increased pollutant emissions associated with construction equipment. The intensity and duration of construction are considered for each of the alternatives. General construction air quality mitigation measures are described in **Section 3.7.3**.

---

[36] US Environmental Protection Agency. *Green Book Website*. Accessed from https://www.epa.gov/green-book. Accessed on July 15, 2019.

No-Action Alternative

Under the No-Action Alternative, non-motorized transportation across the Little Bay would be permanently eliminated and no construction would occur. As the lack of a viable non-motorized connection across Little Bay could be expected to increase vehicular traffic using the LBB, which could result in a minor increase in vehicle emissions.

Alternative 1

As Alternative 1 would carry bicyclists and pedestrians and would not affect motor vehicle traffic on the LBBs, it would not be a substantial source of pollutant emissions during operations. As such, no permanent direct impacts are anticipated for Alternative 1.

Alternative 1 would result in a temporary increase of emissions during construction. Emissions from the operation of construction equipment would include nitrogen oxides, sulfur oxides, carbon monoxide, and particulate matter. These emissions would be temporary and the locations at which they occur would change over time. The construction of Alternative 1 is anticipated to last 3 years, the longest of all the Action Alternatives. The construction would involve the reuse of all existing piers and general rehabilitation of the existing steel truss. Although the duration is longer, the rehabilitation work would likely be less pollutant intensive than the complete replacement of spans and piers occurring in other Action Alternatives.

Alternative 3

As Alternative 3 would carry bicyclists and pedestrians and would not affect motor vehicle traffic on the LBBs, it would not be a substantial source of pollutant emissions during operations. As such, no permanent direct impacts are anticipated for Alternative 3.

Alternative 3 would result in a temporary increase of emissions during construction. Temporary air quality impacts associated with Alternative 3 are expected to be similar to Alternative 1. The construction of Alternative 3 is anticipated to last 2 years. The construction would involve the reuse of all existing piers and rehabilitation of the thru-truss main spans 4, 5 and 6 and the replacement of the approach spans 1, 2, 3, 7, 8 and 9. Although the duration is shorter than Alternative 1, pollutant emissions associated with the replacement of the approach spans may be more intensive, although temporary in nature.

Alternative 6

Alternative 6 would construct the non-motorized, recreational path adjacent to traffic on the southbound LBB. As the alternative would preserve the existing roadway geometries, no permanent direct impacts are anticipated for Alternative 6.

Alternative 6 would result in a temporary increase of emissions during construction. The construction of Alternative 6 is anticipated to last 1.5 years and would involve the replacement of GSB Pier 1, and reuse of all other existing piers. Under Alternative 6, the deck of the southbound LBB would be widened approximately 17.5 feet to the west to accommodate a new multi-use path on the LBB. To accomplish this widening, the GSB superstructure would be removed, since the GSB is approximately 15 feet from the LBB. Although the construction duration is shorter than Alternatives 1 and 3, temporary pollutant emissions associated with constructing the new superstructure and pier would be more intensive, due to the required removal of the existing GSB. This alternative would also temporarily impact motor vehicle traffic on the southbound LBB, increasing delays and pollutant emissions during lane closures and times of reduced capacity.

Alternative 7

As Alternative 7 would carry bicyclists and pedestrians and would not affect motor vehicle traffic on the LBBs, it would not be a substantial source of pollutant emissions during operations. As such, no permanent direct impacts are anticipated for Alternative 7.

Alternative 7 would result in a temporary increase of emissions during construction. Temporary air quality impacts associated with Alternative 7 are expected to be largely similar to those described under Alternative 6, as the alternatives are similar. The construction of Alternative 7 is anticipated to last 1.5 years and would involve the replacement of GSB Pier 1, and reuse of all other existing piers. Alternative 7 varies from Alternative 6 in that Alternative 7 involves an independent deck versus the widened LBB deck. Alternative 7 would also temporarily impact motor vehicle traffic on the southbound LBB, increasing delays and pollutant emissions during roadway closures and times of reduced capacity.

Alternative 9 (Preferred Alternative)

As Alternative 9 would carry bicyclists and pedestrians and would not affect motor vehicle traffic on the LBBs, it would not be a substantial source of pollutant emissions during operations. As such, no permanent direct impacts are anticipated for Alternative 9.

Alternative 9 would result in a temporary increase of emissions during construction. The construction of Alternative 9 is anticipated to last 1.5 years. The construction would involve the reuse of all existing piers and complete replacement of the existing steel truss with a new steel girder superstructure. Although the construction duration is shorter than Alternatives 1 and 3, pollutant emissions associated with the new superstructure would be more intensive although still temporary in nature, due to the required removal of the existing GSB superstructure.

3.7.2.2 Indirect Impacts

The secondary air quality impacts associated with secondary growth were not evaluated in the 2007 FEIS and cannot be reasonably estimated in this DSEIS. These types of impacts are typically included in future emission estimates of Conformity Analyses for the New Hampshire State Implementation Plan.

Under the No-Action Alternative, non-motorized transportation across the Little Bay would be permanently eliminated and no construction would occur. As such, no indirect impacts are anticipated for the No-Action Alternative.

All Action Alternatives would carry bicyclists and pedestrians and would not affect motor vehicle traffic on the LBBs. None of the Action Alternatives would be a substantial source of pollutant emissions. As such, no indirect impacts are anticipated for any of the Action Alternatives.

3.7.3 Mitigation

No substantial air quality impacts are anticipated during the operation of the Project; therefore, no mitigation measures are proposed. Construction activity associated with all Action Alternatives would not cause a substantial adverse air quality impact but would result in a temporary increase in pollutant emissions. The NHDOT will require the contractors involved with construction to include air pollution control devices on heavy diesel construction equipment, in accordance with applicable state and federal laws at the time of construction. The merits and practicality of more stringent or voluntary specification measures will be considered through the final design process with input from the contracting community at large. Mitigating fugitive dust emissions involves minimizing or eliminating its generation. Mitigation measures that will be used for construction include wetting and stabilization to suppress dust generation, cleaning paved roadways, and scheduling construction to minimize the amount and duration of exposed earth.

3.8 Noise

Noise is defined as unwanted or excessive sound. Sound becomes unwanted when it interferes with normal activities such as sleep, work, or recreation. Highway noise has the potential to affect people living and working near highways by causing annoyance or interfering with speech.

3.8.1 Affected Environment

The NHDOT[37] and FHWA[38] noise impact assessment procedures for Type I projects include identifying receptor locations, predicting existing and future highway noise levels, determining project noise impacts, and evaluating noise abatement measures. A Type I project is a highway project that results in the construction of a new highway or the physical alteration of an existing highway that substantially changes either the horizontal or vertical alignment or increases the number of through travel lanes.

In the 2007 FEIS, noise measurements and modeling using FHWA's Traffic Noise Model were used to evaluate existing noise conditions at noise receptors. Most noise receptor locations in the study area are residential (Activity Category B). Existing (2007) sound levels at all the receptors analyzed in the 2007 FEIS ranged from 39 to 71 dBA[39] depending on proximity to the Spaulding Turnpike. Current (2019) sound levels in the GSB Project Study Area would vary marginally from these values due only to changes in traffic volumes since 2007 and the construction of the southbound LBB.

3.8.2 Environmental Consequences

The 2007 FEIS noise analysis results indicated that receptors on Fox Run Road and Shattuck Way in Newington, as well as receptor locations on Dover Point Road, Hilton Park, Wentworth Terrace, Cote Drive, Spur Road, and Homestead Lane in Dover would approach or exceed the noise abatement criteria. The 2007 FEIS determined that sound barriers would be feasible and reasonable on both the east and west sides of the Turnpike between the LBB and Exit 6 and on both the east and west sides of the Spaulding Turnpike north of Exit 6.

3.8.2.1 Direct Impacts

Direct impacts have been evaluated for both the operations and construction of the GSB. During operations, the GSB would not be a substantial source of noise since it would carry pedestrians and bicyclists and would not affect motor vehicle traffic on the LBBs.

The Action Alternatives would result in a temporary increase in noise associated with construction equipment, and no permanent changes in noise level. The types of construction activities that would generate noise include pile driving and other construction activities. The intensity and duration of construction have been considered for each of the Action Alternatives. Potential hydroacoustic effects on fish due to underwater pile driving is discussed in **Section 3.4**, *Wildlife and Fisheries*.

No-Action Alternative

Under the No-Action Alternative, non-motorized transportation across the Little Bay would be permanently eliminated and no construction would occur. As such, there would be no construction noise and no direct noise impact (either temporary or permanent) would occur.

Alternative 1

Alternative 1 would carry bicyclists and pedestrians and would not affect motor vehicle traffic on the LBBs. Therefore, it would not be a substantial source of noise during operations and there would be no permanent direct noise impacts.

Alternative 1 would result in a temporary increase in noise during construction. The construction of Alternative 1 is anticipated to last 3 years, the longest of all Action Alternatives. Thus, construction noise exposure in Alternative 1 would last the longest. The construction would involve the reuse of all existing piers and general rehabilitation of the existing steel truss. Although the duration is longer, the rehabilitation work would likely be less noise intensive than the complete replacement of spans and piers occurring in other Action Alternatives as the partial or complete removal of the bridge superstructure, or drilling for pier foundations, would not be required.

Alternative 3

Alternative 3 would carry bicyclists and pedestrians and would not affect motor vehicle traffic on the LBBs. Therefore, it would not be a substantial source of noise during operations and there would be no direct noise impacts.

[37] NH Department of Transportation. 2016. Policy and Procedural Guidelines for the Assessment and Abatement of Highway Traffic Noise for Type I & Type II Highway Projects.

[38] Procedures for Abatement of Highway Traffic Noise and Construction Noise, Federal Highway Administration, 23 CFR 772.

[39] Sound levels measured using this weighting system are called "A-weighted" sound levels and are expressed in decibel notation as "dBA." The A-weighted sound level is widely accepted by acousticians as a proper unit for describing environmental noise.

Alternative 3 would result in a temporary increase of noise during construction. The construction of Alternative 3 is anticipated to last 2 years. The construction would involve the reuse of all existing piers and rehabilitation of the thru-truss main spans 4, 5 and 6 and the replacement of the approach spans 1, 2, 3, 7, 8 and 9. Although the construction duration is shorter than Alternative 1, noise associated with the replacement of the approach spans may be more noise intensive compared to the rehabilitation activity occurring in Alternative 1.

Alternative 6

Alternative 6 would construct the non-motorized, recreational path adjacent to traffic on the southbound LBB. As this alternative would preserve the existing roadway geometries, there would be no change in traffic noise and no permanent direct noise impacts.

Alternative 6 would result in a temporary increase of noise during construction. The construction of Alternative 6 is anticipated to last 1.5 years and would involve the replacement of GSB Pier 1, and reuse of all other existing piers. Under Alternative 6, the deck of the southbound LBB would be widened approximately 17.5 feet to the west to accommodate a new multi-use path on the LBB. To accomplish this widening, the GSB superstructure would be removed, since the GSB is approximately 15 feet from the LBB. Although the construction duration is shorter than Alternatives 1 and 3, noise associated with the constructing the new superstructure and pier would be more intensive, due to the required removal of the existing GSB superstructure. Such removal would require the use of heavy construction equipment, increasing noise. The replacement of GSB Pier 1 would require foundation work, often requiring activities such as drilling or pile driving resulting in impact noise.

Alternative 7

Alternative 7 would carry bicyclists and pedestrians and would not affect motor vehicle traffic on the LBBs. Therefore, it would not be a substantial source of noise during operations and there would be no permanent direct noise impacts.

Alternative 7 would result in a temporary increase of noise during construction. Temporary noise impacts associated with Alternative 7 are expected to be largely similar to those described under Alternative 6, as the alternatives are similar. Alternative 7 varies from Alternative 6 in that Alternative 7 involves an independent deck versus the widened LBB deck. Although the construction duration is shorter than Alternatives 1 and 3, noise associated with constructing the new superstructure and pier would be more intensive, due to the required removal of the existing GSB superstructure. Such removal would require the use of heavy construction equipment, increasing noise. The replacement of GSB Pier 1 would require foundation work, often requiring activities such as drilling or pile driving resulting in impact noise.

Alternative 9 (Preferred Alternative)

Alternative 9 would carry bicyclists and pedestrians and would not affect motor vehicle traffic on the LBBs. Therefore, it would not be a substantial source of noise during operations and there would be no permanent direct noise impacts.

Alternative 9 would result in a temporary increase of noise during construction. The construction of Alternative 9 is anticipated to last 1.5 years. The construction would involve the reuse of all existing piers and complete replacement of the existing steel truss with a new steel girder superstructure. Although the duration is shorter than Alternatives 1 and 3, noise associated with constructing the new superstructure and pier would be more intensive, due to the required removal of the existing GSB superstructure. Such removal would require the use of heavy construction equipment, increasing noise. However, the Alternative 9 would reuse the existing piers, reducing the need for foundation work associated with impact noise activities such as pile driving.

3.8.2.2 Indirect Impacts

Under the No-Action Alternative, non-motorized transportation across the Little Bay would be permanently eliminated and no construction would occur. Eliminating of non-motorized transportation could increase vehicular traffic in the area, which could have an indirect effect on noise conditions.

All Action Alternatives would carry bicyclists and pedestrians and would not affect motor vehicle traffic on the LBBs. None of the Action Alternatives would be a substantial source of noise during operations. As such, no indirect impacts are anticipated for any of the Action Alternatives.

3.8.3 Mitigation

Since the Project would not affect operational noise impact, there would be no change in noise mitigation from that determined in the 2007 FEIS. There are no statewide noise regulations that relate to construction activities in New Hampshire and NHDOT is not subject to local restrictions related to construction noise.

3.9 Parks, Recreation, and Conservation Lands

This section identifies parks, recreational facilities, and conservation lands within the Study Area. FHWA evaluates potential impacts on parks and recreational facilities under NEPA and under Section 4(f) of the US Department of Transportation (USDOT) Act of 1966, 49 USC 303. Section 4(f) provides consideration of publicly-owned parks, recreation areas, wildlife or waterfowl refuges, or publicly- and privately-owned historic sites of national, state, or local significance, during the planning and design of transportation projects.[40]

Certain parks and recreation areas are also protected by Section 6(f) of the Land and Water Conservation Fund Act, 16 USC 4601-8(f). Section 6(f) applies if the property was acquired or

[40] **Chapter 4**, *Programmatic Section 4(f) Evaluation for the Use of Historic Bridges*, presents an analysis of the properties afforded protection under Section 4(f), addresses potential impacts of the Project on these properties, and describes plans to minimize harm.

developed with financial assistance under the Land and Water Conservation Fund (LWCF) State Assistance Program. In general, Section 6(f) requires that when LWCF-funded properties are converted to non-park purposes, the converted property must be replaced with recreational property of at least equal fair market value and of reasonably equivalent usefulness and location. The US Department of the Interior, National Park Service administers the LWCF program at the federal level, with funding distribution and oversight occurring at the state level. In New Hampshire, the program is managed by the NH Department of Natural and Cultural Resources, Division of Parks and Recreation, Office of Community Recreation.

3.9.1 Affected Environment

Parks, recreational facilities, and conservation lands were identified based on field reviews, aerial imagery, location photographs, and review of existing federal and GRANIT GIS data. There are no parks, recreational facilities, or conservation lands within the Study Area on the Newington side of the GSB. Recreational resources located within and adjacent to the Study Area are depicted in **Figure 3.9-1**.

Hilton Park

Hilton Park, a publicly owned park located on Dover Point, offers picnic areas, a boat launch, fishing dock, a play area, benches, and open green space. Hilton Park was created in 1938 following the GSB construction and contains a historic monument commemorating the site of the first settlement in Dover in 1623. Park visitors have relatively unobstructed views of the Piscataqua River, Little Bay, and the LBB. Hilton Park is open from 6:00 AM – 8:00 PM; overnight use is prohibited. NHDOT, Bureau of Turnpikes, owns and manages the 16-acre park.

Marine Traffic

Recreational boating is prevalent in this coastal area of New Hampshire. Because the GSB crosses the Piscataqua River, a navigable water, recreational boaters and other marine traffic pass under the GSB. Within the Study Area, there is one public boat ramp on the eastern side of Hilton Park.

To access the Piscataqua River, boaters launching from nearby docks would need to pass underneath the GSB; therefore, this analysis identifies public boat ramps within a 2-mile radius of the GSB. In addition to the public boat ramp in Hilton Park, three public boat ramps are within 2 miles of the GSB. One public water access site in Newington is Fox Point Dock, about 1.7 miles west of the GSB. Patterson Lane Ramp in Newington is about 1.3 miles east of the GSB at the end of Patterson Lane. Eliot Boat Basin, in Eliot, Maine, is approximately 1.5 miles southeast of the GSB.

Bicycle and Pedestrian Facilities

The GSB provides a connection for bicyclists and pedestrians, including both recreational and commuting uses. In 2010, the Dover and Newington approaches to the GSB were reconstructed to enhance the pedestrian and bicycle access to the bridge. Following regular bridge inspections, the superstructure was determined to be in critical condition due to the deterioration of the truss and floor system. The degree of deterioration required the NHDOT to install fencing in 2015 along the bridge deck to restrict full access to the middle of the bridge. However, the bridge continued to support pedestrian and bicycle activity.

To measure the extent of pedestrian and bicycle activity on the bridge following the installation of the fencing, the NHDOT Bureau of Turnpikes installed temporary, passive pedestrian counting equipment at the Dover and Newington approaches to the bridge. This equipment provided NHDOT with daily counts of the pedestrians and bicyclists that crossed the counter thresholds in both directions at the two ends of the bridge (it is noted that the counting equipment did not differentiate between a bicyclist and a pedestrian). The counting equipment was in place from mid-July through the end of September of 2016. **Table 3.9-1** provides a summary of the weekly, average weekday, and average weekend pedestrian activity observed during these counting periods. These counts represent the combined totals of pedestrians and bicyclists passing the counter during the given time period.

Table 3.9-1 Bridge Pedestrian and Bicycle Count Data (Summer 2016)

	Newington Approach			Dover Approach		
Time Period (Week Ending Date)	Total Weekly Count	Average Weekday	Average Weekend	Total Weekly Count	Average Weekday	Average Weekend
July 23, 2016	527	76	74	944	133	139
July 30, 2016	477	61	86	*	95**	136**
August 6, 2016	438	76	29	*	*	*
August 13, 2016	595	61	146	817	103	152
August 20, 2016	503	64	92	854	118	132
August 27, 2016	610	86	91	969	120	184
September 3, 2016	*	*	*	874	111	159
September 10, 2016	*	59	*	668	77	142
September 17, 2016**	*	86**	72**	732	104	107
September 24, 2016**	*	61**	98**	602	85	90
October 1, 2016**	*	62**	78**	*	67**	134**
July/August Averages	**525**	**71**	**86**	**896**	**114**	**149**

Notes:
* Data unavailable
** Data from sampling only, no weekly totals available

The count data is not directional, so it is not possible to determine the origins and destinations of pedestrian and bicycle activity on the bridge. For example, the data cannot differentiate whether a pedestrian started on the Dover side, passed the Dover counter heading south onto the bridge, turned around near the middle of the bridge, and passed the Dover counter again, heading north off of the bridge; versus a pedestrian who started on the Dover side, crossed the Dover counter heading south and then crossed the Newington counter, continuing to the south. However, it may be inferred by the substantial difference between the total counts at the Newington approach and the total counts at the Dover approach that there were several pedestrians and bicyclists whose destination (and turnaround location) was the bridge itself. It can also be inferred that the total pedestrian and bicycle activity is equal to the total count at both count stations, divided by two (any pedestrian that passes one counter must necessarily

Figure 3.9-1

\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.9-1_Parks, Recreation and Conservation Lands.mxd

0 750 1500 3000 Feet

Legend

- Town Boundaries
- Public Boat Ramp
- Hilton Park

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Parks, Recreation and Conservation Lands

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Source: NHGRANIT, VHB

pass the same counter or the opposite counter; therefore, each individual pedestrian or bicyclist is counted twice). As shown in **Table 3.9-1**, the bridge experienced an average of 525 counts per week at the Newington counter and 896 counts per week at the Dover counter. This is equivalent to approximately 710 pedestrians and bicyclists per week that used the bridge during the summer of 2016, or just over 100 pedestrians and bicyclists per day. The Dover approach showed more pedestrian and bicycle activity then the Newington approach. This is likely due to the relative proximity of Hilton Park and several residential properties on the Dover side, as opposed to the more commercialized properties on the Newington side.

As inferred from this data, the GSB has historically been used by pedestrians and bicyclists for both recreation and transportation purposes. As previously mentioned in **Chapter 1**, the GSB was forced to close to pedestrians and bicyclists in September 2018 due to safety concerns, and a temporary detour was established in August 2019 along northbound LBB to maintain the connection between Newington and Dover for transportation purposes.

3.9.2 Environmental Consequences

Potential impacts to parks, recreational facilities, and conservation lands were evaluated based on the potential for the Project to directly take land, impede access, or whether the proposal is compatible with local open space or park plans.

3.9.2.1 Direct Impacts

Temporary direct impacts to Hilton Park and marine traffic are described in this section. No permanent, direct impacts to Hilton Park or marine traffic are proposed under any of the Action Alternatives.

No-Action Alternative

The No-Action Alternative would not result in any direct permanent or temporary impacts to Hilton Park or marine traffic; however, the No-Action Alternative would not meet the Purpose and Need of providing non-motorized access between Newington and Dover.

Since the current temporary pedestrian and bicycle route along the northbound LBB impacts future vehicular traffic, this is a short-term solution that was implemented to maintain pedestrian and bicycle traffic over Little Bay until the permanent non-motorized crossing of the Little Bay is completed. Therefore, under the No-Action Alternative, this current accommodation would not be available. As such, non-motorized crossings of the Little Bay would not be possible as the existing GSB has been closed to all traffic due to its deteriorated condition. Therefore, non-motorized access from Newington to Dover would have a choice of an approximately 27-mile detour to the north, or an approximately 23.8-mile detour by following around Great Bay to the south.

Alternative 1

Hilton Park

Temporary, direct impacts due to occupancy of a portion of the western side of Hilton Park are anticipated during the construction period under Alternative 1. Approximately 48,000 square feet of Hilton Park would be temporarily occupied and fenced off for construction access, laydown, and staging (**Appendix D**). This temporary staging area represents approximately 12 percent of the total Hilton Park property in recreational use, or about 29 percent of the approximately 3.8-acre western portion of the park. For all alternatives, the construction access, laydown, and staging would only occur within the portion of the west side of Hilton Park; no access, laydown, or staging is proposed within the eastern side of Hilton Park. Under Alternative 1, the duration of these temporary impacts would be approximately three years. The sidewalk along Wentworth Terrace, which passes underneath the Spaulding Turnpike and runs along Dover Point Road, connects the east and west sides of Hilton Park. This sidewalk would remain open for continued public use under Alternative 1, which would retain the existing connectivity of the east and west sides of Hilton Park, although the temporary staging area would require pedestrians to make a slight detour relative to the existing condition.

In addition to temporary occupancy during construction, Alternative 1 would involve relocation of the pavilion that is currently located on the west side of Hilton Park (refer to Site Photo 12 in **Appendix A**) to allow safe contractor access to the GSB. NHDOT would determine relocation details for the pavilion, such as the structure's final location and whether the structure would be relocated or replaced.

The Hilton Park driveway off of Dover Point Road would be used for construction access under Alternative 1 but would not be fenced off, allowing for continued public use and access to the west side of Hilton Park. More than 14.9 acres of Hilton Park would remain open and accessible to the public during the temporary occupancy for construction. Public access to the recreational opportunities provided by Hilton Park would be maintained. During construction, Hilton Park visitors would still be able to use the existing picnic areas, boat launch, fishing dock, play area, benches, and open green space.

Marine Traffic

During most of the construction proposed under Alternative 1, the main navigational channel (a 200-foot zone of passage under the center span of the GSB) would remain open. For public safety reasons, removal of the center spans and other construction activities may require brief, temporary closure of the navigational channel; closure would be planned in close coordination with the US Coast Guard (USCG), the NH Port Authority, and the NH Marine Patrol. The timeframe of the periodic, temporary closures of the main navigational channel would likely correspond with construction activities and construction timeframes, which under Alternative 1 is proposed to be approximately three years. Alternative 1 would involve a longer time frame of temporary occupancy of Hilton Park but potentially fewer instances of closing the main navigational channel than Alternatives 6, 7 and 9 due to their required construction activities (*i.e.,* removal of the existing GSB superstructure and construction of a new superstructure).

Temporary, direct impacts to marine traffic is anticipated to occur under Alternative 1; final construction plans and coordination with the USCG would ultimately determine when, and how often, the 200-foot navigational channel would need to be closed.

Bicycle and Pedestrian Connection

As previously described, the GSB is relied on by pedestrians and bicyclists to provide recreation and transportation opportunities in the seacoast area of New Hampshire. Alternative 1 would re-establish this connection across the GSB for pedestrians and bicyclists.

Alternative 3

Impacts to parks, recreational facilities, and conservation lands under Alternative 3 would be similar to the impacts described under Alternative 1. The duration of the proposed temporary impacts under Alternative 3 would be two years, whereas the duration of temporary impacts under Alternative 1 would be three years. Like Alternative 1, Alternative 3 would involve a longer time frame of temporary occupancy of a portion of the west side of Hilton Park but potentially fewer instances of closing the main navigational channel than Alternatives 6, 7 and 9 due to their required construction activities that would include removing the existing GSB superstructure and construction of a new superstructure. Alternative 3 would re-establish connection across the GSB over Little Bay for pedestrians and bicyclists.

Alternative 6

Impacts to Hilton Park and marine traffic under Alternative 6 would be similar to the impacts proposed under Alternative 1. The duration of temporary construction impacts under Alternative 6 would be 1.5 years. This shorter construction period would result in less temporary, direct impacts to Hilton Park than Alternatives 1 and 3. However, in contrast to Alternatives 1, 3, and 9, Alternative 6 would involve partial closure of the sidewalk along Dover Point Road, which passes underneath the Spaulding Turnpike and runs along Wentworth Terrace (**Appendix D**). This portion of sidewalk connects the east and west sides of Hilton Park. This sidewalk would remain closed during construction for public safety reasons, resulting in a temporary loss of connectivity between the east and west sides of Hilton Park.

Alternative 6 involves removal of the GSB superstructure as well as construction of an entirely new superstructure, which would likely result in more instances of closing the main navigational channel than Alternatives 1 and 3. Alternative 6 would re-establish pedestrian and bicycle connection over Little Bay.

Alternative 7

Impacts to parks, recreational facilities, and conservation lands under Alternative 7 would be the same as the impacts described under Alternative 6. The duration of temporary impacts under Alternative 6 and 7 are the same, approximately 1.5 years. This shorter construction period would result in less temporary, direct impacts to Hilton Park than Alternatives 1 and 3. However, like Alternative 6, Alternative 7 would involve partial closure of the sidewalk along Dover Point Road, which passes underneath the Spaulding Turnpike and runs along Wentworth Terrace. This portion of sidewalk connects the east and west sides of Hilton Park. This sidewalk would remain closed during construction for public safety reasons, resulting in a temporary loss of connectivity between the east and west sides of Hilton Park.

Like Alternative 6, Alternative 7 involves removal of the GSB superstructure as well as construction of an entirely new superstructure, which would likely result in more instances of closing the main navigational channel. Alternative 7 would re-establish pedestrian and bicycle connection over Little Bay.

Alternative 9 (Preferred Alternative)

Impacts to parks, recreational facilities, and conservation lands under Alternative 9 would be similar to the impacts described under Alternative 1. The duration of temporary impacts under Alternative 9 would be 1.5 years, whereas the duration of temporary impacts under Alternative 1 would be three years. Like Alternatives 6 and 7, this shorter construction period would result in less temporary, direct impacts to Hilton Park than Alternatives 1 and 3. As with Alternatives 1 and 3, the sidewalk along Dover Point Road, which passes underneath the Spaulding Turnpike and runs along Wentworth Terrace, would remain open for continued public use, although the temporary staging area would require pedestrians to make a slight detour relative to the existing condition. Alternative 9 would retain the existing connectivity of the east and west sides of Hilton Park during construction, in contrast to Alternatives 6 and 7.

Like Alternatives 6 and 7, Alternative 9 involves removal of the GSB superstructure as well as construction of an entirely new superstructure, which would likely result in more instances of closing the main navigational channel. Alternative 9 would also re-establish pedestrian and bicycle connection over Little Bay.

3.9.2.2 Indirect Impacts

None of the alternatives (No-Action Alternative or Action Alternatives) would cause indirect impacts to Hilton Park or park visitors. Indirect impacts occur at some future time other than a direct impact. Impacts to Hilton Park would be temporary and directly related to construction. Furthermore, the east side of Hilton Park would remain unimpacted during construction; the fenced off staging area would be within a portion of the west side of Hilton Park, immediately adjacent to the GSB Dover abutment. Once construction is complete, the public would regain full access to the western part of Hilton Park.

Overall, the Project would benefit the Newington-Dover area through improved recreational opportunities for the public by providing a long-term transportation and recreation route for pedestrians and bicyclists over Little Bay. As previously mentioned, the current temporary bicycle and pedestrian route over Little Bay along the northbound LBB is not a feasible long-term solution since the segment of the bridge used for the bicycle and pedestrian route is meant for vehicular traffic. Providing a permanent, long-term bicycle and pedestrian route would improve connectivity and non-motorized transportation modes, which could lead to improved recreational opportunities and access to alternative modes of transportation.

3.9.3 Mitigation

Public access to Hilton Park, outside of the staging and construction work zone, shall be maintained. However, temporary restrictions on public access may be necessary during delivery of materials to the staging areas. The replacement or relocation of the Hilton Park pavilion will be evaluated in coordination with the NHDOT Bureau of Turnpike. To minimize land disturbance, unpaved areas within the fenced-off staging area of Hilton Park are to be protected with temporary geotextile fabric under crushed stone. Disturbed areas shall be restored to pre-

existing conditions once construction is complete. Additionally, coordination between NHDOT and NH Fish and Game regarding recreation opportunities at Hilton Park will be ongoing. As discussed further in **Section 3.15**, *Navigation*, potential periodic closures of the navigational channel during work on the GSB's center spans will be closely coordinated with the USCG, the NH Port Authority, and the NH Marine Patrol to minimize impacts to marine traffic.

3.10 Cultural Resources

3.10.1 Introduction

The NHPA of 1966, as amended, defines historic properties as "any prehistoric or historic district, site, building, structure, or object included on or eligible for listing on the National Register [of Historic Places (National Register)] including artifacts, records, and material remains related to the district, site, building, structure, or object" (54 USC 300308). Historic properties[41] are found both above and below ground. Archaeological sites or archaeological resources represent the locations of prehistoric and historic activities, while above-ground historic properties may include buildings, structures, objects, and sites that are usually at least 50 years old. Historic properties may occur as a grouping: historic/cultural landscapes consist of lands that have been culturally modified; historic districts consist of buildings and other elements that retain identity and integrity as a group; and linear historic districts can include canals, roads, railroads or other manmade linear features. Sacred sites, cemeteries, and burial places are also considered historic properties, although they are generally not considered eligible for the National Register unless they meet special requirements.

The NHPA establishes specific criteria for National Register eligibility:

"The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
B. That are associated with the lives of persons significant in our past; or
C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. That have yielded, or may be likely to yield, information important in prehistory or history." (36 CFR 60.4)

3.10.1.1 Federal Requirements

Historic properties are afforded protection by compliance with Section 106 of the NHPA (Section 106) and its implementing regulations (36 CFR 800); Section 4(f) of the USDOT Act of 1966 (49 USC 303); and the NEPA of 1969 (42 USC 4321 *et seq.*) and the Council on Environmental Quality (CEQ) NEPA regulations (40 CFR 1500-1508).

Section 106 of the National Historic Preservation Act

Section 106 of the NHPA (Section 106) stipulates that "the head of any federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking." (54 USC 306108). The implementing regulations (36 CFR 800) lay out the Section 106 consultation process.

Section 4(f) of the US Department of Transportation Act

Section 4(f) of the USDOT Act of 1966 [Section 4(f)] (49 USC 303) states that "…special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges and historic sites." The regulations governing Section 4(f) implementation (23 CFR 774) specify that the FHWA may not approve the use of a Section 4(f) property unless it determines: 1) that there is no prudent and feasible avoidance alternative, and 2) that the action includes all possible planning to minimize harm to the property from such use. **Chapter 4** of this DSEIS provides a Section 4(f) evaluation.

NEPA

Through this DSEIS, the Project is also complying with the NEPA of 1969 (42 USC 4321 *et seq.*) and CEQ NEPA regulations (40 CFR 1500-1508), which require that an undertaking consider the impacts of the actions on natural and cultural resources. According to the NEPA regulations, in considering whether an action may "significantly affect the quality of the human environment," an agency must consider, among other things, the "unique characteristics of the geographic area such as proximity to historic or cultural resources [40 CFR 1508.27(b)(3)]," and "the degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places" [40 CFR 1508.27(b)(8)].

3.10.1.2 State Requirements

In New Hampshire, historic resources are afforded protection under RSA 227-C:9, Directive for Cooperation in the Protection of Historic Resources, which directs New Hampshire's state agencies, departments, commissions, and institutions to fully cooperate with the NHDHR while administrating all state licensed, assisted, or contracted projects, activities, or programs to protect historical resources under their administration that may be adversely affected by a state

[41] NEPA generally categorizes above-ground and archaeological historic resources as "cultural resources," while Section 106 utilizes the term "historic properties" to refer to those properties listed in, or determined eligible for listing in, the National Register of Historic Places. While the title of this section is "Cultural Resources" to maintain consistency with NEPA language, the discussion itself uses "historic properties," as the latter is more commonly used by agencies such as the ACHP, National Park Service, and NHDHR.

undertaking. The purposes of this process are to locate and identify historical, architectural, archaeological, and historical archaeological resources within a project's impact area; apply the criteria for evaluation of significance to a resource to determine possible eligibility to the National Register, if not previously determined eligible or listed; assess the probable effects of a project on resources listed on or eligible for, the National Register; and avoid historic properties and/or develop appropriate mitigation or minimization methods to lessen a project's impact on affected historic properties. These directives are subject to the agency's budgetary limitations.

3.10.2 Methodology for the Identification of Historic Properties

All historic property investigations and consultations were conducted in accordance with Section 106 and its implementing regulations, NEPA, and RSA 227-C:9. Work associated with the above-ground historic properties survey was completed in accordance with NHDHR's Area Form Manual (updated 2015), NHDHR's Architectural Survey Policy (updated 2016), and appropriate guidelines set forth in National Register Bulletin No. 24, *Guidelines for Local Surveys: A Basis For Preservation Planning* (updated 1985).

3.10.2.1 Area of Potential Effects (APE)

The Area of Potential Effect (APE) is defined as "…the geographic area within which the undertaking may cause changes in the character of or use of historic properties if any such properties exist" (36 CFR 800.16(d)). The establishment of a Project's APE is based on the potential for effects, both physical and indirect, that may impact the character-defining features that qualify a historic property for the National Register.

Several factors were considered in determining the APE, including the evaluation of alternatives for the GSB Project. Work components across all alternatives were combined to develop an APE that considered the widest range of potential effects.

Potential impacts that informed the APE boundaries were varied. The GSB footprint, as well as a portion of the approach paths and areas leading to the bridge, were susceptible to potential physical changes resulting from the Project. Additionally, a temporary detour for bicycles and pedestrians, to maintain connectivity during construction was considered. Potential non-physical effects included the visual impacts of potentially replacing all or portions of the GSB superstructure.

The resulting APE is an irregularly-shaped footprint, beginning approximately 600 feet north of the bridge crossing on Dover Point, and extending up to 1,500 feet west, 700 feet east, and 1,200 feet south of the crossing (**Figure 3.10-1**).

3.10.2.2 Methodology for the Identification of Above-Ground Historic Properties

Project Area Form: Background Research and Reconnaissance Survey

An updated Project Area Form (PAF) was submitted to NHDHR in September 2018, providing information updating the original Spaulding Turnpike PAF that was finalized in November 2005 (Spaulding Turnpike: Newington-Dover Project Area, NWN-DOV). The goal of the PAF was to provide a high-level overview of the resources and historic contexts in the APE.

A site file search at NHDHR was completed in November 2018 to determine whether updates had been filed for inventory forms completed in 2005 as part of the larger Newington-Dover, Spaulding Turnpike Improvements Project, and whether additional properties within the current APE had been recorded. Much of the historical narrative and context discussion contained in the 2005 PAF still stands; therefore, current research focused on updating or enhancing these discussions, as appropriate, to bring them up to the present day. Attention was especially given to describing how the recent changes to transportation routes resulting from the Spaulding Turnpike Improvements Project have affected the land use, roadway layout, and integrity of the APE and individual properties discussed in the 2005 PAF. In addition, some historical development patterns described in 2005 have continued to play out in the intervening years, and relevant recent information was provided. Due to the specific nature of the updated information provided in the 2018 PAF update, research sources consisted primarily of map and historic aerial analysis to understand recent development, supplemented by consulting deeds, directory records, building permit records, and land plans, especially for properties not discussed in the 2005 PAF. Information provided by a property owner on Heaphy Lane clarified the recent evolution of this small collection of properties near the Dover Point waterfront.

A reconnaissance survey was conducted to photograph buildings and structures within the APE, as well as streetscapes. This included previously-recorded properties, as well as properties newly-included in the 2018 PAF update, to understand and document noted changes in integrity since the preparation of previous inventory forms.

The 2018 PAF update identified 14 resources within the APE that were over 50 years old; 13 additional resources were less than 50 years old but helped inform discussions regarding recent development patterns. Properties that were surveyed and discussed in the 2018 PAF update are summarized in **Table 3.10-1**.[42]

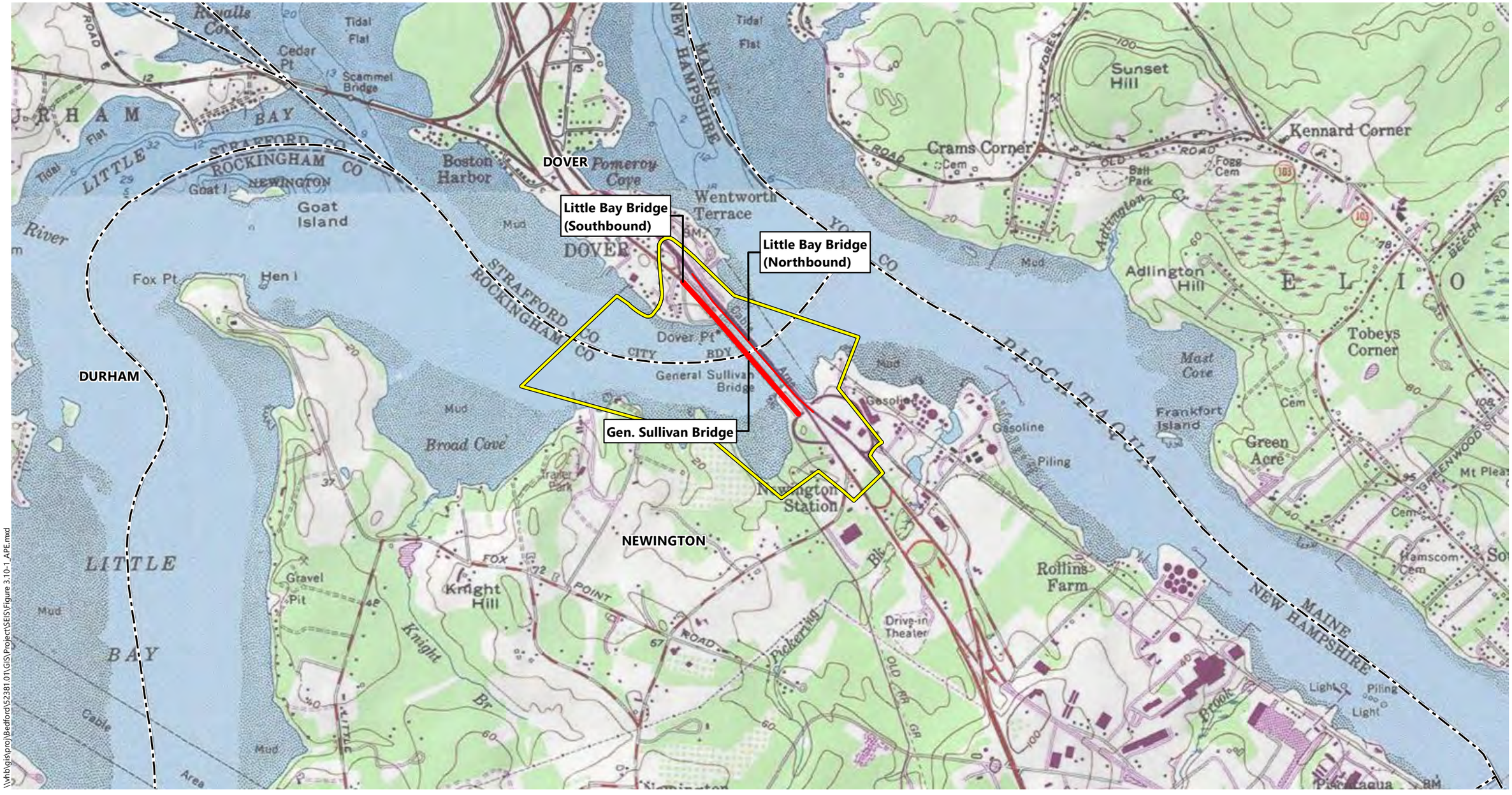
Intensive Survey and Eligibility Evaluations

Multiple alternatives and elements of the Project were evaluated and narrowed down by the spring of 2019. Based on the recommendations of the 2018 PAF update, intensive-level survey via the preparation of NHDHR Individual Inventory Forms was completed for the following properties within the APE. One additional NHDHR Area Form, for the Bloody Point Area in Newington, was not discussed in the original or updated PAF, but was completed following the suggestion by a Consulting Party.

- Hilton Park (DOV0150) - determined not eligible (inventory form update)
- General Sullivan Bridge (DOV0158) - determined eligible (inventory form update)
- 137 Beane Lane (NWN0246) – determined not eligible (new inventory form)
- Bloody Point Area (NWN-BLPT) - determined not eligible (new inventory form)

[42] One additional potentially historic area was subsequently evaluated through the preparation of an NHDHR Area Form, which was not discussed in the 2018 PAF update. See discussion below.

Figure 3.10-1



\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.10-1_APE.mxd

0 750 1500 3000 Feet

Approximate Work Limits

Area of Potential Effect (APE)

Town Boundaries

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Area of Potential Effect

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Source: VHB, NH GRANIT, USGS 7.5-minute Topographic Quadrangles Dover East and Portsmouth, dated 1983

Table 3.10-1 2018 PAF Update: Surveyed Properties

City	Street #	Street Name	Property Name	Year Built	NHDHR #	Desig./ Previous DOE[1]
Dover	430	Dover Point Rd	Ira F. Pinkham House/Wentworth Summer Residence	1853	DOV0093/ NH doc. #626	Eligible (A&C)
Dover	435	Dover Point Rd	Belanger House	1945	DOV0092	Not Eligible
Dover	439	Dover Point Rd	John E. Pinkham House	1865	DOV0091	Not Eligible
Dover	441	Dover Point Rd	Ida M. Dame House/ Linwood Lodge	1900	DOV0090	Not Eligible
Dover	8	Heaphy Ln		2014		
Dover	9	Heaphy Ln		c. 1970		
Dover	12	Heaphy Ln		1999		
Dover	8	Leighton Rd		1983		
Dover	12	Leighton Rd		2014		
Dover	14	Leighton Rd		c. 1950		
Dover	16	Leighton Rd		2003		
Dover	19	Leighton Rd		2011		
Dover	20	Leighton Rd		1953, 2014		
Dover	N/A	N/A	Hilton Park Roadside Safety Rest Area	1938	DOV0150	
Dover/ Newington	N/A	N/A	General Sullivan Bridge	1934	DOV0158/ NH doc. #703	Eligible (A&C)
Dover/ Newington	N/A	N/A	Little Bay Bridges	1983 and 2011		
Newington	61	Beane Ln	Great Bay Marine Inc.	c. 1956	N/A	N/A
Newington	137	Beane Ln	N/A	c. 1930	N/A	N/A
Newington	22	Bloody Point Rd	Axel Johnson Conference Center (Sprague Energy)	c. 1930	NWN-SP	N/A
Newington	24	Bloody Point Rd	Newington Railroad Depot and Toll House	1873	NWN0168/NR #10000187	Listed 4/19/2010 (A&C)
Newington	N/A	N/A	Spaulding Turnpike Bridge over Shattuck Way (Newington 103/124)	1983, 2011	N/A	N/A
Newington	19	Nimble Hill Rd	Portsmouth Sign Company	2010	N/A	N/A
Newington	437	Shattuck Way	Rockingham Electrical Supply	1978	N/A	N/A
Newington	516	Shattuck Way	N/A	c. 1930	NWN0162	Not Eligible
Newington	518	Shattuck Way	N/A	c. 1956	NWN0163	Not Eligible
Newington	521	Shattuck Way	Atco LanAir Inc.	c. 1985	N/A	N/A
Newington	1149	Spaulding Tnpk	Mitchell's Gulf	1996	N/A	N/A

Note: 1 – Determination of Eligibility (DOE)

It is noted that the following properties within the APE were inventoried and evaluated during the initial Section 106 consultation process, which concluded in 2008:

- Ida M. Dame House/Linwood Lodge (DOV0090) - determined not eligible
- John E. Pinkham House (DOV0091) - determined not eligible
- 435 Dover Point Road (DOV0092) - determined not eligible
- Hilton Park (DOV0150) - determined not eligible
- Ira F. Pinkham House/Wentworth Summer Residence (DOV0093) - determined eligible
- General Sullivan Bridge (DOV0158) - determined eligible
- 516 Shattuck Way (NWN0162) - determined not eligible
- 518 Shattuck Way (NWN0163) - determined not eligible
- Newington Railroad Depot and Toll House (NWN0168/ NR #10000187) - eligible
- Axel Johnson Conference Center, Sprague Energy Area Form (NWN-SP) - more information needed
- NWN0159 and NWN016 - determined not eligible (both are since demolished)

The Newington Railroad Depot and Toll House was listed in the National Register in 2010. In 2012, the Ira F. Pinkham House/Wentworth Summer Residence was recorded in a state-level Historic American Building Survey report, prepared by VHB (NH State No. 626).

Inventory forms and Determinations of Eligibility are on file at the NHDHR offices in Concord, NH. Determinations of Eligibility for inventory forms completed for this Project are included in **Appendix I**.

3.10.2.3 Methodology for the Identification of Archaeological Resources

Archaeologists conducted a Phase IA archaeological sensitivity assessment (Bunker, *et al.* 2003) and a Phase IB intensive archaeological investigation/Phase II Determination of Eligibility (Tumelaire, *et al.* 2011; Tumelaire, *et al.* 2012) as part of the larger Newington-Dover, Spaulding Turnpike Improvements Project. Background research and documentary review were major components of the Phase IA study, to identify previously recorded archaeological resources and to complete a chronology of part human activity in the Spaulding Turnpike Improvements Project Area. Data accumulated from archival resources were used to identify particular sites, features, or past land use patterns and to construct contexts to develop expectations for resource presence.

Archival research was completed using a variety of primary and secondary sources at a number of institutions, including Strawbery Banke Museum, the Portsmouth and Newington libraries, the New Hampshire Historical Society, the NHDHR, the NHDOT, and UNH. Documents reviewed included: state-wide inventory files maintained at the NHDHR; published and unpublished archaeological site reports; local and regional histories; historic topographic maps; and historic photographs and aerial photographs. Research was augmented with interviews with property owners, NHDOT personnel, NHDHR personnel, Strawbery Banke Museum historians, archaeologists, and marine specialist.

Phase IA background research was followed by a field inspection for both terrestrial and underwater resources. For terrestrial resources, all roadways within the project area were driven and a selected number of areas were walked; field survey was conducted along cove margins at low tide. Where sites were identified, these were recorded with preliminary field sketches and photographs. For maritime and underwater resources, specialists reviewed aerial photographs, conducted inspection at full-moon low tide, and created an underwater topographic view of the Spaulding Turnpike Improvements Project Area via remote sensing. The compilation of Phase IA background research and field studies resulted in the identification of sensitive areas, or areas with the potential for below-ground or underwater archaeological resources.

During the Phase IA inspection, a brickyard site (27-ST-0057) was identified at the base of the GSB, based on the presence of brick debris. The Phase IB effort resulted in the assessment the rubble was not a site (Tumelaire *et al.* 2011: 55), and the NHDOT proposed that a Phase II documentary search and cartographic analysis be undertaken for Test Area 21 (Tumelaire *et al.* 2011:51). The Phase II literature search focused on Dover Point brickyards with special attention on impacts from transportation (*i.e.,* roads, highways, and rail lines). Documentary research included the review of maps, population census data, and historical plans for the GSB and LBB.

For the Phase IB intensive archaeological investigation, archaeologists hand excavated shovel test pits aligned along transects in sensitive areas to confirm the presence or absence of archaeological resources. Archaeologists excavated test holes measuring 0.5 meter by 0.5 meter, screening all soil through 0.25-inch mesh to collect artifacts. The location of each shovel test pit was mapped on a field plan, and coordinates were collected with a hand-held Trimble Juno data collector and Pro 6H GPS receiver. Archaeologists recorded profiles on field forms and with digital photography.

In June 2019, archaeologists conducted additional Phase IB survey on the grounds of Hilton Park to confirm the presence or absence of archaeological resources within the limits of a proposed staging area. Testing was completed with the mechanical excavation of trenches to seek evidence of activities and features related to a brickyard site (27-ST-055). Archaeologists operated a small tracked excavator to excavate trenches to sample for buried features and deposits.

3.10.2.4 Consultation

As part of the Section 106 consultation, the regulations under 36 CFR 800 require that the Federal agencies consult with the public about Projects and their effects on historic properties. By right, "Consulting Parties" include State Historic Preservation Officers (SHPOs); local governments; federally recognized Indian tribes/THPOs; Native Hawaiian Organizations; the Advisory Council on Historic Preservation (ACHP); and applicants for federal assistance, permits, licenses, and other approvals. Individuals and organizations with a demonstrated legal, economic, or historic preservation interest in an undertaking may also request Consulting Party status from the responsible federal agency; their participation is subject to approval by the federal agency. Stakeholders interested in keeping abreast of the progress of Section 106 consultation may also participate as an "Interested Party."

As of January 2021, the following Consulting and Interested Parties have been identified and approved by the FHWA:

- Kitty Henderson, Executive Director, Historic Bridge Foundation
- Nathan Holth, HistoricBridges.org
- Lulu Pickering, Newington Historic District Commission
- Anne Rugg, Manager, CommuteSMART Seacoast (Retired; removed from Consulting Party list on 10/01/2020)
- Karen Saltus, President, Seacoast Area Bicycle Riders (Requested removal from Consulting Party list on 01/02/2020)
- Christopher G. Parker, Assistant City Manager, Director of Planning and Strategic Initiatives, City of Dover
- Karen Anderson, Newington Special Project Coordinator, Town of Newington (Interested Party)
- Martha Roy, Newington City Administrator, Town of Newington (Interested Party)
- Senator David Watters, New Hampshire State Senate District 4 (Interested Party)

Information regarding Section 106 consultation meetings and public information meetings can be found in **Chapter 7**, *Public, Agency and Tribal Coordination*. During the process, the PAF update, inventory forms, and effects determinations were distributed to the Consulting and Interested Parties for review and input. These documents were also made available on the Project's website, at www.newington-dover.com/gsb_subsite.

3.10.3 Affected Environment

3.10.3.1 Identified Above-Ground Historic Properties

Based on a review of the architectural and/or historical significance of above-ground resources in the APE pursuant to 36 CFR 800.4 and 36 CFR 67.8, three properties were identified as listed in the National Register or eligible for listing.

A description of the three properties and a summary of their significance is listed below. These properties are also identified in **Figure 3.10-2**, *Cultural Resources*. Additional documentation and a discussion of eligibility is available at NHDHR, NHDOT and FHWA.

General Sullivan Bridge (DOV0158) (GSB)

Built in 1934, the GSB is a 1,528-foot-long bridge, with the primary superstructure consisting of a combination deck truss and partial through arch truss, over Little Bay between the Town of

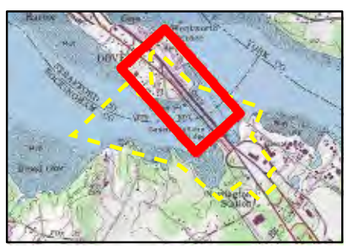
Figure 3.10-2

\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.10-2_Cultural Resources.mxd

0 125 250 500 Feet

Legend

- Area of Potential Effect (APE)
- Parcel Boundaries
- Town Boundaries
- Inventoried Property, Not Eligible
- E — Inventoried Property, NR-Eligible or Listed (shown with boundary)
- Sprague Energy Area, Eligibility Undetermined
- Bloody Point Survey Area Boundary (DOE Not Eligible as a District)



Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Cultural Resources

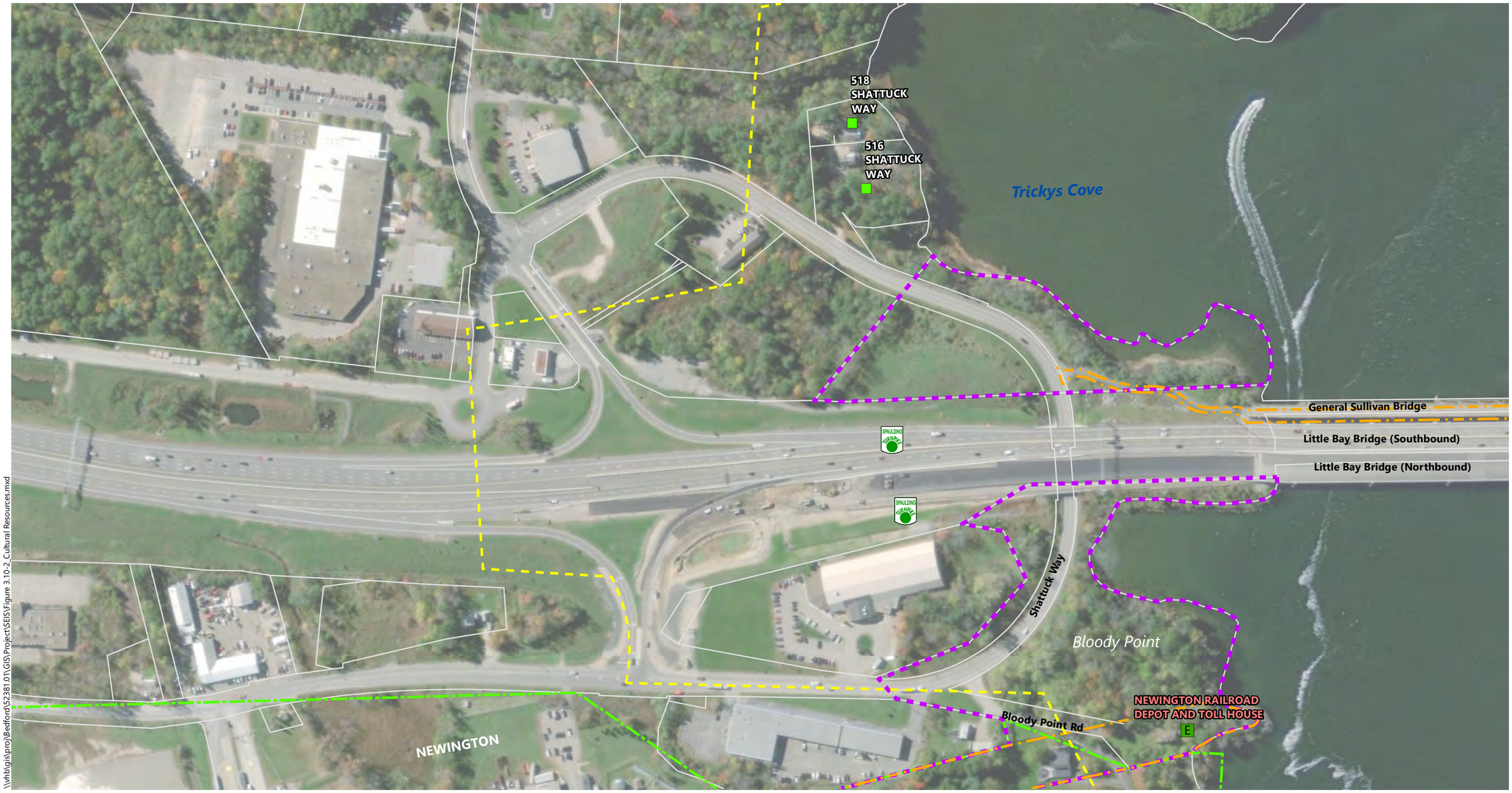
Sheet 1 of 4

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Source: VHB, NH GRANIT

Figure 3.10-2



\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.10-2_Cultural Resources.mxd

0 125 250 500 Feet

Legend

- Area of Potential Effect (APE)
- Parcel Boundaries
- Town Boundaries
- Inventoried Property, Not Eligible
- Inventoried Property, NR-Eligible or Listed (shown with boundary)
- Sprague Energy Area, Eligibility Undetermined
- Bloody Point Survey Area Boundary (DOE Not Eligible as a District)

Newington-Dover 11238S — Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Cultural Resources

Sheet 2 of 4

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Source: VHB, NH GRANIT

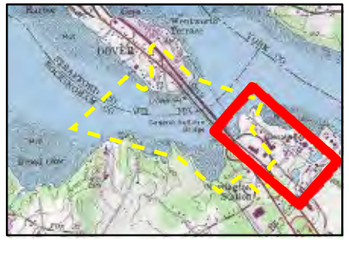
Figure 3.10-2

\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.10-2_Cultural Resources.mxd

0 125 250 500 Feet

Legend

- Area of Potential Effect (APE)
- Parcel Boundaries
- Town Boundaries
- Inventoried Property, Not Eligible
- Inventoried Property, NR-Eligible or Listed (shown with boundary)
- Sprague Energy Area, Eligibility Undetermined
- Bloody Point Survey Area Boundary (DOE Not Eligible as a District)



Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Cultural Resources

Sheet 3 of 4

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT Department of Transportation

Source: VHB, NH GRANIT

Figure 3.10-2

\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.10-2_Cultural Resources.mxd

0 125 250 500 Feet

Legend

- Area of Potential Effect (APE)
- Parcel Boundaries
- Town Boundaries
- Inventoried Property, Not Eligible
- Inventoried Property, NR-Eligible or Listed (shown with boundary)
- Sprague Energy Area, Eligibility Undetermined
- Bloody Point Survey Area Boundary (DOE Not Eligible as a District)

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Cultural Resources

Sheet 4 of 4

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT Department of Transportation

Source: VHB, NH GRANIT

Newington and the City of Dover, New Hampshire. The eligible boundary of the GSB includes the footprint of the bridge itself, its abutments, and the south approach in Newington, leading north from Shattuck Way. The north abutment, and north and south approaches, are considered non-contributing, as they've been rebuilt and/or realigned.

The bridge is significant under Criterion A for its role in the transportation history of the Seacoast area. Constructed at a key crossing along a former turnpike route, the bridge helped reestablish the eastern end of the old turnpike road at Cedar Point in Durham. Previously all traffic between Portsmouth and Concord traveled first to Dover, then through Barrington on NH 9 to join the First New Hampshire Turnpike (US 4) in Northwood. The GSB allowed a more direct route through Durham, Lee, and Nottingham and reestablished the usefulness to the full length of the Turnpike in the early 20th century. At the same time, the bridge, replacing the former road and railroad bridge between Newington and Dover Point, became part of the East Side Road trunk line highway, from the seacoast through Dover to points north. The bridge later carried the Spaulding Turnpike when it was first created in the 1950s.

Construction of the bridge was covered by national engineering publications, due to its technological advances. It was completed in 1934 by the firm of Fay, Spofford & Thorndike, as one of the four textbook examples of the firm's continuous bridge designs that were largely responsible for the adoption of long-span continuous trusses across the country (along with the Lake Champlain Bridge between Crown Point, NY and Chimney Point, VT, and bridges over the Cape Cod Canal in Bourne and Sagamore, MA). Not only did the bridges demonstrate the feasibility of analyzing stresses and the economic advantages in continuous designs, the bridges also became known for an elegant, three-part design of a through-arch truss flanked by deck trusses, which is evident in the GSB. The bridge is nationally significant under Criterion C for its design and engineering.

The Newington Railroad Depot and Toll House (NWN0168/ NR #10000187)

The Newington Railroad Depot and Toll House at 24 Bloody Point Road is located at the tip of Bloody Point in Newington on 3.8 acres of land and marks the former south approach of the Portsmouth and Dover Railroad at a dedicated railroad bridge over the bay, just east of the GSB and LBBs. Constructed in 1873, the 2½-story building retains clapboard siding and wood trim and is a relatively rare example of a depot that also served as a toll house and residence for the stationmaster/toll taker, resulting in a residential form for a railroad-related resource. The railroad tracks and bridge were removed following the abandonment of the line and the operation of the station in 1934. The building is in fair condition, currently vacant but "mothballed" for potential future use.

The property was listed in the National Register in 2010 and is significant under Criteria A and C in the areas of transportation and architecture. It is noted in the nomination that the ending date for the period of significance, 1934, coincided with the construction of the GSB and the abandonment of the railroad line, which ended the utilization of the depot property for transportation purposes.

Ira F. Pinkham House/Wentworth Summer Residence (DOV0093)

The Ira F. Pinkham House/Wentworth Summer Residence at 430 Dover Point Road in Dover (DOV0093) was constructed c. 1853 for farmer and brickmaker Ira Pinkham. The 1 ½-story house is located on a 0.8-acre property adjacent to the Spaulding Turnpike in Dover. The house has a sidehall plan, is oriented gable-end to the street, and features an early 20th century 1-story enclosed wraparound porch with a pedimented entrance. It was purchased as a summer residence by businessman Frank E. Wentworth and his wife Annie in 1912, who likely enclosed the porch and applied the asbestos shingles in the 1930s and 1940s. A 19th-century barn associated with the house was relocated off-site in 2011-2012.

The property, including the house and an associated barn, was determined eligible for listing in the National Register under Criteria A and C in 2005 for significant associations with Dover Point's former brick-making industry, and the 20th century development of Dover Point as a seasonal destination.

3.10.3.2 Identified Archaeological Resources

Archaeologists conducted a Phase IA archaeological sensitivity assessment (Bunker *et al.* 2003) and a Phase IB intensive archaeological investigation/Phase II Determination of Eligibility (Tumelaire *et al.* 2011; Tumelaire *et al.* 2012) in the Study Area. The 2007 FEIS identifies areas of archaeological sensitivity based on these Phase 1A and Phase 1B findings, for the larger Newington-Dover, Spaulding Turnpike Improvements Project.

The FEIS Phase IA archaeological analysis identified the western side of Hilton Park in Dover, and additional developed area to the northwest (approximately 12.7 acres), as exhibiting sensitivity (*i.e.*, Area 16). This area includes an approximately 0.5-acre verified site, identified as a brickyard (27-ST-55 and 27-ST-56, *i.e.*, Area 17) within Hilton Park. The FEIS Phase IA archaeological analysis also identified the eastern side of Hilton Park to be sensitive (*i.e.*, Area 18). This area includes a portion of Dover Point (*i.e.,* Area 22) associated with an historic railroad bed and pilings.

Within Dover, a thin strip of ground (approximately 0.2 acre) curving along the northern shore of the Piscataqua River beneath the GSB and LBB was identified as a brickyard (identified as Area 21 or site 27-ST-57) during a Phase IA sensitivity assessment completed in 2003. Additional background research and cartographic analysis revealed that the shoreline had been altered and filled from construction of the GSB in 1933, and construction of the LBB in the 1960s and 1980s. Inspections in 2009 resulted in the conclusion that this area was not an archaeological site.[43]

For the Phase IB intensive archaeological investigation, archaeologists hand excavated shovel test pits aligned along transects in five sensitive areas (**Table 3.10-2**), to confirm the presence or absence of archaeological resources.

[43] In May 2009, Dr. Kathleen Wheeler inspected the area with Dr. Joyce McKay of the New Hampshire Department of Transportation, at which time both agreed that the resource (identified as Area 21 or site 27-ST-57) was not an archaeological site (Tumelaire, *et al*. 2011:55).

Table 3.10-2 Findings of the Phase IB Intensive Archaeological Investigation

Contract	Test Area	Results
L	14	No Archaeological Resources Identified
L	16	No Archaeological Resources Identified
L	21	No Archaeological Resources Identified
L	HP1	No Archaeological Resources Identified
M	30	No Archaeological Resources Identified

In June 2019, a Phase IB intensive archaeological investigation was completed in Hilton Park to confirm the presence of archaeological deposits and features relating to Brickyard 27-ST-0055, which was identified in 2003 for the larger Newington-Dover, Spaulding Turnpike Improvements Project.[44] The recent Phase IB intensive archaeological investigation identified a brick floor and evidence of thermally altered soil within the western side of Hilton Park. The brick floor extends across a portion of Hilton Park that is adjacent to the area proposed for construction staging. Within Newington, the immediate area surrounding the GSB and LBB abutments was determined to lack integrity and does not exhibit sensitivity for archaeological resources.

3.10.4 Environmental Consequences

3.10.4.1 Impact Methodology

In the Section 106 implementing regulations, the consultation process may have the following outcomes:

No Historic Properties Affected. If the agency official finds that either there are no historic properties present or there are historic properties present but the undertaking will have no effect upon them (36 CFR 800.4(d)(1)).

Finding of Adverse Effect. An adverse effect is determined when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, and association (36 CFR 800.5(a)(1)).

Adverse effects include, but are not limited to (36 CFR 800.5(a)(2)):

- Physical destruction of or damage to all or part of the property;
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR 68) and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

Finding of No Adverse Effect. The agency official, in consultation with the SHPO/THPO, may propose a finding of no adverse effect when the undertaking's effects do not meet the above definition of "adverse effect." This finding may also occur when undertaking is modified or conditions are imposed such as the subsequent review of plans for rehabilitation by the SHPO/THPO to ensure consistency with the Secretary's Standards for the Treatment of Historic Properties (36 CFR 68) and applicable guidelines, to avoid adverse effects (36 CFR 800.5(b)).

For the purposes of this DSEIS, adverse effects on historic properties are further evaluated as direct or indirect. The Section 106 implementing regulations do not define "direct" and "indirect" impacts, other than to note, "Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative" [36 CFR 800.5(a)(1)].

While effects evaluations on historic properties have often interpreted "direct effects" as physical impacts and "indirect effects" as non-physical impacts, a recent opinion by the US Court of Appeals for the District of Columbia provides guidance on more nuanced definitions.[45] Although the court case examined evaluation of effects under Section 110(f) of the NHPA[46], the ACHP has indicated the definitions of "direct" and "indirect" may be applied to Section 106 as well. Based on the guidance provided by this ruling, the distinction between direct and indirect effects is determined by the causality of the effect, not the physicality of the effect.

Direct effects occur when an effect comes from the time and place of the Project with no intervening cause. These effects may include physical, visual, auditory, or other impacts resulting directly from the Project.

Indirect effects to historic properties are those caused by the undertaking that are later in time or farther removed in distance but are still reasonably foreseeable.[47]

This DSEIS also considers adverse effects to historic properties in terms of duration, as temporary or permanent.

---

[44] Independent Archaeological Consulting. 2019. End-of-Field Report, Hilton Park 11238, Phase IB Intensive Archaeological Investigation, Proposed Staging Area. Unpublished Technical Report issued July 12, 2019.

[45] US Court of Appeals. 2019. *National Parks Conservation Association v. Todd T. Semonite, ACOE Chief, et al*. Appeal from the US District Court from the District of Columba. USCA Case No. 18-5179.

[46] Section 110 requires each Landholding Agency to identify, evaluate, and protect any historic property, and ensure that the historic property within its inventory is managed with consideration for its historic value. Section 110(f) of the NHPA (54 USC 306107) requires an agency to minimize harm to any National Historic Landmark "directly and adversely" affected by a project.

[47] The definitions outlined in the court opinion have been summarized on the ACHP website: Advisory Council on Historic Preservation. 2019. *Court Rules on Definitions; Informs Agencies on Determining Effects*. June 10, 2019. Accessed from https://www.achp.gov/news/ court-rules-definitions-informs-agencies-determining-effects. Accessed on July 15, 2019.

Temporary effects are most often related to the period of construction. They may include impacts due to construction activities, or protective measures implemented during construction such as the establishment of detour routes for bicycles and pedestrians.

Permanent effects are ongoing and will be in place for the reasonably foreseeable future.

3.10.4.2 Impacts to Above-Ground Historic Properties

Direct Impacts

No-Action Alternative

Ira F. Pinkham House/Wentworth Summer Residence (DOV0093): The Ira F. Pinkham House/Wentworth Summer Residence is located nearly a quarter-mile northwest of the GSB, on Dover Point Road and the intervening road alignment and topography preclude a visual relationship between this historic property and the bridge crossing. As there is no physical or visual connection between this resource and the bridge crossing, there would be no direct, permanent or temporary impacts under the No-Action Alternative.

Newington Railroad Depot and Toll House (NWN0168/NR #10000187): The bridge crossing is located approximately 1,400 feet from this resource's National Register boundary and is set on the far side of multiple bridge structures constructed over the last fifty-plus years. Thus, visibility of the bridge crossing is limited to the tip of Bloody Point along the water, where the center span of the GSB peeks up above the LBB, and portions of the truss can be seen between the piers of the modern bridges. As the No-Action Alternative retains the GSB, there would be no direct, permanent or temporary impacts on this historic property.

General Sullivan Bridge (DOV0158): Under the No-Action Alternative the GSB (DOV0158) would only undergo routine maintenance. This alternative would not correct the existing state of substantial deterioration, which has resulted in the bridge being structurally deficient. Due to the continued and rapid deterioration of the GSB, the No-Action Alternative would result in an adverse, direct, and permanent effect to this historic property. Additionally, under the terms of the existing permit for the GSB and expanded LBB issued by the USCG, the GSB would eventually need to be removed.[48]

Alternative 1

Ira F. Pinkham House/Wentworth Summer Residence (DOV0093): As in the No-Action Alternative, the bridge crossing is located outside of visual distance from this historic property. Additionally, no roadwork on the north approach from Dover Point Road would be required under Alternative 1, meaning all elements of the Project associated with the rehabilitation of the GSB would remain far removed from the Ira F. Pinkham House/Wentworth Summer Residence. As described in **Section 3.8**, *Noise*, the Action Alternatives would result in a temporary increase in noise associated with construction equipment, and no permanent changes in noise level. Alternative 1 would result in the greatest duration of increased noise level, three years. However, temporary increases in noise levels would not impact the character-defining features for which this property is eligible. Therefore, there would be no direct, permanent or temporary impacts to this property under Alternative 1.

Newington Railroad Depot and Toll House (NWN0168/NR #10000187): As the GSB would be rehabilitated under Alternative 1, much of the potential impacts to the Newington Railroad Depot and Toll House would be similar to those under the No-Action Alternative. As noted above, **Section 3.8**, *Noise* concludes that increased noise levels associated with the Action Alternatives would be temporary in nature; as a historic transportation resource, having a quiet setting is not a character-defining feature of this property, and an increased noise level for any length of time would not diminish the qualities that make the property eligible for the National Register. Thus, Alternative 1 would have no direct, permanent or temporary impacts to this historic property.

General Sullivan Bridge (DOV0158): The rehabilitation of the GSB would include the replacement of the bridge deck and repairs to the substructure and truss superstructure to support loading requirements. On the sides of the truss superstructure, approximately 39 members and 54 gusset plates require repairs or replacement in kind. In addition, eight of the nine spans of the upper, overhead lateral bracing and all nine spans of the lower lateral bracing require repairs or replacement in kind. A pedestrian bridge railing would be installed, and the Newington (south) abutment would be rehabilitated. Work would also include cleaning, repainting, and repointing bridge elements.

The 2008 MOA stipulated that the NH SHPO agreed that "…the removal and replacement of the floor system and any necessary replacement of rivets with bolts are not considered to be adverse effects." Similarly, it is assumed that in-kind replacement of braces and other structural and substructure elements would not be considered adverse effects and would have an overall beneficial effect of saving the bridge. The new pedestrian railing would be designed to have minor physical and visual impact, so as not to diminish the historic materials and aesthetic of the GSB. Therefore, Alternative 1 would result in a direct and permanent impact to the bridge, but these impacts would not constitute an adverse effect.

Alternative 3

Ira F. Pinkham House/Wentworth Summer Residence (DOV0093): Under Alternative 3, roadwork on Dover Point Road would be necessary. These road improvements would be limited to resolving minor alignment concerns between Dover Point Road and the new approach leading to the new bridge spans, and would end approximately 400 feet from this historic property. Therefore, there would be no physical impacts to the property. As described in **Section 3.8**, *Noise*, Alternative 3 would increase noise levels due to construction temporarily for a period of 1.5 to two years, a shorter duration than Alternative 1 but potentially at a slightly higher intensity. However, temporary increases in noise levels would not impact the character-defining features for which this property is eligible. Thus, Alternative 3 would result in no direct, temporary or permanent effects on the Ira F. Pinkham House/Wentworth Summer Residence.

[48] On November 30, 2006, Gary Kassof of the USCG sent a letter to Marc G. Laurin, Senior Environmental Manager of NHDOT, regarding the Draft Environmental Impact Statement for the Newington-Dover, 11238 project. The USCG advised NHDOT that the GSB should be removed as it no longer served a transportation purpose, and that a clear and reasonable rationale must be presented for retaining or rebuilding the structure. The letter also stipulated that the bridge permit application to be submitted must address the need to retain or rebuild the GSB and, if the old bridge is to be removed, should include complete removal of all parts not utilized in the new structure.

Newington Railroad Depot and Toll House (NWN0168/NR #10000187): As noted above, there are no physical impacts to this property under any alternative. However, the replacement of the approach spans of the GSB would remove portions of the truss that have been visible features of the landscape of the bridge crossing, in which the Newington Railroad Depot and Toll House and the GSB have co-existed for over seven decades. Although the last remnant of visual connection between the Depot and the GSB would be removed under Alternative 3, for the most part the visual link between the two resources was previously severed by the twentieth- and twenty-first century construction of new bridge structures. Therefore, the removal of the approach spans under Alternative 3 would be noticeable from this property, but this effect would not be adverse.

Additionally, a temporary increase in noise levels associated with the construction of Alternative 3 would not diminish the qualities that make this property eligible for the National Register. Thus, Alternative 3 would cause permanent, direct impacts to this historic property, but these impacts would result in no adverse effect.

General Sullivan Bridge (DOV0158): Under Alternative 3, the GSB's central spans (Spans 4, 5, and 6) would be retained, while the approach spans (Spans 1, 2, 3, 7, 8, and 9) would be replaced. The piers and abutments would be retained. This alternative would retain the visually prominent arched central spans, as well as the elegant continuous deck truss/through-truss configuration that defines the bridge as a significant and influential design marrying technological innovation and aesthetics. However, Alternative 3 would result in the removal and replacement of two-thirds of the spans with modern materials, representing a consequential loss of historic materials. Retention of the substructure would not offset the loss of the superstructure spans, as the significance of the bridge's design is carried in its notable and recognizable superstructure truss system.

Removal of a notable and recognizable part of the bridge superstructure essentially negates its significance under Criteria A and C. As the most visible and recognizable element of the GSB, the superstructure embodies the engineering advances and aesthetics that define the bridge's contribution to the development of the national highway network. The replacement of the historic bridge would result in the physical loss of an early, nationally-significant example of its engineering design; dwindling of the bridge type in New Hampshire and nationally; and the loss of this major link in the transportation network of the region, whose evolution is intertwined with the history of the region itself.

Thus, Alternative 3 would have an adverse, direct, and permanent effect on this historic property, although minimized to an extent by the retention of the arched central spans and characteristic continuous deck truss/through-truss configuration.

Alternative 6

Ira F. Pinkham House/Wentworth Summer Residence (DOV0093): Although Alternative 6 includes the replacement of the entire GSB superstructure (both the approach and center spans), the impacts to the Ira F. Pinkham House/Wentworth Summer Residence would be similar to that of Alternative 3. Thus, there would be no temporary or permanent direct impacts to this historic property.

Newington Railroad Depot and Toll House (NWN0168/NR #10000187): The replacement of the GSB superstructure would result in a direct, permanent impact to this historic resource. However, for the reasons discussed in Alternative 3, these impacts would not constitute an adverse effect.

General Sullivan Bridge (DOV0158): Under Alternative 6, the entire GSB superstructure would be demolished, increasing the magnitude of the loss of this primary character-defining feature. The removal of the superstructure would irreversibly impact the historic integrity of the bridge, and therefore its eligibility for the National Register. Therefore, this alternative would result in an adverse, direct, and permanent effect to the GSB.

Alternative 7

Ira F. Pinkham House/Wentworth Summer Residence (DOV0093): For the same reasons as those outlined under Alternatives 3 and 6, Alternative 7 would result in no direct, temporary or permanent effects to this property.

Newington Railroad Depot and Toll House (NWN0168/NR #10000187): The replacement of the GSB superstructure would result in a direct, permanent impact to this historic resource under Alternative 7. However, for the reasons discussed in Alternatives 3 and 6, these impacts would not constitute an adverse effect.

General Sullivan Bridge (DOV0158): Under Alternative 7, the GSB superstructure would be demolished. For the same reasons as those outlined under Alternative 6, Alternative 7 would result in an adverse, direct, and permanent effect to the GSB.

Alternative 9 *(Preferred Alternative)*

Ira F. Pinkham House/Wentworth Summer Residence (DOV0093): Alternative 9 would involve roadwork on Dover Point Road. These road improvements would be limited to resolving minor alignment concerns between Dover Point Road and the new approach leading to the new bridge spans, and would end approximately 400 feet from this historic property. Therefore, there would be no physical impacts to the property. As described in **Section 3.8**, *Noise*, Alternative 9 would increase noise levels due to construction temporarily for a period of 1.5 to two years, a shorter duration than Alternative 1 but potentially at a slightly higher intensity. However, temporary increases in noise levels would not impact the character-defining features for which this property is eligible. Thus, Alternative 9 would result in no direct, temporary or permanent effects on the Ira F. Pinkham House/Wentworth Summer Residence.

Newington Railroad Depot and Toll House (NWN0168/NR #10000187): As noted above, there are no physical impacts to this property under any alternative. However, the replacement of the approach spans of the GSB would remove portions of the truss that have been visible features of the landscape of the bridge crossing, in which the Newington Railroad Depot and Toll House and the GSB have co-existed for over seven decades. Although the last remnant of visual connection between the Depot and the GSB would be removed under Alternative 9, for the most part, the visual link between the two resources was previously severed by the twentieth- and twenty-first century construction of new bridge structures. Therefore, the removal of the approach spans under Alternative 9 would be noticeable from this property, but this effect would not be adverse.

Additionally, a temporary increase in noise levels associated with the construction of Alternative 9 would not diminish the qualities that make this property eligible for the National Register. Thus, as with Alternatives 3, 6, and 7, Alternative 9 would cause permanent, direct impacts to this historic property, but these impacts would result in no adverse effect.

General Sullivan Bridge (DOV0158): Under Alternative 9, the entire GSB superstructure would be demolished, increasing the magnitude of the loss of this primary character-defining feature. The removal of the superstructure would irreversibly impact the historic integrity of the bridge, and therefore its eligibility for the National Register. Therefore, this alternative would result in an adverse, direct, and permanent effect to the GSB.

Indirect Impacts

This section describes the potential indirect impacts of the Proposed Action on cultural resources. The APE identified for the Proposed Action (**Section 3.10.2**, *Methodology for the Identification of Historic Properties*) extends beyond the Study Area defined in **Section 1.1**, *Study Area*, namely along the banks of the Little Bay from which the GSB is visible. However, the reasonably foreseeable actions considered for the assessment of indirect effects to historic properties do not differ between the Study Area and the APE.

No-Action Alternative

Ira F. Pinkham House/Wentworth Summer Residence (DOV0093): Under the No-Action Alternative, potential indirect impacts would consist of the permanent lack of direct recreational access and connectivity for non-vehicular use between Newington and Dover over the Little Bay. The lack of connectivity would not indirectly impact this historic resource.

Newington Railroad Depot and Toll House (NWN0168/NR #10000187): For similar reasons, there would be no measurable indirect impacts to the historic Newington Railroad Depot and Toll House resulting from the No-Action Alternative. There may be less use of the property for recreational reasons if the non-motorized connection to Dover is eliminated, but this would not affect the property's character-defining historic features.

General Sullivan Bridge (DOV0158): Under the No-Action Alternative, impacts to the GSB would be direct in nature; the permanent severance of recreational access over the Little Bay would result in increased deterioration of the bridge and safety hazards associated with that determination, which are all direct impacts. Thus, there would be no indirect impacts to the GSB under the No-Action Alternative.

Action Alternatives

Ira F. Pinkham House/Wentworth Summer Residence (DOV0093): None of the Action Alternatives would result in measurable indirect impacts on the Ira F. Pinkham House/Wentworth Summer Residence. Improving connectivity for non-motorized transportation across the Little Bay, whether through the rehabilitation of the GSB through Alternative 1 or the partial or wholesale replacements of the bridge under the other Action Alternatives, would result in induced growth. There are no anticipated indirect effects to this property's character-defining historic features.

Newington Railroad Depot and Toll House (NWN0168/NR #10000187): Indirect impacts to this historic property are identical across all Action Alternatives. The re-introduction of recreational connectivity across the Little Bay, through the reopening of the GSB or the construction of a new structure, would not indirectly impact the property in a measurable way. It is possible that connection improvements may encourage increased visitation to the Newington Railroad Depot and Toll House property by recreation users, but this would not impact its historic, character-defining features.

General Sullivan Bridge (DOV0158): Under Alternative 1, impacts associated with maintaining connectivity between Newington and Dover via the GSB would consist entirely of physical, direct impacts to this historic structure, resulting in no adverse effect. Thus, there would be no indirect impact to the GSB under this Action Alternative.

The adverse effects of Alternatives 3, 6, 7, and 9, when considered with other past, present, and reasonably foreseeable projects, would not result in indirect impacts to the GSB because the superstructure would be removed or altered to the extent of permanently impacting the bridge's eligibility for listing in the National Register. Thus, no reasonably foreseeable projects could cause further adverse effects to the GSB.

Section 106 Findings

The Section 106 finding of effect for Alternative 9 (the Preferred Alternative) is a finding of Adverse Effect. Applying the criteria of effect at 36 CFR 800.5(a)(2), it was determined that the project will result in an Adverse Effect to the General Sullivan Bridge; No Adverse Effect for the Newington Railroad Depot and Toll House; and No Historic Properties Affected for the Ira F. Pinkham House/Wentworth Summer Residence. The Section 106 findings are provided in an Adverse Effect Memo (**Appendix I**), signed on January 2, 2020 which documents concurrence on effects by FHWA, NHDOT, and NHDHR.

3.10.5 Mitigation

If a project cannot be designed to avoid historic properties, then appropriate mitigation to resolve adverse effects must be established. The identification of measures to mitigate the adverse effects resulting from the Preferred Alternative is ongoing at this time and will be stipulated in a new MOA.

For the single archaeological resource in the APE – the Brickyard known as Site 27-ST-55 – no mitigation is needed, as no impacts are proposed. Appropriate protection measures will be identified, established and enforced to prevent potential impacts to the site from adjacent construction staging that would be located in Hilton Park. If the project footprint is revised during the final design, then the revised APE would be evaluated for potential impacts. If impacts are likely, all phases of archaeological investigation would be completed.

The NHDHR, FHWA, NHDOT, and Consulting and Interested Parties have discussed potential mitigation measures for the loss of the GSB and a list of ideas was updated periodically as input was provided. After the Adverse Effects Memo was signed on January 2, 2020, meetings among NHDOT, NHDHR, FHWA, ACOE, and the Consulting/Interested Parties focused exclusively on developing mitigation for adverse effects resulting from the project.

While the language of the stipulations to be included in a Memorandum of Agreement (MOA) will be finalized following the public input on the DSEIS, the following mitigation measures relate

directly to the adverse effects resulting from the GSB Project, and have support among most of the agencies and Consulting/Interested Parties. Note that other measures will be considered in response to public comments on this DSEIS. The draft mitigation measures, entitled *"Newington-Dover 11238S, Section 106 – Draft Mitigation Stipulations,"* dated March 31, 2021, are detailed in **Appendix I**, and currently include the following:

- Marketing the GSB for re-use in compliance with 23 USC Section 144;
- Documentation of the GSB in accordance with the Historic American Engineering Record standards;
- Promotion and providing access to the NHDOT Historic Bridge Inventory and Management Plan;
- Development of an interpretive program including on-site interpretive panels and an installation at the Woodman Museum in Dover;
- Development of a plan for the rehabilitation of the Newington Railroad Depot and possible transfer of the building along with the state-owned land on Bloody Point to the Town of Newington; and
- Completion of a feasibility study of a future link between the Dover Community Trail and the new/rehabilitated GSB, including development of interpretive signage to highlight the history of the Newington-Dover Branch Line.

The significance of the GSB is tied to its design and engineering, parts of which are invisible to observers, and its role in the development of the regional transportation network, much of which has been overlain by subsequent modernizations in this still-evolving landscape. Thus, the institution of an educational interpretive program has been discussed as particularly apt, as it allows the presentation of historic themes that are not readily apparent. Bloody Point and Hilton Park offer views of the bridge crossing, which would allow a direct visual connection between these areas and the site of the GSB, strengthening the message of an interpretive program. Other benefits include the ability to build upon mitigation carried out to resolve adverse effects resulting from the replacement of the Lake Champlain Bridge, which had a similar history and significance, and the potential use of the proposed new bridge as an additional location for interpretive materials.

Understanding the specific maintenance and preservation needs of each bridge type is essential to their long-term care and would better inform the public agencies that serve as their stewards amid changing needs and transforming land use. The NHDOT is preparing a historic bridge inventory and management plan to address these needs. The education potential of the conclusions and guidelines is pertinent to the story of the GSB over the last 90 years and would allow municipalities and agencies to better program their maintenance into annual budgets and long-term planning. Utilizing mitigation measures that expand the reach of this educational potential is a meaningful use of resources.

The Newington Railroad Depot and Toll House (NWN0168/ NR #10000187) property on Bloody Point is underutilized. Although it is currently owned by the State, it has previously been leased by the Town of Newington, and discussions regarding a renewed lease or a transfer of ownership to the Town have occurred sporadically over the last few decades. Multiple parties are supportive of rehabilitating the Depot building and developing the recreational space surrounding it, which extends to the waterfront overlooking the bridge crossing. Logistical complications include ensuring rehabilitation is carried out in a historically-sensitive manner; the identification of a feasible use for the building; initial and operational costs associated with improving the property, and the legal complications of land transfer.

While other off-site mitigation ideas have been discussed, there is ample opportunity to develop appropriate and relevant mitigation that have a close connection to the effects of the Project. Thus, consideration of measures that are geographically distant from the GSB may not be necessary or appropriate.

The mitigation measures continue to be refined through the Section 106 consultation process, including input by stakeholders, Consulting and Interested Parties, and the public. Once finalized, the measures will be incorporated into a new MOA.

3.11 Contamination and Hazardous Materials

As defined by the US Environmental Protection Agency, hazardous waste is a waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment. The NHDES defines hazardous waste as a waste which may pose a present or potential threat to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Federal polices, regulations, and guidance that may pertain to hazardous materials include:

- Toxic Substances Control Act Polychlorinated Biphenyl regulations, Title 40 CFR 761;
- Toxic Substances Control Act, 15 USC 2601-2692 including the Asbestos Hazard Emergency Response Action;
- Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, Title 26 CFR 1926.62;
- OSHA Standards for Hazardous Materials, Title 29 CFR 1910 and 1926;
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended, 42 USC 9601 *et seq.*; and RCRA and Superfund Amendments and Reauthorization Action, 42 USC 6901 *et seq.*;
- USDOT Hazardous Materials Transportation act of 1975 as amended, 49 USC 5101-5127.

State polices, regulations and guidance that may pertain to hazardous materials include:

- NHDES Env-Or 600 Contaminated Site Management
- New Hampshire Statues Title X Chapter 147-A Hazardous Waste Management

3.11.1 Affected Environment

An assessment of potential petroleum and hazardous materials sites at the corridor level was reported in the 2007 FEIS to identify existing conditions including the release or threat of release of oil and/or hazardous materials (OHM) within the Study Area. An online file review was conducted in 2021 to identify properties within the Study Area that have had a release or pose a threat of release of OHM, and which may impact the environmental quality of the Study Area.

Included in these reviews were federal and state environmental databases from EDR® and the NHDES.

Based on a review of the 2007 assessment and online file review in 2021, no properties impacted by hazardous materials were identified within the Study Area. However, there are four properties near the Study Area that based on their regulatory listing have the potential to impact environmental conditions within the Study Area. A description of these properties is provided in **Table 3.11-1** below. The location of these NHDES listed properties and associated Groundwater Management Zone (GMZs) are included in **Figure 3.11-1**.

Table 3.11-1 NHDES Listed Properties within 1,000 feet of the Study Area

Address	Property Name	City	NHDES ID	Databases	Spill Status
410 Shattuck Way	Tradbe Treatment & Recycling of Newington	Newington	17240	Hazardous Waste Generator, Solid Waste Facility, Aboveground Storage Tank Program, Initial Response Spill Site, Leaking underground storage tank	Closed
1149 Spaulding Turnpike	Mitchell's Gulf	Newington	4342	Hazardous Waste Generator, Underground Storage Tank Program, Leaking underground storage tank	Active
430 Dover Point Road	K-9 KAOS	Dover	60233	Initial Response Spill Site	Closed
NH 16	Former Newington Country Store	Newington	17190	Leaking Underground Storage Tank	Active

In October 2008, marine sediments within Little Bay were sampled as part of the larger Newington-Dover Spaulding Turnpike Improvement Project for purposes of complying with Clean Water Act Section 401 Certification requirements. Sediment analytical results from the sampling event indicating that eight contaminants detected in marine sediments were above the threshold effect concentrations and four contaminants were identified above probable effect concentrations. These contaminants included polyaromatic hydrocarbons such as 2-methylnaphthalene, fluoranthene, naphthalene and pyrene as well as metals including copper, lead, mercury, and nickel. However, it should be noted that all concentrations of contaminants detected in marine sediments were below the NHDES Contaminated Soil Disposal and Reuse Criteria.

In 2009, soil and groundwater within the vicinity of the larger Newington-Dover, Spaulding Turnpike Improvements Project were sampled in order to assess potential OHM concerns associated with the Spaulding Turnpike Improvements Project. With the exception of arsenic, all soil and groundwater results were below the applicable NHDES regulatory thresholds. Arsenic was detected above the NHDES Soil Category 1, 2, and/or 3 standards. The elevated arsenic concentrations were attributed to the nature of the native marine deposits throughout the area.

In 2018, NHDES initiated rulemaking to establish Maximum Contaminant Levels and Ambient Groundwater Quality Standards (AGQS) for four PFAS: perfluorooctanioic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorononanoic acid and perfluorohexane sulfonic acid. The current standards, ranging from 11 to 18 nanograms per liter, became effective on September 30, 2019. Under these rules, groundwater that has the potential to have PFAS-impacted groundwater above AGQSs may be subject to management through a GMP.

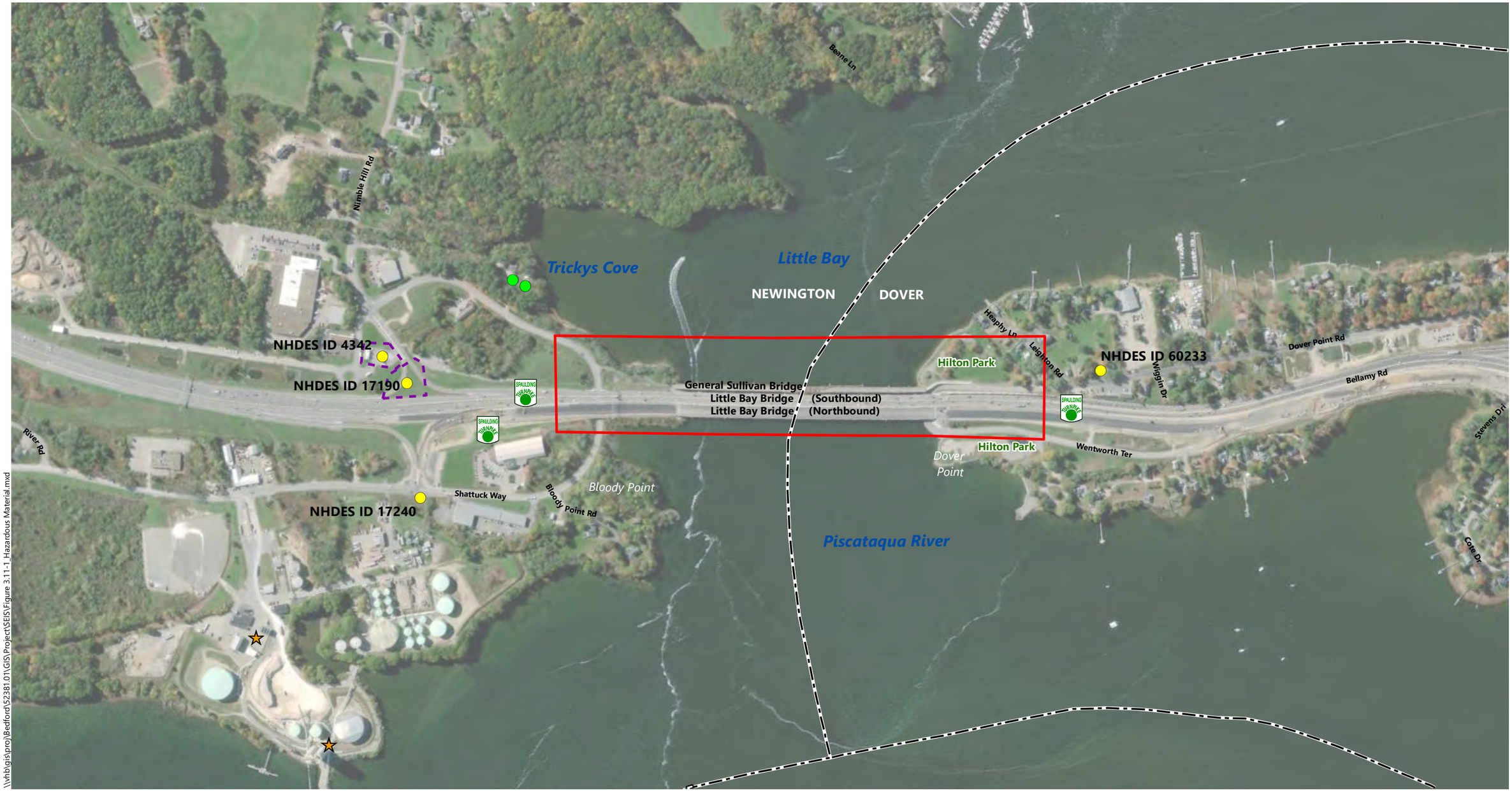
The Pease Airforce Base EPA Superfund Site is a remediation site being addressed by the United States Air Force for the presence of various petroleum plumes associated with the historical use of the property. In 2012, initiatives begun to assess for the presence of PFOS and PFOA at the Pease Airforce Base, which subsequently identified elevated concentrations of PFOS and PFOA across a portion of the Air Force Base. The petroleum plumes present at the Pease Air Force Base are actively being monitored under a GMZ located along the flight line of the Air Force Base. According to the 2018 Annual Report, an Airfield Interim Mitigation System is being constructed to treat the PFOS and PFOAs in groundwater within the Air Force Base. The GMZ associated with the Pease Air Force Base is located more than 1.5. miles south of the Site. Therefore, although elevated concentrations of PFOS and PFOAs are present at the Pease Air Force Base, due to the location of the GMZ greater than 1.5 miles from the Project Area and the location of sampling points in close proximity to the Project Area, it is unlikely PFOS or PFOAs emanating from the Pease Air Force Base would be encountered during construction of the Project.

According to information obtained from the available online database, sampling was conducted south of the Study Area in September 2014 and 2017 that identified concentrations of PFOS and perfluorohexane sulfonic acid below the current AGQS standards. Additional PFAS sampling conducted in the vicinity of the NHDES site at 372 Shattuck Way detected select PFAS below the current AGQS standards; however, NHDES has requested additional sampling be conducted to evaluate the presence of the remainder of the regulated PFAS compounds. The PFAS sampling locations are shown in **Figure 3.11-1**.

In December 2015, Coating Condition Assessment was performed for the GSB to evaluate the condition of the existing coating system applied to the structure.[49] The results of the assessment determined that the coating system was in poor conditions with widespread corrosion and rust observed throughout the bridge components. Laboratory analysis identified lead in the existing coating on the bridge. Based on the presence of lead paint on the bridge, the OSHA Lead in Construction Standard (29 CFR 1926.62) must be invoked during any activities that disturb the paint. It should also be noted that other hazardous materials such as heavy metals may be present in the coating which will also require management under the applicable OSHA Standards.

[49] KTA-Tator, Inc. 2016. Coating Condition Assessment of the General Sullivan Bridge over the Little Bay, Dover, NH. Technical Report issued to VHB, Inc., April 1, 2016.

Figure 3.11-1



\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.11-1_Hazardous Material.mxd

0 300 600 1200 Feet

Legend

- Study Area
- Town Boundaries
- Approximate Location of NHDES Listed Property
- Select PFAS < NHDES 9/30/2019 AGQS; Additional Sampling Required
- PFAS<NDHES 9/30/2019 AGQS
- Approximate NHDES GMZ Boundary

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Hazardous Materials

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Source: NHGRANIT, VHB

3.11.2 Environmental Consequences

This section discusses the direct and indirect effects of the No-Action Alternative and the Action Alternatives on the generation and handling of potential contamination and hazardous materials within the Study Area.

3.11.2.1 Direct Impacts

No-Action Alternative

The No-Action Alternative would have no adverse direct impacts on the environment and human health relative to hazardous materials. Because the No-Action Alternative would not change current infrastructure or operations, it would have no permanent impact on known contaminated properties.

Alternative 1

Alternative 1 would have minor direct impacts on the environment and human health relative to contamination and hazardous materials.

Construction of Alternative 1 would generate construction debris associated with the rehabilitation of the GSB. Asbestos-containing materials may be encountered during demolition activities in a number of components associated with the bridge or within unidentified conduits beneath the roadway, depending on their age. Based on the findings of the Coating Conditions Assessment, lead-based paint in present within the Project Area and due to the poor condition of the paint, total coating removal and replacement would likely be conducted during the rehabilitation of the GSB. In addition, mercury, polychlorinated biphenyls (PCBs), and other special wastes may also be present in conduits and bridge structures. The abatement of these materials would be performed in accordance with appropriate regulations in order to ensure that there would be no adverse effect such as releases or misdirected wastes.

Construction-related equipment contains mechanical fluids have the potential to result in spills or leaks when not maintained in good working order. Contractors may also employ the use of supplies containing hazardous materials in order to conduct their work. Although the spill or release of OHM in the process of construction is an unlikely event; spill prevention plans would be required to prevent and control any such spills. Therefore, construction-related equipment being used during construction phases of the Project is not anticipated to result in an adverse effect.

Based on soil analytical results collected from within the Project Area, there is the potential to encounter arsenic-impacted soils during construction phases of the Project. Although the concentrations of arsenic are likely attributed to the native marine deposits throughout the area, arsenic impacted soils will be managed in accordance with a Project-specific Soil Management Plan as outlined in **Section 3.11.3**. There is also the potential that undocumented releases of OHM will be encountered during construction phases of the Project. These releases would be reported to NHDES as appropriate and remediated per applicable regulations. The removal of a percentage of contaminated environmental media from within the Project area would likely have a beneficial effect.

Alternative 3

Alternative 3 would have minor direct impacts on the environment and human health relative to contamination and hazardous materials.

Alternative 3 retains the GSB substructure, rehabilitates the central span, but replaces the approach spans. It would therefore generate more construction debris than Alternative 1. However, the abatement of these materials would be performed in accordance with appropriate regulations in order to ensure that there would be no adverse effects, such as releases or misdirected wastes. Therefore, this would be considered a minor direct impact.

Additionally, the existing piers would be maintained. Therefore, marine sediments would not be generated under this Alternative and there are no impacts to marine sediments under this alternative.

Impacts related to releases from construction-related equipment and potential to encounter impacted soils and/or groundwater would be similar to Alternative 1.

Alternative 6

Alternative 6 would have minor direct impacts on the environment and human health relative to contamination and hazardous materials.

During the demolition of the superstructure, a moderate to high volume of construction debris would be generated. However, the abatement of these materials would be performed in accordance with appropriate regulations in order to ensure that there would be no adverse effects such as releases or misdirected wastes. Therefore, this would be considered a minor direct impact.

A new pier would be constructed within Little Bay and Hilton Park as part of Alternative 6, which would generate sediments that would require proper disposal. Based on the October 2018 sediment sampling analytical data, sediment is impacted by low levels of polyaromatic hydrocarbons and metals. Although there is the potential for adverse ecological impacts associated with sediment disturbances during the installation of piers, based on the low levels of contaminants identified in sediments in conjunction with the implementation of proper sediment containment measures that limit turbidity in marine waters during construction, the direct impacts of removing sediment from Little Bay would be considered minor.

Impacts related to releases from construction-related equipment and potential to encounter impacted soils and/or groundwater would be the same as Alternative 1.

Alternative 7

Direct impacts to contamination and hazardous materials would be the same as outlined under Alternative 6.

Alternative 9 (Preferred Alternative)

Alternative 9 would have minor direct impacts on the environment and human health relative to contamination and hazardous materials. Under Alternative 9, the bridge superstructure would be replaced, generating a moderate to high volume of construction debris, similar to Alternatives 6

and 7. The abatement of these materials would be performed in accordance with appropriate regulations to ensure that there would be no adverse effects such as releases or misdirected wastes. Therefore, this would be considered a minor direct impact.

No new piers would be installed under Alternative 9 and no sediments would be generated. Therefore, there would be no permanent impacts to marine sediments under this alternative.

Impacts related to releases from construction-related equipment and potential to encounter impacted soils and/or groundwater would be the same as Alternative 1. As with all alternatives, new materials would use utilized as applicable during construction, and standard marine construction BMPs would be implemented wherever feasible to mitigate the potential for suspension of sediments and consequent siltation.

3.11.2.2 Indirect Impacts

No-Action Alternative

There would be no indirect impacts to hazardous materials for the No-Action Alternative.

Action Alternatives

Minor indirect impacts are possible under the Action Alternatives due to the potential amount of construction debris generated. Construction debris would require proper disposal; the movement of contaminated materials could have a minor adverse indirect impact during the transportation, disposal, and management of contaminated media due to the potential for improper handling or misdirection of wastes. This potential effect is proportionate to the amount of waste generated by each alternative. Alternatives 1 and 3 would have the least potential for such effects, whereas Alternatives 6 and 7 would have the most due to the work related to the replacement of GSB Pier 1.

3.11.3 Mitigation

As noted throughout this section, the primary impacts associated with the Action Alternatives is the generation of potentially hazardous building materials. Hazardous materials (asbestos, lead-based paint, PCBs, mercury, etc.) will be inventoried prior to any structural demolition or renovation work in accordance with Section 5.2 of the NHDOT *Standard Specifications for Road and Bridge Construction*. If these hazardous materials are found to be present in the structures, they would be properly abated by a licensed contractor in accordance with state and local regulations and shipped to a receiving facility licensed to handle the specific type of solid waste under the appropriate shipping documents such as manifests.

A Soil Management Plan (SMP) shall be developed in accordance with NHDOT specifications that would be based upon the results of subsurface investigations for the Project. These investigations should be conducted in order to pre-characterize soils that are designated for excavation during construction phases of the Project. A typical SMP outlines standards and procedures for the identification and disposal of contaminated materials that may be encountered during construction. Tracking protocols for contaminated soils will be detailed from the point of excavation to designated testing areas and to the ultimate disposal site.

Furthermore, a Health and Safety Plan shall be developed which provides the minimum health and safety specifications that contractors must meet during construction including requirements for environmental monitoring, personnel protective equipment, site control and security, and training.

The Project would also require excavation of Limited Reuse Soils (LRS), which are soils that are likely (based on "generator knowledge") and/or demonstrated (through laboratory analyses) to contain contaminant concentrations in the range of the NHDOT specific Acceptable Reuse Concentrations. Roadside LRS commonly encountered at NHDOT construction projects include:

- Soils with elevated concentrations of several polynuclear aromatic hydrocarbons and a few common metals; and
- Soils with petroleum residue (total petroleum hydrocarbons) related to the normal operation of motor vehicles and asphalt pavement.

The NHDOT has determined that roadside LRS may be encountered in all topsoil within the limits of the existing right-of-way, regardless of its depth. In instances where topsoil is not present, soil from the top of ground to a depth of 6 inches is considered to be LRS. Soils excavated from beyond and/or below the specified LRS limits that do not exhibit visual or olfactory evidence of potential contamination shall not require handling as impacted material.

Contractors will be advised that roadside LRS occurs within the limits of disturbance. The previously mentioned SMP will provide guidance for the identification, handling, storage, reuse, and disposal of LRS soils generated during construction activities.

In the event that PFAS-impacted groundwater is encountered during construction phases, dewatering activities shall be conducted in accordance with applicable NHDES rules and/or Groundwater Management Plans.

The Contractor will develop a Project Operations Plan, which shall specify the Contractor's means and methods for handling and managing LRS, and Contaminated Soil and Groundwater. This will include the implementation of the BMPs described in the SMP. No excavation would take place until the Project Operations Plan has been approved by the NHDOT. In addition, following approval of the Project Operations Plan, the Contractor shall be required to notify the NHDOT's Bureau of Environment at least two weeks prior to beginning excavation.

3.12 Visual Resources

Visual and aesthetic resources include naturally occurring landscape features as well as man-made resources or structures. The anticipated visual and aesthetic impacts of the Project - both beneficial and adverse - are discussed in this section. Both impacts to visual resources and viewers (the population affected by the Project) are considered. The visual resources analysis is consistent with the following list of laws, regulations, guidance and plans pertaining to the protection and enhancement of scenic qualities.

- Federal-aid Highway Act of 1970
- FHWA's Guidelines for Visual Impact Assessments of Highway Projects (2015)
- FHWA's NEPA procedures codified in 23 CFR 771

- Intermodal Surface Transportation Efficiency Act of 1991
- Wild and Scenic Rivers Act of 1968
- National Trails Systems Act of 1968
- Antiquities Act of 1906
- Section 106 of the National Historic Preservation Act of 1966[50]
- Section 4(f) of the USDOT Act of 1966[51]
- Section 6(f) of the Land and Water Conservation Fund (LWCF)
- City of Dover, New Hampshire Master Plan: 2009 Update to the Recreation Chapter

State public land management programs and plans may contain measures to protect the visual quality of protected areas (*e.g.*, forests and parks, public landscapes, restoration areas, and others). Refer to **Section 3.9**, *Parks, Recreation and Conservation Land* for information on these protected areas.

3.12.1 Affected Environment

A visual assessment was completed using site photographs and aerial mapping programs. The visual Study Area was identified through these efforts, and includes adjacent areas visible from the GSB, and areas from which the GSB can be seen by viewers, including the Spaulding Turnpike, LBBs, Piscataqua River and Hilton Park. The visual inventory within the Study Area includes existing buildings and infrastructure, visually sensitive resources, as well as the general components that form the basis of all landscapes. The inventory includes:

- Landscape features - such as topographic features, vegetation, and landscapes such as wetlands and farmlands.
- Manmade development – such as urban centers, industrial, commercial, institutional and residential areas, and utilities lines.
- Parks and recreation facilities – including properties protected by Section 4(f) and Section 6(f).
- Historic and archaeological resources – such as properties protected under Section 106.
- Other protected or iconic cultural resources – such as scientific or natural areas, scenic byways, routes, and vistas.

This visual impact assessment identifies areas that would be impacted by the alternatives.

3.12.1.1 Visual Resources and Viewshed Overview

The project viewshed is primarily centered around the GSB, LBBs, Piscataqua River and Hilton Park. The GSB center arched truss is highly visible to vehicular traffic traveling northbound or southbound over the LBBs, marine vessels, and viewers in Hilton Park (see **Appendix A**, Site Photo 1). The GSB has a distinctive and aesthetically-pleasing composition of a center arched through truss with deck side trusses. The addition of the LBB in 2011 directly adjacent to the GSB has affected the setting of the GSB, impeding viewsheds to and from the GSB on the east side. However, the setting on the west side of the GSB, overlooking the Little Bay, Dover Point, and Hilton Park, is largely intact, so while the integrity of setting has been diminished, it has not been eliminated. Subsequent deterioration has affected the physical integrity of the bridge, but the historically significant features of the structure are still evident.

As part of the construction of the new LBB, the north and south approaches to the adjacent GSB were re-routed in 2011. At the south end of the GSB in the Town of Newington, a paved curvilinear path provides access for pedestrians and bicycles between Shattuck Way and the GSB (Site Photo 2). The south approach to the GSB in Newington is an on-grade pedestrian path. The north abutment, located in Hilton Park in the City of Dover, was reconstructed in 2010 along with a new north approach bridge (Site Photo 3). Prior to 2015, pedestrians and bicyclists traveling on the GSB had open, picturesque views of the Little Bay to the west (Site Photo 4). In 2015, chain link fencing was added to the center of the bridge along the entire length, as a safety measure to keep pedestrians away from the outside deck extremes, which impeded the view to the west. The subsequent closure of the bridge in September 2018 eliminated the views of the Little Bay to the west. However, as previously discussed in **Section 2.4**, NHDOT established a temporary detour along northbound LBB in August 2019. For pedestrians using the temporary detour over the northbound LBB, the lanes of traffic of the southbound bridge and the GSB block the view of Little Bay to the west but provide open views of the Piscataqua River and Hilton Park to the east.

3.12.1.2 Views from the Highway

Roadway travelers heading north on the Spaulding Turnpike (NH 16) from Newington into Dover get a very picturesque and panoramic view of mountains in the distance and the arched GSB and LBBs in the foreground. Roadway travelers have an exceptional view of the broad waters of the Piscataqua River and Hilton Park. In the summer months, the manicured lawns of Hilton Park and its pier, as well as boats in the river, provide a very scenic viewscape. Crossing over the northbound LBB, the lanes of traffic of the southbound bridge and the GSB partially block the view of Little Bay to the west. In this area of the City of Dover, the main visual components include suburban residences, small pockets of forest, open space, and shoreline. The Spaulding Turnpike (NH 16) and associated approach roadways and ramp infrastructure, noise barriers, visually characterize this area for both roadway travelers and other viewers, such as residents or boaters.

Roadway travelers heading south on the Spaulding Turnpike (NH 16) from Dover into Newington can see the GSB center arch once they are within a half mile of the GSB. The Spaulding Turnpike (NH 16) and associated ramp infrastructure, also visually characterize this area. Sound walls limit roadway travelers' views as they drive south. Crossing over the southbound LBB, roadway travelers have relatively unobstructed views of Little Bay and the GSB center arched truss to the west. In this area of the Town of Newington, the main visual components include Trickys Cove, shoreline, pockets of forested areas, vegetation, and local roadways. Rockingham Electrical Supply is visible to the east, along with a few other commercial developments. As in Dover, the Spaulding Turnpike (NH 16), and associated approach roadways and ramp infrastructure, also visually characterizes this area for roadway travelers.

[50] Visual impacts to historic resources are also discussed in **Section 3.10**, *Cultural Resources*.

[51] For information on Section 4(f) properties, refer to **Chapter 4**, *Programmatic Section 4(f) Evaluation for the Use of Historic Bridges*.

3.12.1.3 Views from the Water

Marine traffic is prevalent in this coastal area of New Hampshire. Because the GSB crosses the Piscataqua River, marine vessels are allowed to pass under the center arched truss, providing boaters with exceptional views of the GSB structure (Site Photo 6). Boaters traveling east toward the GSB get an unobstructed, picturesque and panoramic view of the entire GSB superstructure and stone masonry piers (Site Photo 7).

3.12.1.4 Views from Hilton Park

In its description of Hilton Park, the *2009 Dover Recreation Master Plan* states that, "*There are outstanding views of the Piscataqua River and Little Bay.*"[52] In addition to views of these waterways, the entire GSB is visible from the west side of Hilton Park (Site Photo 8). Looking southwest, viewers in Hilton Park also experience exceptional views of marine vessels and Newington's distant shoreline (Site Photo 9). The built features of Hilton Park, including benches, picnic tables, and the pavilion, are described in **Section 3.9**, *Parks, Recreation and Conservation Land*. The paved access road into the west side of Hilton Park is lined with mature trees and a few shrubs, which provide shade for park users (Site Photo 10).

The visual landscape from the east side of Hilton Park are more centered around unobstructed views of the marine environment and marine vessels, the shoreline of the Piscataqua River, as well as the LBBs and associated roadway infrastructure (Site Photo 11). The top of the GSB center arched truss is barely visible from this side of the 16-acre Hilton Park. As described in **Section 3.9**, *Parks, Recreation and Conservation Land*, the east side of Hilton Park provides more recreational opportunities for park visitors than the west side of Hilton Park (*i.e.,* boat launch, fishing dock, and play area).

3.12.2 Environmental Consequences

Potential impacts to visual resources were evaluated based on noticeable changes in the physical characteristics of the existing environment, types of project features and construction impacts that are proposed, and whether the Project would complement or contrast with the visual character of the existing environment.

3.12.2.1 Direct Impacts

Potential direct impacts to visual resources and viewers are described in this section. Direct visual impacts, or changes to a visual landscape, may be either temporary or permanent. According to FHWA's *Guidelines for Visual Impact Assessments of Highway Projects*, temporary impacts are those impacts resulting from construction or short-term activities that fall within a period of two years or less. The guidelines also define permanent impacts as those resulting from construction activities lasting for two or more years, the built project, or the operations and maintenance associated with the built project.

No-Action Alternative

Under the No-Action Alternative, there would be no permanent, noticeable visible changes to visual resources, viewers, or visual quality. The existing physical characteristics and structural components of the GSB would remain unchanged from the bridge's current, deteriorated conditions.[53] The GSB would continue to be closed to pedestrians and bicyclists, as it has been since September 2018.

Alternative 1

Under Alternative 1, the existing physical characteristics of the GSB would remain, as the bridge would be rehabilitated and visually consistent with the present structure. The rehabilitation of the GSB would include the replacement of the bridge deck and repairs to the substructure and truss superstructure. On truss elevations, approximately 39 members and 54 gusset plates would require repairs or replacement in kind. In addition, eight of the nine spans of the upper lateral bracing and all nine spans of the lower lateral bracing would require repairs or replacement in kind. A pedestrian bridge railing would be installed, and the Newington abutment would need to be rehabilitated, maintaining visual consistency with the existing Newington abutment. Work would also include cleaning, repainting, and repointing bridge elements.

As a beneficial impact, Alternative 1 would enhance views of the natural visual resources (*e.g.*, land, water, and vegetation) and landscape characteristics of the surrounding area (see **Figure 2.3-1**). The portions of open deck and safety rail design would benefit viewers by providing views of Little Bay, the Piscataqua River, Hilton Park, marine traffic, Trickys Cove, and coastal shoreline. The visually prominent arched central spans would be retained, further benefiting the visual character of the bridge.

Temporary, direct visual impacts would occur under Alternative 1 due to the 3-year construction period because construction equipment and fenced areas for staging would temporarily disrupt the current views of the GSB from Hilton Park. Once construction is complete and all staging areas restored, there would be no permanent, noticeable visible changes to visual resources, viewers, or visual quality.

Alternative 3

Under Alternative 3, there would be no permanent, noticeable visible changes to visual resources, viewers, or visual quality. The existing physical characteristics of the GSB would remain. Under Alternative 3, the GSB's central spans (Spans 4, 5, and 6) would be retained, while the approach spans (Spans 1, 2, 3, 7, 8, and 9) would be replaced with visually consistent spans. The substructure piers would be retained, the Newington abutment would be rehabilitated, and the Dover abutment would be reused. This alternative would retain the visually prominent arched central spans, as well as the aesthetically-pleasing continuous deck truss/through-truss configuration (see **Figure 2.3-2**).

---

[52] Department of Planning and Community Development. *City of Dover, New Hampshire Master Plan: 2009 Update to the Recreation Chapter.* Accessed from https://www.dover. nh.gov/government/city-operations/planning/master-plan/index.html. Accessed on July 19, 2019.

[53] Note, however, that the USCG would likely require removal of the GSB if it no longer serves a transportation purpose. See November 30, 2006 letter from Gary Kassof, USCG, to Marc G. Laurin, NHDOT, regarding the Draft Environmental Impact Statement for the Newington-Dover, 11238 Project.

Similar to Alternative 1, Alternative 3 would enhance views of the natural visual resources (*e.g.*, land, water, and vegetation) and landscape characteristics of the surrounding area, resulting in a beneficial impact to pedestrians and bicyclists crossing the bridge.

Temporary, direct visual impacts would occur under Alternative 3 due to the 2-year construction period because construction equipment and fenced areas for staging would temporarily disrupt the current views of the GSB from Hilton Park.

Alternative 6

Under Alternative 6, there would be permanent, substantial visible changes to visual resources, viewers, or visual quality. Except for the original stone masonry piers, the GSB, a key visual resource, would be removed. The removal of the superstructure would be highly noticeable to viewers and would remove a key visual resource within the Study Area. The new superstructure would not be in the form of a truss, and therefore would not be visually consistent with the existing GSB.

Under Alternative 6, the multi-use path would be immediately adjacent to the LBB deck. Chain link fencing would be installed on top of a 2-foot wide concrete barrier; this would provide a measure of safety but would not shield users of the path from noise and wind generated by vehicles passing at highway speeds on the LBB. The lack of separation between vehicular traffic and recreational and non-motorized travelers, and the associated noise, wind, and perception of risk is a substantial disadvantage of this alternative which the public has viewed unfavorably. Pedestrians and bicyclists would be located directly adjacent to high speed vehicle traffic, thus adversely affecting safety and user experience, in addition to negatively impacting views of the Piscataqua River to the east.

Additionally, Alternative 6 would involve reconstruction of the Dover approach span from Hilton Park, including relocation of an existing pier. Removal and replacement of one of the eight original stone masonry piers would create an inconsistent, or incoherent, visual effect. This change would be most noticeable to viewers on the west side of Hilton Park. The visual character of the stone piers would be permanently altered due to the removal and replacement; the seven remaining stone masonry piers would be left in place for support of the pier extensions, resulting in a visual change in superstructure alignment from the existing GSB (see **Figure 2.3-3**).

As a beneficial impact, Alternative 6 would enhance pedestrians' and bicyclists' views of the natural visual resources (*e.g.*, land, water, and vegetation) and landscape characteristics of the surrounding area. The open deck and safety rail design and chain link fencing on the west facing side of the new bridge would benefit viewers by providing views of Little Bay, the Piscataqua River, Hilton Park, marine traffic, Trickys Cove, and coastal shoreline.

Temporary, direct visual impacts would occur under Alternative 6 due to the 1.5-year construction period because construction equipment and fenced areas for staging would temporarily disrupt the current views of the GSB from Hilton Park.

Alternative 7

Substantial alteration of visual environment would occur under Alternative 7, similar to the impacts described for Alternative 6. The removal of the superstructure would be highly noticeable to viewers and would remove a key visual resource within the Study Area. The new superstructure would not be in the form of a truss, and therefore would not be visually consistent with the existing GSB.

Alternative 7 is similar to Alternative 6 but would construct a new, separate multi- use path adjacent to the existing southbound LBB superstructure rather than extend the LBB deck. A new multi-use path deck would be constructed approximately 7.5 feet from the existing southbound LBB superstructure. Pedestrians and bicyclists would be located further from high speed vehicle traffic than Alternative 6. However, views of the Piscataqua River to the east would be reduced by the addition of chain link fencing on the east side of the new bridge (see **Figure 2.3-4**).

Similar to the impacts described for Alternative 6, Alternative 7 would involve reconstruction of the Dover approach span from Hilton Park, including relocation of an existing pier. Removal and replacement of one of the eight original stone masonry piers would create an inconsistent, or incoherent, visual effect. This change would be most noticeable to viewers on the west side of Hilton Park. The visual character of the stone piers would be permanently altered due to the removal and replacement; the seven remaining stone masonry piers would be left in place for support of the pier extensions, resulting in a visual change in superstructure alignment from the existing GSB.

As a beneficial impact, Alternative 7 would enhance pedestrians' and bicyclists' views of the natural visual resources (*e.g.*, land, water, and vegetation) and landscape characteristics of the surrounding area. The open deck and safety rail design would benefit viewers by providing unobstructed, expansive views of Little Bay, the Piscataqua River, Hilton Park, marine traffic, Trickys Cove, and coastal shoreline.

Temporary, direct visual impacts would occur under Alternative 7 due to the 1.5-year construction period because construction equipment and fenced areas for staging would temporarily disrupt the current views of the GSB from Hilton Park.

Alternative 9 (Preferred Alternative)

Substantial alteration of visual environment would occur under Alternative 9. Under Alternative 9, the GSB superstructure would be replaced with a steel girder superstructure with a structural steel frame, in the form of a "V" longitudinally, extending from the bottom of the girders to the top of the existing GSB piers (see **Figure 2.3-5**). This alternative follows the existing GSB alignment, thereby allowing the reuse of the existing repointed GSB stone masonry piers without requiring substantial modifications.

The removal of the superstructure would be highly noticeable to viewers and would remove a key visual resource within the Study Area. The new superstructure would not be in the form of a truss, and therefore would not be visually consistent with the existing GSB. However, unlike Alternatives 6 and 7, the recently constructed approach span at the Dover end of the bridge would be retained and reused as part of Alternative 9, and the alignment of the existing GSB would be maintained. Additionally, unlike Alternatives 6 and 7, all eight of the original stone masonry piers would be retained, adding to the substructure's coherent and harmonious visual character.

As a beneficial impact, Alternative 9 would enhance pedestrians' and bicyclists' views of the natural visual resources (*e.g.*, land, water, and vegetation) and landscape characteristics of the surrounding area. The open deck and safety rail design would benefit viewers by providing fully unobstructed, expansive views of Little Bay, the Piscataqua River, Hilton Park, marine traffic, Trickys Cove, and coastal shoreline.

Temporary, direct visual impacts would occur under Alternative 9 due to the 1.5-year construction period because construction equipment and fenced areas for staging would temporarily disrupt the current views of the GSB from Hilton Park.

3.12.2.2 Indirect Impacts

Under the No-Action Alternative and Alternatives 1, 3, 6, 7, and 9 there would be no visual impacts to the historic GSB, as all potential impacts would be physical in nature. Therefore, the Project would result in no indirect visual impacts, either permanent or temporary.

3.12.3 Mitigation

This section identifies possible mitigation measures for impacts to visual resources, viewers, or visual quality. Both construction-related and design-related mitigation are described, as well as potential visual enhancements to Hilton Park.

Disturbed areas in Dover and Newington used for construction staging would be restored to as near pre-existing conditions as practicable once construction is complete. As needed, the visual character of the disturbed areas would be restored with replacement plantings. Replacement plantings should be native and indigenous to the area for visual consistency with the surrounding landscape and natural environment.

Additional design-related treatments that could be implemented for the purpose of enhancing and improving bridge aesthetics include:

- Design structural features to blend with the surrounding built and natural environments to complement the visual landscape.
- Select low-sheen and non-reflective surface materials to reduce potential for glare.
- Choose durable paint colors with a dull, flat, or satin finish (not glossy) to reduce potential for glare.
- Develop an aesthetically pleasing design to minimize effects of visual intrusion upon the natural and built landscape.
- Design bridge lighting to maximize energy efficiency, safety and security, and be aesthetically pleasing.

The list above is meant to provide examples of final-design features that could benefit viewers, visual resources, and visual quality.

3.13 Construction Impacts

Construction activities have the potential to adversely impact adjacent populations or natural resources by exposing them to impacts or hazards they are otherwise not regularly exposed to. This section describes anticipated construction period impacts resulting from the Project and proposes mitigation measures for those impacts. Potential construction impacts include noise and vibration, air quality, truck traffic, construction staging areas, and traffic control measures.

3.13.1 Affected Environment

See each resource section within **Chapter 3**, *Affected Environment and Environmental Consequences*, for a discussion of what specific resources are present within the Study Area.

3.13.2 Environmental Consequences

All construction-related impacts are temporary, since construction would take place for a limited duration. Potential construction impacts are related to potential noise and vibration, air quality emissions, water quality impacts, generation of truck traffic, use of property for construction staging areas, and implementation of traffic control measures. The resources affected by the Project are generally the same for all Action Alternatives, with additional transportation and noise impacts under Action Alternatives 6 and 7. It is important to note there are no statewide noise regulations that relate to construction activities in New Hampshire. NHDOT would coordinate construction activities with the Town of Newington and City of Dover.

Construction phasing and contractor access would be further defined during the final design and construction phases of the GSB Project. While conceptual construction plans show the placement of temporary structures in Little Bay (**Appendix D**), the final design of these structures is dependent on contractor means and methods.

3.13.2.1 Direct Impacts

Direct temporary impacts were evaluated for each alternative. As noted above, construction impacts are resource specific and largely dependent on the activities necessary to build each alternative. For example, Action Alternatives which propose superstructure replacement would result in similar construction impacts. The potential impacts from construction are also dictated by the estimated construction duration, which vary from 1.5 to 3 years depending on the alternative.

No-Action Alternative

No construction would take place under the No-Action Alternative; therefore, no direct construction impacts would occur.

Alternative 1

Alternative 1 has the longest construction period of the five Action Alternatives evaluated for the Project with an estimated construction period of 3 years. Predominant work under this alternative would involve removal and replacement of the existing bridge floor system, removal and replacement in-kind of upper and lower lateral braces, in-kind replacement of several sway braces, rehabilitation of the Newington abutment, steel truss repair work, repointing the existing stone masonry piers, cleaning and painting existing structural steel, and installing a pedestrian

bridge railing. A longer construction period means temporary impacts would persist longer than other alternatives.

Emissions from stationary and mobile sources during construction would include oxides of nitrogen and sulfur, carbon monoxide, and particulate matter. The use of construction equipment would continue throughout rehabilitation of the GSB. The air quality impact assessment concluded that although the duration is longer, the rehabilitation work would likely be less pollutant intensive than the complete replacement of spans and piers occurring under other Action Alternatives. These emissions would be temporary and the locations at which they occur would change over time.

Due to the location of the Project, adjacent to and over Little Bay, temporary impacts to water quality are possible during earthwork activities through siltation and erosion. Additional temporary impacts are possible from the presence of mechanical fluids (*e.g.*, effluents, solvents, or oils) typically present at construction sites. With the proper mitigation measures, temporary impacts to water quality are not anticipated to be adverse.

Temporary impacts to approximately 0.2 acre of the northern portion of the blue mussel shellfish bed under the GSB may occur during the installation and removal of the causeways and trestle at the beginning and end of construction. The causeways and trestles would be in place throughout the duration of construction, which is anticipated to take approximately 3 years. Standard marine construction BMPs would be implemented wherever feasible to mitigate the potential for suspension of sediments and consequent siltation.

Construction access anticipated to require the installation of two temporary causeways and trestles. The placement of these structures would divert floodwaters to other areas of the Great Bay Estuary; however, these impacts would be negligible due to the extensive area of the Little Bay and Great Bay Estuary. The Great Bay National Estuarine Research Reserve (part of the Great Bay Estuary) encompasses 10,235 total acres, approximately 7,300 acres of open water and wetlands. The approximate size of the causeways and trestles equals 0.72 total acre, or 0.007 percent of the total area of Great Bay National Estuarine Research Reserve. Post construction, coastal and marine habitats would be restored to pre-construction conditions (*e.g.*, sloping and grading). Conditions are anticipated to rebound to existing conditions.

The placement of causeways and trestles would temporarily alter hydrodynamics on a localized scale in the areas directly adjacent to temporary structures. Current water flow in the area is complex and has a wide range of directional components and speeds due to the dynamic tidal changes within Little and Great Bay. The placement of temporary structures would result in minor shifts or changes in tidal flows, currents, and wave patterns. The temporary causeways would be located approximately 60 feet from the causeway locations evaluated in the 2007 FEIS and 2010 Hydraulic Modeling Report.[54] The hydrodynamic models predicted a minor increase in tidal maxima of 0.02 to 0.35 inches across Little Bay and the Great Bay Estuary from the placement of temporary causeways and trestles. Temporary impacts on hydrodynamics from the temporary structures would increase the current velocity at a maximum of 10 percent through the navigation channel (between GSB Piers 4 and 5). These temporary shifts or changes would persist the longest under Alternative 1, when compared to the other alternatives.

Construction-related equipment used during construction phases of Alternative 1 is not anticipated to result in an adverse effect from hazardous materials. The operation of construction equipment involves the use of mechanical fluids (*e.g.*, solvents, oils, and gasoline) that have the potential to result in spills or leaks when not maintained in good working order. Some of these materials may be considered hazardous to the general public, workers or the environment. Although the spill or release of these materials or fluids during construction is unlikely, spill prevention plans would be required to prevent and control any such spills. Construction debris can also contain hazardous materials, for example, lead-based paint or asbestos. Any construction debris removed from the site would be handled and disposed of off-site to not impact public health, or the environment. The abatement of these materials would be performed in accordance with appropriate regulations in order to ensure that there would be no adverse effects such as releases or misdirected wastes.

Under Alternative 1 (and all Action Alternatives), the construction access, laydown, and staging would only occur within the western side of Hilton Park; no access, laydown, or staging is proposed within the eastern side of Hilton Park. During construction, approximately 48,000 square feet of the western side of Hilton Park would not be publicly accessible because the area would be used for access and staging. The Hilton Park driveway off of Dover Point Road would be used for construction access under Alternative 1 (and all Action Alternatives) but would not be fenced off, allowing for continued public use and access to the west side of Hilton Park. The remaining 14.9 acres of the 16-acre Hilton Park would remain open to the public throughout construction. NHDOT would determine relocation details for the pavilion, such as the structure's final location and whether the structure would be relocated or replaced. The construction staging area would be fenced for safety. Under Alternative 1, temporary impacts to Hilton Park would last for the duration of construction, which is estimated to take three years. The sidewalk along Wentworth Terrace, which passes underneath the Spaulding Turnpike and runs along Dover Point Road, connects the east and west sides of Hilton Park. This sidewalk would remain open for continued public use, which would retain the existing connectivity of the east and west sides of Hilton Park.

Temporary noise impacts caused by Alternative 1 would persist the longest of the alternatives. However, although the estimated duration of construction is longer, the equipment associated with the rehabilitation work would likely be less noise intensive than the complete replacement of spans and piers occurring in other Action Alternatives.

Temporary visual changes would occur under Alternative 1 due to the estimated 3-year construction period because construction equipment and fenced areas for staging would temporarily alter views of the GSB, most notably from Hilton Park. These temporary changes to the viewshed would be present through the duration of construction. Fencing or barriers around construction staging areas are necessary to ensure public safety and to protect equipment and materials.

[54] AECOM. 2010. Hydraulic Modeling Analysis – Spaulding Turnpike Improvements, Little Bay Bridges Newington to Dover, New Hampshire. Prepared for VHB.

Alternative 3

Generally, Alternative 3 would have similar construction impacts described under Alternative 1; however, the partial rehabilitation would result in slightly more temporary impacts related to noise and hazardous materials, due to the use of heavy machinery and an increase in construction debris. Abatement of construction debris would still need to be performed in accordance with appropriate regulations in order to ensure that there would be no adverse effects, such as releases or misdirected wastes. Construction debris would be created through the replacement of spans 1, 2, 3, 7, 8 and 9. Work would require the use of heavy machinery which would cause minor, temporary increases in ambient noise levels in the surrounding area. Construction of Alternative 3 is anticipated to take two years. As with Alternatives 1 and 9, the sidewalk along Wentworth Terrace, which passes underneath the Spaulding Turnpike and runs along Dover Point Road, would remain open for continued public use during construction, which would retain the existing connectivity of the east and west sides of Hilton Park. Conversely, a shorter construction period (relative to Alternative 1) would reduce the potential impacts on other resources, including, air quality, water quality, wildlife and fisheries, hydrodynamics, parks and recreation, noise, and visual resources.

Alternative 6

Alternative 6 would generally have similar construction impacts as Alternative 1, with additional temporary impacts to transportation, connectivity of Hilton Park, hazardous materials and noise. Under Alternative 6, the deck of the southbound LBB would be widened approximately 17.5 feet to the west to accommodate the new multi-use path. The GSB superstructure would be removed, and the Dover approach span and northernmost pier (GSB Pier 1) would be replaced. At the Newington approach, the existing abutment would be removed in its entirety and replaced, due to changes in geometry and bridge type. Construction of Alternative 6 is anticipated to take 1.5 years. This shorter construction period would reduce impacts on natural resources in the Study Area; however, the additional transportation and noise impacts would result in more impacts than Alternative 9, which also has a construction duration of 1.5 years.

In contrast to Alternatives 1, 3, and 9, Alternative 6 would involve partial closure of the sidewalk along Dover Point Road, which passes underneath the Spaulding Turnpike and runs along Wentworth Terrace (**Appendix D**). This portion of sidewalk connects the east and west sides of Hilton Park. This sidewalk would remain closed during construction for public safety reasons, resulting in a temporary loss of connectivity between the east and west sides of Hilton Park.

The use of traffic control measures on the southbound LBB during construction would cause temporary, direct impacts to transportation. Traffic control measures would potentially cause congestion on the Spaulding Turnpike due to the temporary lane closures and speed limit decreases. These traffic control measures are necessary to provide safe worker and motorist conditions.

Construction debris would be created from the removal and replacement of GSB Pier 1, the Dover approach span, and GSB superstructure. All construction debris would be handled and disposed of off-site to not impact public health or the environment.

Work associated with construction of Alternative 6 would involve the use of heavy machinery, which would temporarily increase ambient noise levels. The replacement of Pier 1 would also require foundation work to secure the new pier which would likely require pile driving, creating more noise impacts. Although the construction duration is shorter, noise associated with the LBB deck widening, approach span replacement, and pier replacement would be more intensive than the other Action Alternatives.

Alternative 7

Construction impacts under Alternative 7 are similar to Alternative 6. The difference between these Alternatives 6 and 7 is minor, as Alternative 7 would construct the multi-use path adjacent to the southbound LBB (7.5 feet away) on an independent deck. The construction of the independent deck would require traffic control measures, similar to what would be needed under Alternative 6.

Similar to Alternative 6, Alternative 7 would involve partial closure of the sidewalk along Dover Point Road, which passes underneath the Spaulding Turnpike and runs along Wentworth Terrace (**Appendix D**). This portion of sidewalk connects the east and west sides of Hilton Park. This sidewalk would remain closed during construction for public safety reasons, resulting in a temporary loss of connectivity between the east and west sides of Hilton Park.

Alternative 9 (Preferred Alternative)

Generally, Alternative 9 would have similar construction impacts as Alternative 1; however, the superstructure replacement would result in slightly more temporary impacts to noise and hazardous materials from the use of heavy machinery and increase in construction debris. Alternative 9 would have similar temporary construction impacts on air quality, water quality, wildlife and fisheries, hydrodynamics, parks and recreation, noise, and visual resources as Alternative 1; however, all temporary impacts would be less due to the shorter construction duration. Construction of Alternative 9 is estimated to take about 1.5 years, which is half the time estimated for Alternative 1, and equivalent to construction of Alternatives 6 and 7.

As with Alternatives 1 and 3, the sidewalk along Wentworth Terrace, which passes underneath the Spaulding Turnpike and runs along Dover Point Road, would remain open for continued public use during construction, which would retain the existing connectivity of the east and west sides of Hilton Park.

As other Action Alternatives, Alternative 9 would cause temporary increases in noise levels in the Study Area for short periods of time. Although the construction period for Alternative 9 is less than Alternative 1 and 3, noise levels resulting from the superstructure replacement would be more intensive since Alternative 9 proposes full replacement of the GSB superstructure. During construction, heavy machinery would be used to replace the existing superstructure. Alternative 9 does not propose the replacement of GSB piers, therefore no pile driving, or foundation work would be needed.

The majority of construction debris created would be due to replacement of the entire superstructure of the GSB. All construction debris removed or created would be handled and disposed of off-site to not impact to public health or the environment.

3.13.2.2 Indirect Impacts

Indirect or secondary impacts are unlikely to occur as a result of construction. The temporary impacts resulting from construction activities would not cause impacts on resources that are reasonably foreseeable or removed from time or space from the Project. Post construction, areas impacted by staging and temporary structures would be restored to pre-construction conditions; these areas are anticipated to rebound to existing conditions.

3.13.3 Mitigation

Construction activities are not anticipated to result in permanent direct impacts to any of the above-mentioned resource areas. Mitigation measures and BMPs to be incorporated to minimize or eliminate construction-related impacts to nearby natural, cultural, and social resources are described in the resource-specific sections of **Chapter 3** of this DSEIS. Mitigation measures would be implemented in accordance with applicable laws and regulations during construction. Examples of resource-specific, construction-related mitigation measures include but are not limited to siltation or erosion control barriers, spill prevention plans, and wetting soils during excavation. No long-term construction mitigation measures are anticipated.

3.14 Social and Economic Resources and Environmental Justice

Potential socioeconomic impacts resulting from transportation projects can relate to population size, property acquisitions, economic growth (or loss), residential or commercial property values, and household income. The 2007 FEIS included an extensive analysis of the regional economics in New Hampshire, spanning 33 municipalities and three counties: Strafford, Rockingham and Carroll. The analysis for this DSEIS focuses on the potential for impacts to the Town of Newington and City of Dover because the scope of the Project is substantially smaller in scale than the larger Newington-Dover, Spaulding Turnpike Improvements Project, and lacks any feature that could induce secondary impacts.

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* directs federal agencies to take appropriate and necessary steps to identify and address disproportionately high and adverse effects on the health or environment of minority and low-income populations to the greatest extent practicable. Title VI of the Civil Rights Act of 1964 prohibits discrimination by recipients of federal financial assistance on the basis of race, color, and national origin, including matters related to language access for those persons with limited English proficiency (LEP).[55] Executive Order 13166, *Improving Access to Services for Persons with Limited English Proficiency*, requires Federal agencies examine the services they provide, identify any need for services to those with LEP, and develop and implement a system to provide those services so LEP persons can have meaningful access to them. FHWA Order 6640.23A establishes policies and procedures for FHWA to use in complying with EO 12898, while the CEQ provides guidance on NEPA and Environmental Justice analyses in their publication *Environmental Justice: Guidance Under the National Environmental Policy Act*.

These regulations and associated guidance provide the foundation for this Environmental Justice (EJ) analysis, which is imperative to determine whether EJ populations are disproportionately impacted. The EJ analysis also aids in guiding the public outreach and future hearings. For example, public transit-accessible meeting locations and translation services.

3.14.1 Affected Environment

The Study Area used to evaluate socioeconomic resources encompasses Newington and Dover because the Project does not propose roadway improvements or changes to highway alignment, as was the subject of the larger Newington-Dover, Spaulding Turnpike Improvements Project. Due to the comprehensive socioeconomic evaluation completed in the 2007 FEIS, and the limited scope of the GSB Project, it was not necessary to complete a full economic analysis for this DSEIS.

This section reassessed the information and data presented in the 2007 FEIS and compared that data to recent US Census Bureau American Community Survey (ACS) data. According to the 2010 Census, the total population of the Town of Newington has decreased since 2007; 775 people to 753 people. In contrast, the population in the City of Dover in 2010 was 29,987 people, an increase from 2007 (26,884 people).

In the 2007 FEIS, populations for Newington and Dover were forecasted based on historical growth trends and assumptions. The 2017 populations numbers in Dover and Newington are consistent with the forecasted populations numbers from the 2007 FEIS.[56] The population reported in the 2010 Census (753 people) was slightly less than the projected population reported for Newington in the 2007 FEIS (870 people); conversely, the population reported in the 2010 Census (29,987 people) in Dover was slightly higher than the projected population in the 2007 FEIS (28,930 people). Rockingham and Strafford Counties have either met or exceeded the State of New Hampshire median household income growth rate of approximately 36 percent between 1990 and 2000. Data provided by the US Census Bureau ACS 5-year Estimate regarding median household income showed that both Rockingham ($89,451) and Strafford Counties ($67,805) had median household income over the US average ($60,336) in 2017.

The EJ analysis was completed by the NHDOT Office of Federal Compliance. In this analysis, ACS data published by the US Census Bureau for each Census Tract within the Study Area is analyzed to determine the proportion of minority populations, low-income populations, elderly populations, and LEP persons. The EJ Study Area occurs entirely within Rockingham and Strafford Counties. The two EJ study areas used in the analysis is the *Impacted Area:* the population within a 1-mile radius of the Project limits of work, and the *Surrounding Area*: the population within a 3-mile radius from the Project limits of work, excluding the impact area. Average data pertaining to minority populations, median income, LEP, and age within the Impacted Area and

[55] LEP Definition: Where there is a population of people who speak English as a second language less than well (as indicated by the US Census data). When a particular LEP language group constitutes 5 percent of the impacted population, the NHDOT 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.

[56] US Census Bureau. *2017 American Community Survey Data*. Updated February 4, 2019. Accessed from https://www.census.gov/programs-surveys/acs/news/data-releases.2017.html. Accessed on July 3, 2019.

Surrounding Area is presented **Table 3.14-1**. Based on this analysis, the NHDOT Office of Federal Compliance determined that the impacted and surrounding areas have portions of elderly persons and low-income populations higher than established thresholds within Census Tracts.

Table 3.14-1 Population Characteristics within the EJ Study Area

Study Area: Rockingham County and Strafford County, NH	Average % Elderly Population	Average % Minority Population	Average % Low-Income Household Population	Average % LEP
Impacted Area: 1-mile radius of Project	**15.1**	7.8	**15.9**	0.7
Surrounding Area: 3-mile radius of Project	**17.36**	6.25	**16.16**	0.3

Source:
NHDOT Inter-Office Communication from Jay Ankenbrock to Marc Laurin, entitled *"Environmental Justice Population Analysis, Newington-Dover 11238-S,"* dated July 25, 2018.

3.14.2 Environmental Consequences

Transportation projects can impact socioeconomic resources through the acquisition of properties or lands, loss of municipal tax revenue, or induced or future growth as a result of a project. These changes can impact residential or commercial property values, induce land use changes, or impact commercial businesses through an increase or loss of business.

Examples of direct impacts to EJ populations include property acquisitions, changes to land use, and impacts to properties that serve EJ communities (*e.g.*, low-income housing). There are no proposed property acquisitions, or changes to land use as a result of the alternatives evaluated for this project. Impacts to EJ populations would not exceed more than minor temporary impacts during construction (*e.g.*, noise from construction equipment use and traffic control measures on LBB). These temporary, construction-related impacts would not be disproportionate adverse impacts to EJ populations.

Beneficial economic effects are associated with the expenditure of construction funds, which are distributed to the local economy, and can have a multiplier effect as those funds are reinvested. Cost estimates were prepared for each reasonable alternative, and are summarized in **Table 3.14-2**; detail is provided in **Appendix C**.

Table 3.14-2 Initial Capital and Life Cycle Cost Estimate Summary

Alternative	Descriptions	Initial Capital Cost	Life Cycle Cost (2018 Dollars)
No-Action	Ultimate removal of the General Sullivan Bridge and Supporting Substructure Entirely[1]	$8,000,000	N/A
1	Rehabilitation of the General Sullivan Bridge - 16' Path	$43,000,000	$74,000,000
3	Partial Rehabilitation - 16' Path	$42,250,000	$61,750,000
6	Southbound Little Bay Bridge - Widened Deck on Pier Extension - 16' Path	$28,000,000	$31,250,000
7	Southbound Little Bay Bridge - Independent Deck on Pier Extension - 16' Path	$29,500,000	$32,250,000
9	Superstructure Replacement - Girder Option - 16' Path	$28,500,000	$31,250,000

1 The USCG would likely require removal of the GSB if it no longer serves a transportation purpose. See November 30, 2006 letter from Gary Kassof, USCG, to Marc G. Laurin, NHDOT, regarding the Draft Environmental Impact Statement for the Newington-Dover, 11238 Project.

3.14.2.1 Capital Cost Estimation

Capital cost estimates were developed for each alternative. These cost estimates were calculated using NHDOT unit bid prices where available. Specialty elements such as micropiles and bolted steel repairs are estimated from projects similar to the alternative being studied. Superstructure replacement with a truss and the complete bridge replacement alternative are estimated using a cost per square foot. Estimates also include provisions for different levels (low, moderate, and high) of risk so that the alternatives can be compared fairly and equally at their higher end of the potential cost ranges. Risk considerations include work items that are subject to variability in quantity or construction that may require special means and methods.

3.14.2.2 Life-Cycle Cost Analysis

A life-cycle cost analysis was developed for all alternatives to evaluate total alternative costs over a 75-year planning horizon. To account for the time-reduction value of the dollar, and to make an equal comparison of alternatives given that future expenditures are valued less than present day expenditures, dollars are discounted at three percent per year in this analysis. This three percent discount follows FHWA guidelines and generally reflects the average discount rate over the past 30 years.[57] The analysis also assumes that future maintenance, operation and repair expenditures are discounted to the year construction is completed, which is referred to as Year 0. Capital costs are assumed to be fully expended in Year 0. The life cycle cost analysis considers regular maintenance and rehabilitation elements for each alternative, such as joint replacement, sealing of pack rust and spot painting. Minor items that are similar across all alternatives, such as navigational lighting maintenance and replacement, are not included in the analysis.

3.14.2.3 Direct Impacts

No-Action Alternative

Under the No-Action Alternative, the GSB would continue to be closed to pedestrian and bicycle access over Little Bay. The closure of the GSB over the long-term has the potential to have minor

[57] Federal Highway Administration. 2002. *Life-Cycle Cost Analysis Primer.* FHWA Technical Report IF-02-047. US Department of Transportation, Office of Asset Management. Issued August 2002.

socioeconomic impacts on businesses in Dover and Newington through a loss of alternative commuting opportunities. Under the No-Action Alternative, the GSB would continue to be closed and not accessible to persons in Newington and Dover, which includes EJ populations.

Alternative 1

Alternative 1 would not have measurable direct adverse impacts on private property, since parcel acquisitions are not required to implement this alternative. The 2007 FEIS analyzed induced growth impacts that could occur from rehabilitation of the GSB, within the 33 municipalities and three counties surrounding the GSB and LBBs. These findings remain unchanged; Alternative 1, rehabilitation of the GSB, would not affect the findings of the 2007 FEIS relative to induced growth in the surrounding communities.

There would be no disproportionately high or adverse impacts to EJ populations because the Project limits are within parcels owned by the State of New Hampshire and on existing bridge infrastructure. After construction is complete, Alternative 1 would have permanent, beneficial impacts by providing a safe and ADA accessible multi-use path over the Little Bay. Alternative 1 would not result in any disproportionately high and adverse impacts on EJ populations.

During the 3-year construction period, there would be temporary beneficial impacts to businesses and wages in the area during the length of construction which is approximately 3 years. Because the initial capital costs for Alternative 1 are higher than other alternatives, this economic benefit would be substantially more than other alternatives, except for Alternative 3 which is similar in cost. Temporary beneficial impacts involve re-circulation of a direct dollar spent throughout the economy because of the construction. These beneficial impacts are short-term, coincidental with the actual phasing and construction of the Project.

Alternative 3

Permanent, direct impacts to socioeconomic resources would be similar to Alternative 1. There would be no parcel acquisitions, and no disproportionately high and adverse impacts on EJ populations. As with Alternative 1, this alternative would provide permanent, beneficial impacts by providing a safe and ADA accessible multi-use path over the Little Bay.

The construction of Alternative 3 is anticipated to take approximately 2 years. A shorter construction timeframe than Alternative 1 would minimize the potential for temporary impacts on socioeconomic resources and EJ populations. A shorter construction duration would also result in the availability of the ADA-accessible multi-use path sooner than Alternative 1. During the construction of the Project there would be temporary beneficial impacts to businesses and wages in the area during the length of construction, 2 years. Temporary beneficial impacts involve re-circulation of a direct dollar spent throughout the economy because of the construction. These beneficial impacts are short-term, coincidental with the actual phasing and construction of the Project.

Alternative 6

Permanent, direct impacts to socioeconomic resources would be similar to Alternative 1. There would be no parcel acquisitions, and no disproportionately high and adverse impacts on EJ populations. As with Alternative 1, this alternative would provide permanent, beneficial impacts by providing a safe and ADA accessible multi-use path over the Little Bay.

Construction of Alternative 6 is estimated to take 1.5 years. Temporary construction-related impacts under Alternative 6 would be similar to Alternative 1; however, Alternative 6 would involve additional impacts on traffic and ambient noise levels. Traffic control measures would be utilized during the construction of the deck extension on the southbound LBB, which could result in temporary impacts to transportation through delays and congestion. Examples of typical traffic control measures include, signage, lane closures, and speed reductions, which would be removed upon completion of construction. The timing and duration of traffic control measures would be determined closer to final design. Traffic control measures would have negligible impacts to EJ populations identified in the Study Area; however, these temporary impacts would not be disproportionately high or adverse.

Temporary noise impacts associated with the replacement of superstructure and GSB Pier 1 would be more intensive than construction activities associated with Alternatives 1, 3, and 9. Although the construction duration is shorter than Alternatives 1 and 3, noise associated with constructing the new superstructure and pier would be more intensive, due to the required removal of the existing GSB superstructure and replacement of GSB Pier 1. Construction of Alternative 6 would require the use of heavy machinery which would increase ambient noise levels in the Study Area. During construction there would be temporary beneficial impacts to businesses and wages in the area during the length of construction which is approximately 1.5 years. Temporary beneficial impacts involve re-circulation of a direct dollar spent throughout the economy because of the construction. These beneficial impacts are short-term, coincidental with the actual phasing and construction of the Project.

Alternative 7

Permanent, direct impacts to socioeconomic resources would be similar to Alternative 1. There would be no parcel acquisitions, and no disproportionately high and adverse impacts on EJ populations. As with Alternative 1, this alternative would provide permanent, beneficial impacts by providing a safe and ADA accessible multi-use path over the Little Bay.

Temporary, direct impacts to EJ populations would be similar to Alternative 6. Traffic control measures would have negligible impacts to EJ populations identified in the Study Area but would not be disproportionately high or adverse.

Alternative 9 (Preferred Alternative)

Permanent, direct impacts to socioeconomic resources would be similar to Alternative 1. There would be no parcel acquisitions, and no disproportionately high and adverse impacts on EJ populations. As with Alternative 1, this alternative would provide permanent, beneficial impacts by providing a safe and ADA accessible multi-use path over the Little Bay.

Temporary, direct impacts to EJ populations would be similar to Alternative 3; however, the construction duration of Alternative 9 is shorter than Alternatives 1 and 3. Due to the removal of the GSB superstructure, noise associated with constructing Alternative 9 would be more intensive than Alternatives 1 and 3, but less intensive than Alternatives 6 and 7. In contrast to Alternatives 6 and 7, Alternative 9 would reuse the existing piers, reducing the need for

foundation work associated with impact noise activities such as pile driving. The shorter construction timeframe for Alternative 9 would involve less potential for temporary impacts on socioeconomic resources and EJ populations, when compared to Alternatives 1 and 3.

3.14.2.4 Indirect Impacts

Indirect impacts on socioeconomic resources and EJ populations were assessed in the 2007 FEIS. Indirect impacts on socioeconomic resources and EJ populations are impacts which are removed in time and distance from the immediate project but are reasonably foreseeable. Indirect impacts (or effects) include growth-inducing effects or other changes in land use, increase vehicular travel, population size, or impacts to the natural environment.

No-Action Alternative

Under the No-Action Alternative, indirect impacts on socioeconomic resources and EJ populations would occur through the lack of availability of recreational access and connectivity between Newington and Dover, across Little Bay, for non-motorized use. The lack of safety improvements to the GSB would sustain the barrier of pedestrian and bicycle access over Little Bay, potentially impacting public health through a decrease in recreational opportunities within Newington and Dover. Additionally, the lack of available non-motorized transportation opportunities could indirectly impact traffic conditions by increasing the number of vehicles traveling over the LBBs, which overtime would increase congestion and emissions in the Study Area.

Action Alternatives

Indirect impacts on socioeconomic resources and EJ populations are nearly identical across all alternatives, which are summarized below.

None of the Action Alternatives would have measurable indirect effects on socioeconomic resources. The improvements to the GSB would not cause indirect impacts from induced growth; however, all Action Alternatives would improve connectivity and non-motorized transportation modes (*e.g.,* walking and biking). Residential and commercial properties in the Study Area could see minor increases in property value, due to the improved recreational opportunities, and access to alternative transportation or commuting options.

Temporary indirect impacts would be minor on EJ populations in Strafford and Rockingham Counties. Indirect impacts would result from temporary, fluctuating increases in truck trips, and construction equipment use. Such indirect impacts would not be disproportionately high or adverse to EJ populations. With the proper implementation of public outreach, it is not anticipated that these construction-related actions would result in indirect adverse effects to EJ populations.

3.14.3 Mitigation

The Project would not result in measurable impacts to socioeconomic resources, such as parcel acquisitions; therefore, no mitigation measures are required. The Project is not anticipated to induce population growth within or outside of the Study Area, as determined through the direct and indirect impacts evaluation in the 2007 FEIS.

The EJ study areas (*i.e.*, the Impacted and Surrounding Areas) determined by the NHDOT Office of Federal Compliance show rates of elderly and low-income populations above their established thresholds. Temporary, construction-related impacts from the Project would result from increased truck traffic, vehicular and non-vehicular emissions, and noise and vibration activities; however, construction of the Project would not cause disproportionately high or adverse effects on any elderly or low-income populations in accordance with the provisions of EO 12898.

Regardless of the lack of impacts, BMPs would be adopted to minimize temporary, construction-related impacts. Public involvement efforts will be undertaken to accommodate and encourage participation by traditionally underserved groups, to ensure program access and minimize the potential for disproportionate project impacts on protected groups.

3.15 Navigation

This section evaluates the potential beneficial and negative impacts of the Project on marine navigation. The GSB spans a navigation channel, which provides access from the Great Bay to the Piscataqua River. Commercial and recreational marine transportation is prevalent in the Great Bay and Piscataqua Region, as the area is a prominent coastal expanse of New Hampshire. Because the GSB crosses the Piscataqua River, a navigable water, recreational boaters and other marine traffic pass under the GSB through a 200-foot-wide navigation channel (between GSB Piers 4 and 5) (see Photo 6 in **Appendix A**).

3.15.1 Affected Environment

The Piscataqua River channel provides important navigational access to Great Bay from the open ocean. The limits of the GSB Project are more than 3,000 feet away from the upstream limit of the Portsmouth Harbor and Piscataqua River Navigation Project (**Figure 3.15-1**), a federal navigation project maintained by the US Army Corps of Engineers. While the federal project accommodates larger vessels, navigation is limited largely to smaller commercial and recreational craft beyond the upstream limit of the channel (*i.e.,* beneath the GSB and LBBs and toward Little Bay).

The 2007 FEIS states that all tidal waters entering and leaving Great Bay, Little Bay, and their associated tributaries pass through the constriction between Dover Point and Bloody Point, resulting in unusually strong currents. As discussed in **Section 3.3**, *Floodplain and Hydrodynamics*, the completed conditions of the Spaulding Turnpike Improvements Project equaled a slight increase in current velocity within the 200-foot-wide navigation channel (between GSB Piers 4 and 5) by a maximum of 5 percent. The currents in the area of the LBBs are in the range of 10 to 12 feet per second at maximum values during both the ebb and flood tides, with the ebb values slightly greater than the flood values.

Combined with the piers of the LBBs and the GSB, these currents can create a difficult navigation problem for vessels which attempt passage through the navigation channel. Additionally, the poor condition of the GSB has become a concern to boaters and safety agencies due to the potential hazards from falling material. Under the terms of the existing permit for the GSB and

Figure 3.15-1

\\vhb\gis\proj\Bedford\523811.01\GIS\Project\SEIS\Figure 3.15-1_Navigation.mxd

0 750 1500 3000 Feet

- Approximate Work Limits
- Study Area
- Approx. Limits of Federal Project
- Town Boundaries
- Temporary Bicycle and Pedestrian Detour (Approximate)

Note: USGS topographic source map is from 1983 and therefore does not reflect all current conditions.

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Navigation

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Source: VHB, NH GRANIT, USGS 7.5-minute Topographic Quadrangles Dover East and Portsmouth, dated 1983

expanded LBB issued by the USCG, the GSB superstructure and substructure would eventually need to be removed if it is no longer used for transportation purposes.

3.15.2 Environmental Consequences

Potential impacts to navigation are described in the following section. Under all Action Alternatives, the existing horizontal navigational patterns would be unchanged, as none of the Action Alternatives would involve replacement of GSB Piers 4 and 5, between which the main navigation channel passes. As discussed further below, the most notable differences among the Action Alternatives is in the vertical clearance of the navigation channel and the estimated duration of construction.

3.15.2.1 Direct Impacts

None of the alternatives would affect the Portsmouth Harbor and Piscataqua River Navigation Project, since the limits of this project are more than 3,000 feet away from the GSB project.[58] All Action Alternatives would involve temporary, direct impacts to marine traffic due to periodic closure of the main navigation channel during construction. For public safety reasons, removal of, or work on, the center spans and other construction activities may require brief, temporary closure of the navigation channel. Final construction plans and coordination with the USCG would ultimately determine when, and how often, the 200-foot-wide navigation channel would need to be closed during construction. The timeframe of the periodic, temporary closures of the navigation channel would likely correspond with construction activities and construction timeframes, which vary among the Action Alternatives from 1.5 to 3 years. These temporary, direct impacts to marine traffic would cease after construction. Temporary causeways and trestles would not be installed in the 200-foot navigational channel.

No-Action Alternative

Under the No-Action Alternative, no construction would occur. The existing structural deficiencies of the GSB would remain unaddressed, causing safety concerns and potential direct impacts to marine traffic. Due to these concerns, on November 30, 2006, Gary Kassof of the USCG sent a letter to Marc G. Laurin, NHDOT Senior Environmental Manager, regarding the Draft Environmental Impact Statement for the Newington-Dover, 11238 project. The USCG advised NHDOT that the GSB should be removed if it no longer served a transportation purpose, and that a clear and reasonable rationale must be presented for retaining or rebuilding the structure. The letter also stipulated that the bridge permit application to be submitted for construction of the new LBB must address the need to retain or rebuild the GSB and, if the old bridge is to be removed, should include complete removal of all parts not utilized in the new structure.

Alternative 1

As shown in the **Figure 3.15-2**, Alternative 1 would maintain the existing vertical navigational clearance of the 100-foot and 200-foot navigation channels, at 47.9 feet and 34.7 feet, respectively. There would be no permanent beneficial or negative impacts to navigation. Temporary, direct impacts related to periodic closure of the navigation channel would occur under Alternative 1 during rehabilitation work on the center spans and bridge deck of the GSB. Alternative 1 would have an approximate construction duration of 3 years, which is the longest construction duration of all Action Alternatives.

Alternative 3

As with Alternative 1, Alternative 3 would maintain the existing vertical navigational clearance of the 100-foot and 200-foot navigation channels, at 47.9 feet and 34.7 feet, respectively (see **Figure 3.15-2**.) There would be no permanent beneficial or negative impacts to navigation. Temporary, direct impacts related to periodic closure of the navigation channel would occur under Alternative 3 during rehabilitation work on the center spans of the GSB. Alternative 3 would have an approximate construction duration of 2 years, which is less than the construction duration of Alternative 1, but 6 months greater than the construction durations of Alternatives 6, 7, and 9.

Alternative 6

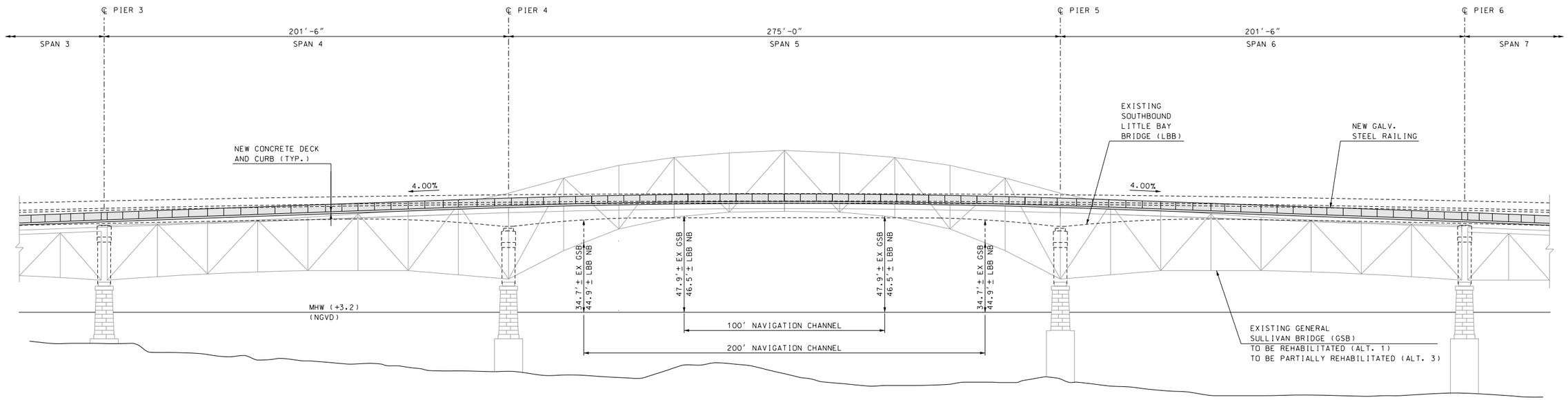
In contrast to Alternatives 1, 3, and 9, Alternative 6 would decrease the navigational clearance of the 100-foot navigation channel. As shown in **Figure 3.15-3**, Alternative 6 would decrease the existing vertical clearance of the 100-foot navigation channel by 1.3 feet, for a total vertical navigational clearance of 45.2 feet compared to the existing 46.5-foot vertical clearance of the northbound LBB and the 47.9-foot vertical clearance of the GSB. The decrease in vertical navigational clearance of the 100-foot navigation channel would result in a negative, permanent, direct impact to marine traffic. When compared to Alternatives 1, 3, and 9, Alternative 6 would result in the greatest permanent, negative impacts to the 100-foot navigation channel.

Alternative 6 would benefit marine traffic due to improvements to the width of navigational clearance within the 200-foot navigation channel. Alternative 6 would not provide greater overall accommodation for taller marine vessels; however, shorter marine vessels would have more room pass through the 200-foot navigation channel. Although Alternative 6 would increase the vertical clearance of the 200-foot navigation channel from 34.7 feet to 45.0 feet, the vertical navigational clearance of the 200-foot navigation channel is restricted by the northbound LBB (note that the existing LBB clearance within the 200-foot navigation channel is 44.9 feet, only 0.1 foot shorter than the vertical navigational clearance of Alternative 6).

In summary, the 100-foot navigation channel vertical clearance would be limited to 45.2 feet due to Alternative 6, which is a decrease in vertical navigational clearance. The 200-foot navigation channel vertical clearance would be limited to 44.9 feet due to the LBB; however, Alternative 6 would permanently benefit shorter marine vessels by providing additional room within the 200-foot navigation channel.

---

[58] Section 14 of the Rivers and Harbors Act of 1899 mandates that any use or alteration of a Civil Works project by another party is subject to the approval of ACOE. This requirement is codified in 33 USC 408 (Section 408). However, NHDOT believes that the GSB Project would not trigger Section 408 review due to the distance between the GSB project and the Portsmouth Harbor and Piscataqua River Navigation Project. See letter from Keith Cota, NHDOT to Michael Hicks, ACOE dated July 29, 2019.



NAVIGATIONAL CLEARANCES
ELEVATION: ALTERNATIVES 1 & 3—SPANS 4, 5, & 6
NOT TO SCALE

NOTE
1. VERTICAL NAVIGATIONAL CLEARANCE DIMENSIONS FOR THE NORTHBOUND LITTLE BAY BRIDGE CONTROL OVER THE SOUTHBOUND LITTLE BAY BRIDGE AND ARE DESCRIBED ON THIS SHEET ACCORDINGLY.

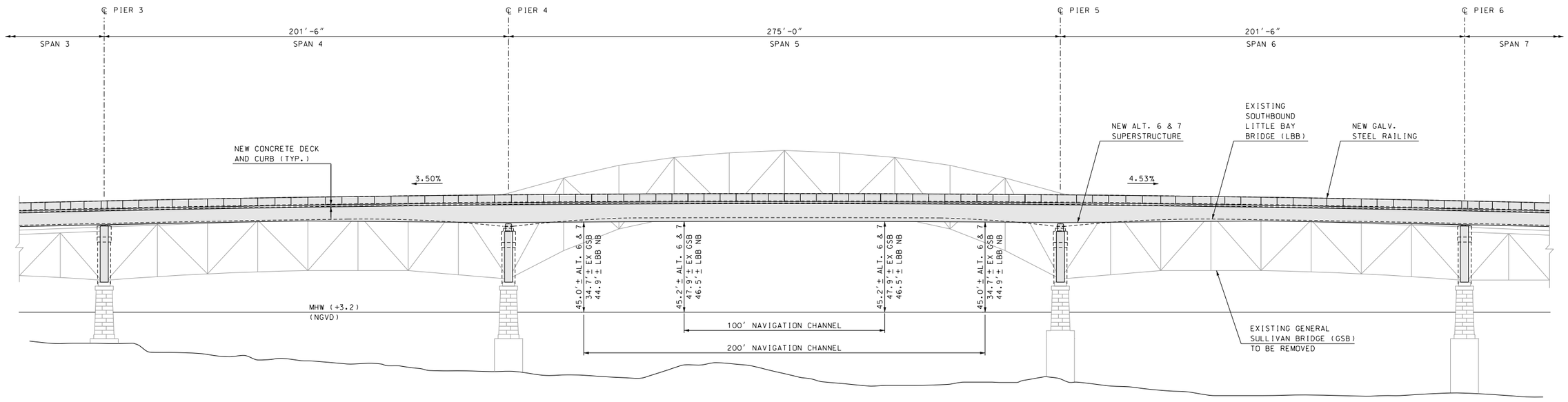
Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Navigational Clearances, Alternatives 1 and 3

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT Department of Transportation



NAVIGATIONAL CLEARANCES
ELEVATION: ALTERNATIVES 6 & 7—SPANS 4, 5, & 6
NOT TO SCALE

NOTE
1. VERTICAL NAVIGATIONAL CLEARANCE DIMENSIONS FOR THE NORTHBOUND LITTLE BAY BRIDGE CONTROL OVER THE SOUTHBOUND LITTLE BAY BRIDGE AND ARE DESCRIBED ON THIS SHEET ACCORDINGLY.

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Navigational Clearances, Alternatives 6 and 7

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Temporary, direct impacts related to periodic closure of the navigation channel would occur under Alternative 6 during removal of the GSB superstructure and construction of the new superstructure. Alternative 6 would have an approximate construction duration of 1.5 years, equivalent to the construction duration of Alternatives 7 and 9.

Alternative 7

The permanent and temporary direct impacts to navigation under Alternative 7 are the same as described under Alternative 6.

Alternative 9 (Preferred Alternative)

Alternative 9 would neither benefit nor negatively impact the vertical navigational clearance of the 100-foot navigation channel because the restriction is the northbound LBB, which is lower than both the existing GSB and Alternative 9. Within the 100-foot navigation channel, the existing LBB clearance is 46.5 feet. The existing vertical clearance of the GSB is 47.9 feet and the vertical navigational clearance of Alternative 9 would be 48.0 feet.

Within the 200-foot navigation channel, Alternative 9 would benefit marine traffic due to the improvements to the width of navigational clearances, as compared to the No-Action Alternative or Alternatives 1 and 3. As shown in **Figure 3.15-4**, Alternative 9 would benefit the 200-foot navigation channel through increasing the existing 34.7-foot vertical navigational clearance beneath the GSB. Alternative 9 would not provide greater overall accommodation for taller marine vessels; however, shorter marine vessels would have more room pass through the 200-foot navigation channel, resulting in a permanent benefit. Under the "V-Frame" design option, the vertical navigational clearance would increase by 9.6 feet, for a new total clearance of 44.3 feet. Similarly, the "Super Haunch" design option would benefit the 200-foot navigation channel through increasing the vertical navigational clearance beneath the GSB by 10.2 feet, for a new total clearance of 44.9 feet.

In summary, the 100-foot navigation channel vertical clearance would remain limited to 46.5 feet due to the LBB. Under Alternative 9 "Super Haunch" design option, the 200-foot navigation channel vertical clearance would remain limited to 44.9 feet due to the LBB; however, Alternative 9 "Super Haunch" design option would permanently benefit shorter marine vessels by providing additional room within the 200-foot navigation channel. Under Alternative 9 "V-Frame" design option, the 200-foot navigation channel vertical clearance would be limited to 44.3 feet due to the "V-Frame" design; however, Alternative 9 "V-Frame" design option would permanently benefit shorter marine vessels by providing additional room within the 200-foot navigation channel.

Temporary, direct impacts related to periodic closure of the navigation channel would occur under Alternative 9 during removal of the GSB superstructure and construction of the new superstructure. Alternative 9 would have an approximate construction duration of 1.5 years, equivalent to the construction duration of Alternatives 6 and 7.

3.15.2.2 Indirect Impacts

Indirect impacts occur at some future time other than a direct impact. All Action Alternatives would improve navigation safety for marine traffic, maintenance crews, and emergency responders, as each Action Alternative would address the structural deficiencies of the GSB. In addition, Alternatives 6, 7, and 9 would indirectly benefit marine transportation in the Great Bay and Piscataqua Region by permanently increasing the vertical clearance within the 200-foot navigational channel beneath the GSB and LBBs. Alternatives 6 and 7 would increase the navigational clearance by 10.2 feet; Alternative 9 would increase the navigational clearance by 9.6 feet under the "V-Frame" option, or 12.8 feet under the "Super Haunch" design option. This would allow for larger marine vessels to pass through a wider navigational channel, which currently are restricted to the 100-foot channel due to existing height restrictions of the 200-foot channel.

3.15.3 Mitigation

Potential periodic closures of the navigational channel during construction will be closely coordinated with the USCG, the NH Port Authority, and the NH Marine Patrol to minimize impacts to marine traffic. To facilitate early coordination with the USCG, a Bridge Project Initiation Request as outlined in Section 2 of the Bridge Permit Application Guide (Commandant Publication P16591.3D), published by the USCG in July 2016, was provided by NHDOT to the USCG on November 12, 2019 (included in **Appendix J**). On November 19, 2019, the USCG confirmed that NHDOT's Bridge Project Initiation Request met all requirements of the Bridge Permit Application Guide. NHDOT was given permission to submit draft bridge permit application materials as described in the Application Guide, including more detailed information as the existing site conditions and limitations are investigated.[59]

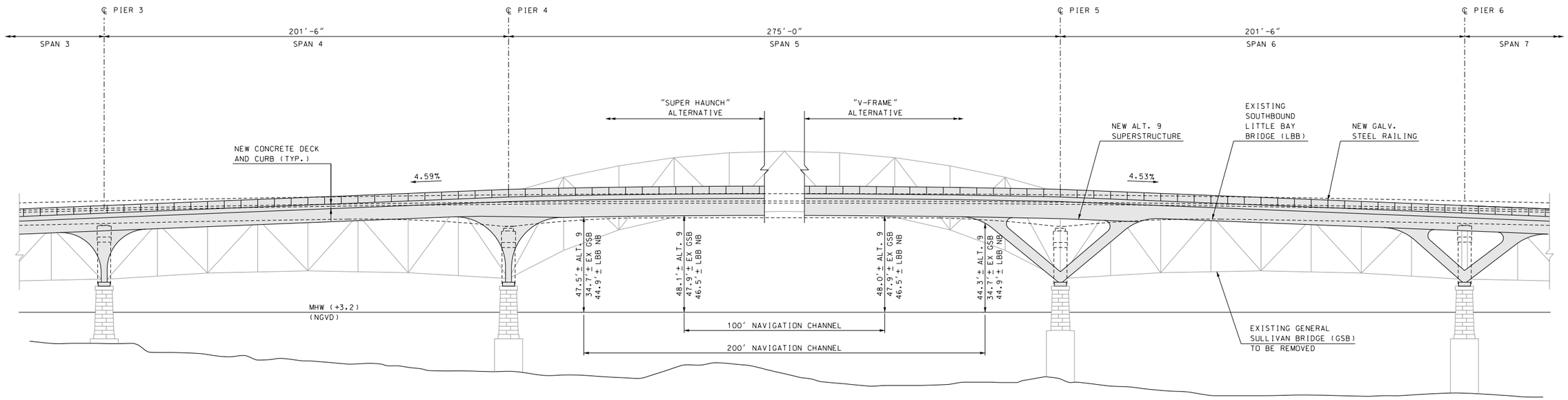
3.16 Relationship of Local Short-term Uses vs. Long-term Productivity

This section assesses and compares the potential short-term uses of the environment to the maintenance and enhancement of long-term productivity. Short-term impacts and uses of the environment are generally associated with the construction period. For example, a short-term, localized impact could be an increase in noise during construction, which could result in inconvenience to local residents. An example of long-term productivity could be long term economic benefits by enhancing travel connection points for both motorists, pedestrians, and bicyclists.

Other sections within **Chapter 3**, *Affected Environment and Environmental Consequences*, describe specific impacts to resource areas.

The relationship between short-term uses and long-term productivity would be similar for all Action Alternatives. Short-term impacts during construction would be offset through mitigation measures as well as the long-term benefits associated with the Project.

[59] A USCG permit review would require a Coastal Zone Management Consistency Determination and may require a Water Quality Certificate.



NAVIGATIONAL CLEARANCES
ELEVATION: ALTERNATIVE 9—SPANS 4, 5, & 6
NOT TO SCALE

NOTE
1. VERTICAL NAVIGATIONAL CLEARANCE DIMENSIONS FOR THE NORTHBOUND LITTLE BAY BRIDGE CONTROL OVER THE SOUTHBOUND LITTLE BAY BRIDGE AND ARE DESCRIBED ON THIS SHEET ACCORDINGLY.

Newington-Dover 11238S | Newington and Dover, NH

General Sullivan Bridge Supplemental EIS

Navigational Clearances, Alternative 9

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Short-Term Impacts

The No-Action Alternative would result in the fewest short-term uses of resources, as no construction would occur. However, the No-Action Alternative results in greater adverse impacts to long-term productivity, as further explained below.

Short-term impacts of the Action Alternatives would be associated with construction: noise, water quality, occupancy of land, visual impacts, hydrodynamics, marine traffic, and temporary impacts to air quality. **Sections 3.1** to **3.15** of **Chapter 3**, *Affected Environment and Environmental Consequences* identify specific mitigation strategies and BMPs to offset temporary, short-term impacts due to construction. Short-term uses associated with the Action Alternatives include:

- **Temporary noise impacts due to construction**. The types of construction activities that would generate noise include pile driving, and other construction-related activities. The anticipated intensity and duration of construction varies for each of the Action Alternatives, ranging from 1.5 years to 3 years.
- **Temporary impacts to water quality are possible during earthwork activities**. Erosion and sedimentation would be minimized during construction through the use of BMPs to avoid impacts to aquatic communities.
- **Temporary occupancy of land**. Approximately 1.6 acres total (0.5 acre of State land in Newington and 1.1 acres of State land in Dover) would be temporarily occupied and fenced off for construction access, laydown, and staging (**Appendix D**). The timeframe of the temporary occupancy corresponds with the construction timeframe, which varies among the Action Alternatives from 1.5 to 3 years. Hilton Park users could utilize other parks in Dover, in addition to the entire east side of Hilton Park in response to the short-term impact to Hilton Park. As discussed in **Section 3.9**, *Parks, Recreation, and Conservation Lands*, the Action Alternatives vary in the potential to restrict movement between the west and east sides of Hilton Park.
- **Temporary visual impacts associated with construction staging**. Fencing or barriers around construction staging areas are necessary to ensure public safety during construction and the protection of equipment and materials.
- **Temporary impacts to floodplain and hydrodynamics**. During construction, impacts would occur due to the placement of the temporary stone causeways and trestles in the Little Bay. The placement of these structures would have minor impacts on floodwaters.
- **Temporary impacts to marine traffic due to periodic closure of the main navigational channel**. For public safety reasons, removal of, or work on, the center spans and other construction activities may require brief, temporary closure of the navigational channel; closure would be planned in close coordination with the USCG.
- **Temporary air quality impacts due to increase of emissions during construction**. Construction of the Project would temporarily result in increased pollutant emissions associated with construction equipment and earth moving activities. Emissions from the operation of construction equipment would include nitrogen oxides, sulfur oxides, carbon monoxide, and particulate matter.

These and other temporary impacts (identified in **Sections 3.1** through **3.15**) would cease after construction. In comparison, short-term benefits of construction would include additional employment and an additional source of revenue to the local service industry. Increased local spending during construction would also benefit the economy of the communities in the corridor.

Long-Term Impacts

No-Action Alternative

The No-Action Alternative would result in greater impacts to long-term productivity than the Action Alternatives. Impacts on long-term productivity include negative impacts to pedestrian and bicyclist mobility and accessibility. The No-Action Alternative would not resolve the barrier to connectivity between Dover and Newington. Without a connection across Little Bay, pedestrian and bicycle routes would be limited between Durham or Dover and Newington or Portsmouth. In addition, the existing structural deficiencies of the GSB would remain unaddressed, causing safety concerns and potential long-term impacts to marine traffic.[60]

Action Alternatives

All Action Alternatives assist in the long-term productivity of the area as each alternative would address the structural deficiencies of the GSB and current lack of a permanent non-motorized connection across Little Bay. The Action Alternatives would improve public safety for pedestrians and bicyclists, marine traffic, maintenance crews, and emergency responders. Providing safe, non-motorized access across Little Bay would result in a long-term beneficial effect that would outweigh the short-term impacts resulting from construction.

All Action Alternatives would support long-term economic benefits due to the maintenance and enhancement of bicycle connectivity in the local area. The March 2015 white paper produced by FHWA on the economic benefits of nonmotorized transportation concluded, "*…the economic impact of bicycling and walking includes avoided societal costs related to a mode shift from automobile travel to bicycling and walking (e.g., reduction of greenhouse gas and other emissions, traffic enforcement, noise impacts, and safety)*."[61] Additionally, according to the 2015 white paper, there are a variety of potential economic benefits of bicycle and pedestrian infrastructure, including: commute cost savings for bicyclists and pedestrians, direct benefits to bicycle and tourism-related businesses, indirect economic benefits due to changing consumer behavior, and individual and societal cost savings associated with health and environmental benefits.

The State of New Hampshire offers over 470 miles of trails and greenways. The NHDOT, in partnership with others, is developing New Hampshire's first Statewide Pedestrian and Bicycle Transportation Plan. The website developed for the Plan states the need to improve pedestrian and bicycle safety and encourage walking and cycling for both recreation and transportation in New Hampshire. The Action Alternatives are consistent with and would support these goals

[60] Note, however, that the USCG would likely require removal of the GSB if it no longer serves a transportation purpose. See November 30, 2006 letter from Gary Kassof, USCG, to Marc G. Laurin, NHDOT, regarding the Draft Environmental Impact Statement for the Newington-Dover, 11238 Project.

[61] Federal Highway Administration. 2015. *White Paper: Evaluating the Economic Benefits of Nonmotorized Transportation.* US Department of Transportation. FHWA-HEP-15-027.

through reestablishing access between Dover and Newington and enhancing the larger bicycle route network in the seacoast area. The final *New Hampshire Statewide Pedestrian and Bicycle Transportation Plan* is anticipated to be completed in November 2019.

As described in **Section 3.3**, *Floodplain and Hydrodynamics*, Alternatives 6 and 7 would remove and replace the GSB's Pier 1, causing a permanent change within the Little Bay and Great Bay Estuary system. The permanent new pier may result in changes to the hydrodynamic conditions, for example, tidal maxima, currents, and wave patterns in the intertidal zone and other areas surrounding the new pier. However, the size of this area would be small in relation to the overall floodplain area and would not affect the long-term productivity of the Little Bay and Great Bay Estuary. Alternatives 1, 3, and 9 do not propose permanent changes to structures in the intertidal zone; therefore, these three alternatives would not affect the long-term productivity of the Little Bay and Great Bay Estuary.

Alternatives 6, 7, and 9 would benefit long-term productivity for marine traffic due to the improvements to navigational clearances of the 200 foot channel, as compared to the No-Action Alternative or Alternatives 1 and 3. The increase in the vertical clearance above the water surface would provide larger marine vessels with more maneuverability through the bridge crossing. This long-term beneficial effect of improvements to navigational clearances under Alternatives 6, 7, and 9 would outweigh the short-term impacts to marine traffic resulting from periodic temporary closure of the navigational channel during construction.

With regards to long-term impacts on historic structures, Alternatives 3, 6, 7, and 9 would result in a permanent loss of, or adverse effects to, the GSB. Appropriate mitigation to resolve adverse effects will be established in a new Section 106 MOA, which would be signed by FHWA, NHDHR, NHDOT and anticipated to be signed by the Consulting Parties.

3.17 Irreversible and Irretrievable Commitment of Resources

Implementation of the Project would involve a commitment of a range of natural, physical, human, and fiscal resources. Fossil fuels, labor, and construction materials such as cement, steel, timber decking, aggregate, and bituminous material would be expended. Additionally, labor and natural resources would be used in the fabrication and preparation of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use would not have an adverse effect upon continued availability of these resources. Any construction would also require a substantial one-time expenditure of both state and federal funds, which are not retrievable.

The decision to commit these resources is based on the concept that residents in the immediate area, region, and state, as well as visitors or tourists, would benefit from the reestablished pedestrian and bicyclist access between Dover and Newington. This benefit is expected to outweigh the commitment of these resources.

3.18 Cumulative Impacts

Cumulative impacts are defined as "impacts that result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, without regard to the agency (Federal or non- Federal) or individual who undertakes such other actions." (40 CFR 1508.7) Cumulative impact analyses capture the effects resulting from the proposed action in combination with the effects of other actions completed or future actions in the same geographic area. Cumulative impacts can result from individually small or minor impacts but collectively equal more significant adverse impacts over time.

The analysis of cumulative impacts includes projects within the Study Area that are were completed in the past, are currently under construction, or are reasonably foreseeable—in other words, projects that are planned or programmed for construction within the time frame of this analysis or which are likely to occur. Reasonably foreseeable actions do not include those actions that are highly speculative or indefinite. (43 CFR 46.30)

Cumulative impacts can include both direct and indirect effects. Direct effects occur at the same time and place as when a Proposed Action is being implemented. (40 CFR 1508.8) These effects are discussed in previous section of this chapter, and may include noise impacts from construction equipment, traffic disruptions or detours, impacts to natural resources, or property impacts. Indirect effects are caused by the action and are later in time or further removed in distance (from the Project) but are still reasonably foreseeable, and are also discussed above. Indirect effects can also include growth-inducing impacts, changes in land use patterns, increased population density or growth rates, and impacts on natural resources. (40 CFR 1508.7)

Because this section evaluates the cumulative impacts for multiple resources, the structure of this section differs from the previous sections of **Chapter 3** that focused on impacts on a single resource area.

The 2007 FEIS evaluated the cumulative impacts of the Spaulding Turnpike Improvements, which have the potential to cause more cumulative impacts from the construction of additional lanes through the Seacoast Region of New Hampshire. As the Project does not pose any changes to roadway or highway infrastructure, the potential for cumulative impacts is far less.

3.18.1 Affected Environment

The evaluation of cumulative effects encompasses the geographic area affected by the Project because cumulative effects are focused on those areas where the impacts of the Project overlap with impacts of other past, present, and reasonably foreseeable future projects. These impacts are evaluated within the Study Area used for all resources evaluated in the DSEIS.

3.18.1.1 Historical Development Context

The larger Newington-Dover, Spaulding Turnpike Improvements Project has been under construction since 2010. The purpose of the Spaulding Turnpike Transportation Improvements Project is to improve long-term mobility and safety along the Spaulding Turnpike between Exit 1 and the Dover toll plaza, just north of Exit 6, which was designed to be accomplished through

five contracts, or phases of construction.[62]

- Contract L – New Little Bay Bridge and Wentworth Terrace
- Contract O – Rehabilitate Little Bay Bridge
- Contract M – Newington Exits 3 and 4
- Contract Q – Dover and Exit 6
- Contract S – Rehabilitate General Sullivan Bridge (Note that this DSEIS is reevaluating this contract.)

Past development in Strafford and Rockingham Counties were key drivers in the need for the Spaulding Turnpike Improvements. The Rockingham Planning Commission's 2015 Regional Master Plan states, "… *[the Spaulding Turnpike] carries commuter and tourist traffic, and serves as a gateway from the Seacoast to the Lakes Region and the east side of the White Mountains. This facility is currently being improved between Exits 3 and 6 by widening the bridges and roadway to 4 lanes in each direction and reconfiguring the interchanges. Additional work will occur on connecting roadways to improve traffic flow on and off of the highway*." The larger Newington-Dover, Spaulding Turnpike Improvements Project presented a major change in roadway infrastructure in this region of New Hampshire, and with these changes was the potential for growth impacts. Therefore, the 2007 FEIS included an in-depth cumulative impacts assessment.

In the 2007 FEIS, anticipated impacts from induced growth were evaluated in Strafford, Rockingham and Carroll Counties, spanning 33 municipalities. The time period considered for the analysis was 35 years prior (1970 to 2005) and 20 years into the future (2005 to 2025). The past, present and future actions outlined in the 2007 FEIS analysis are summarized below for two reasons: 1) the replacement of the GSB under Alternative 9 is anticipated to start before 2025, which is within the time period analyzed in the 2007 FEIS, and 2) the GSB Project would not induce population or development growth because the bridge would solely function for pedestrian and non-motorized use. Increased development is strongly related to economic expansion, but because the bridge would only serve non-motorized transportation, it is not anticipated that the GSB Project would directly cause development or urbanization. Any increased development in the area would likely occur with or without the GSB Project.

As part of the NEPA process for the larger Newington-Dover, Spaulding Turnpike Improvements Project, the 2008 ROD stipulated a number of mitigation measures to avoid, lessen, remedy, or compensate for impacts. The mitigation measures outlined in the 2008 ROD were identified to address the Spaulding Turnpike Improvements Project's direct and indirect effects, which in turn, minimized, rectified, or compensated for negative cumulative impacts. These mitigation measures and commitments were determined through coordination with Federal and state agencies with jurisdiction over the resources in question. For the GSB Project, final mitigation measures and environmental commitments will be memorialized in the Supplemental Record of Decision.[63]

[62] Refer to the project website (http://www.newington-dover.com/index.html) for further information on the contract phases of the Spaulding Turnpike Transportation Improvements Project.

[63] NHDOT and FHWA may complete the NEPA environmental review process by issuing a single document that consists of the Final SEIS and SROD unless FHWA determines that statutory criteria or practicability considerations preclude issuance of such a combined document.

3.18.1.2 Present and Future Development Context

The cumulative impacts analysis considered other projects within the Study Area that are currently under construction or are reasonably foreseeable to be constructed in the future. The impact analysis accounts for changes from other projects within the time frame that the Project would contribute to cumulative effects on other resources. The analysis considered other transportation projects, other major non-transportation development proposals, and population and employment growth forecasts.

According to Newington's *Town Planner Report – Spring 2019*, several projects are planned within Newington.[64] However, none of the listed projects are within the GSB Project's Study Area. The City of Dover's Master Plan does not indicate any proposed development or projects within the Study Area limits in Dover. Hilton Park is included in the Recreation Chapter of the Master Plan, and a few public survey responses recorded in the Recreation Chapter indicate a desire for improvements to Hilton Park; however, the Recreation Chapter does not present proposed work to be done within Hilton Park. As stated above, any increased development in the surrounding area of Dover and Newington would likely occur with or without the GSB Project, and not as a result of the pedestrian bridge improvements.

Based on the current trends in population growth and employment opportunities, it can be anticipated that the Seacoast Region of New Hampshire would continue to see development or changes in land use. The cumulative impacts analysis in the 2007 FEIS examined the future land consumption (in acres) from the No Build and Build Alternatives (the Spaulding Turnpike Improvements). This analysis indicated that more than 21,000 acres of land within the regional study area would be expected to be converted from undeveloped to developed land by the year 2025, even without the completion of the Spaulding Turnpike Improvements.

The growth of the Portsmouth-Rochester metropolitan area has driven past, present and future developments. Key developments in the area include, the closure of Pease Air Force Base and its redevelopment as the Pease International Tradeport in Portsmouth/Newington, regional retail expansion in Rockingham County, Spaulding Turnpike Improvements: Exits 11-16 (in Rochester), and Spaulding Turnpike Improvements: Exit 10 (Dover). The integration of communities and development in the Seacoast Region is evident in the commuting patterns of residents; over three quarters of people living in the metropolitan study area also work within the area.

3.18.2 Environmental Consequences of Cumulative Impacts

As part of the cumulative impacts analysis, NEPA and CEQ require that the impact results from a project be compared to past, present, and reasonably foreseeable future actions. AASHTO interprets reasonably foreseeable in the following manner: "*Impacts that are merely possible, or*

[64] Town of Newington Planning Department. 2019. *Town Planner Report Spring 2019*. Accessed from https://www.newington.nh.us/sites/newingtonnh/files/uploads/town_planner_report_spring_2019.pdf. Accessed on July 29, 2019.

that are considered 'speculative', are not reasonably foreseeable."[65] The following sections describe the contribution of the GSB Project to the overall permanent cumulative impacts on resources from other past, present, and reasonably foreseeable future actions. The methods and data sources used for determining potential cumulative impacts are resource-specific.

Cumulative impacts are most commonly associated with the change in land use from induced growth impacts (*e.g.*, undeveloped land to residential or commercial properties). The addition of lanes or expansion of highway infrastructure can result in the conversion of land, new development, and economic growth outside the immediate project area. Induced growth impacts are not anticipated to occur in Newington and Dover, as the Project proposes to provide pedestrian and bicycle access between Newington and Dover. Improvements to the pedestrian and bicycle infrastructure in Newington and Dover would not result in land use changes, or future growth impacts outside the scope of the 2007 FEIS analysis.

If the GSB Project does not have the potential to have a direct or indirect impact on a resource, the potential for cumulative impacts on that resource does not exist. A majority of the impacts identified are short-term and associated with the construction period, as described in the resource sections of **Chapter 3**. Additionally, the implementation of mitigation measures and BMPs during construction would reduce any anticipated short-term impacts. None of the Action Alternatives would result in permanent impacts to several resources analyzed in this DSEIS. Therefore, there would be no potential for the GSB Project to contribute to cumulative impacts on the following resource areas:

- Wetlands and Surface Waters
- Floodplains and Hydrodynamics
- Farmlands
- Noise
- Hazardous Materials
- Social and Economic Resources
- Water Quality and Pollutant Loading
- Threatened and Endangered Species
- Air Quality
- Parks, Recreation and Conservation Lands
- Construction Impacts

The Project may contribute to cumulative impacts where permanent impacts to resources are anticipated to occur. Given the analyses presented in **Chapter 3**, the cumulative impact analysis considered the potential cumulative impacts on the following specific resources: marine resources, cultural resources, and visual resources. Each resource was evaluated for the effects (adverse and beneficial) of the Project, plus the effects of other past, present, and reasonably foreseeable actions. The direct and indirect effects on marine resources, cultural resources, and visual resources are included in other sections of **Chapter 3** but are also summarized here in **Section 3.17**, *Cumulative Impacts*, to clarify the total impact of the Project in context of all other actions. See **Section 3.4**, *Wildlife and Fisheries*, **Section 3.12**, *Visual Resources*, and **Section 3.10**, *Cultural Resources* for the additional discussions on the Project's impacts to these resource areas.

[65] American Association of State Highway and Transportation Officials. 2016. *Practitioner's Handbook #12: Assessing Indirect Effects and Cumulative Impacts under NEPA*. Accessed from https://environment.transportation.org/center/products_programs /practitioners_handbooks.aspx. Accessed on July 30, 2019.

3.18.2.1 Natural Resources

Reasonably Foreseeable Future Impacts (without the Project)

No foreseeable future projects involve development or construction within the limits of the Study Area in Little Bay. Therefore, effects to natural resources are not anticipated to occur as a result of any foreseeable future projects.

Cumulative Impacts

Inter- and subtidal habitat is present within the Study Area, including a 2.8-acre blue mussel shellfish bed. The mussel bed was identified by the NHDES Shellfish Program in 2013.[66] Cumulative impacts to these habitat features would result from the construction of Alternatives 6 and 7, from the permanent changes to marine habitats from the removal and replacement of GSB Pier 1. Although these changes are permanent, it is likely that the blue mussel beds impacted would rebound to existing conditions overtime, however the changes to marine habitat from Alternatives 6 and 7 have the potential to impact shellfish growth in the immediate area. Cumulative impacts are not anticipated to occur from Alternatives 1, 3 and 9, since these alternatives do not propose permanent changes in Little Bay.

The causeways and trestles would be in place throughout the duration of construction for all Action Alternatives, which is anticipated to take approximately 3 to 1.5 years. The causeway and trestle system in Dover would impact approximately 0.2 acre of the blue mussel bed. Standard marine construction BMPs would be implemented wherever feasible to mitigate the potential for the suspension of sediments and consequent siltation. Post-construction the areas temporarily impacted by the causeways and trestles will be restored. These temporary impacts would not result in permanent or future impacts to blue mussel habitat or growth.

3.18.2.2 Cultural Resources

Reasonably Foreseeable Future Impacts (without the Project)

As determined in **Section 3.10**, *Cultural Resources*, the No-Action Alternative and Alternatives 1, 3, 6, 7, and 9 all result in no effect to the National Register-eligible Ira F. Pinkham House/Wentworth Summer Residence or to the National Register-listed Newington Railroad Depot and Toll House property. Therefore, the cultural resource of concern for this cumulative impact evaluation is the GSB.

No foreseeable future projects involve development within the limits of the Study Area; the geographically closest planned project is approximately 0.4 mile south of the GSB abutment where Doloma Investment of Portsmouth, Inc. proposes construction of a four-story, 83-room hotel at 141 Shattuck Way in Newington. Therefore, adverse effects to the GSB are not anticipated to occur as a result of any foreseeable future projects.

[66] Morrissey, E., and C. Nash. 2013. *Identifying Blue Mussel* (Mytilus edulis) *Resource in Coastal New Hampshire*. NH Department of Environmental Services' Shellfish Program. Accessed from https://www.des.nh.gov/organization/divisions/water/ wmb/shellfish/redtide/aquaculture.htm. Accessed on January 14, 2019.

Any potential impacts that a future project undertaken within the Study Area may have on cultural resources would be minimized through compliance with historic preservation regulations. Federally-assisted projects would be subject to review under Section 106 of the NHPA and New Hampshire's historic preservation laws and regulations. A privately funded development may be reviewed if the development was located within a local historic district or applied to a locally designated property. Privately funded developments are not typically regulated under federal regulations.

The GSB is historically significant on a national level. There are additional pending projects that may impact other examples of continuous truss highway bridge designs in the United States. The USACE recently completed a Major Rehabilitation Evaluation Report for the Sagamore Bridge carrying MA Route 6 over the Cape Cod Canal in Sagamore, MA, and the Bourne Bridge carrying MA Route 28 across the Cape Cod Canal in Bourne, MA, often referred to as the "Cape Cod Canal bridges." Based upon recommendations of the report, the USACE proposed to replace the Cape Cod Canal bridges. In 1930, the Strauss Engineering Company completed the Quincy Memorial Bridge, carrying US 24 over the Mississippi River in Quincy, Illinois. An evaluation is underway for the potential replacement of this bridge.

Cumulative Impacts

As discussed in **Section 3.10**, *Cultural Resources*, Alternative 1 would not result in adverse effects to the GSB. The rehabilitation of the GSB would include the replacement of the bridge deck and repairs to the substructure and truss superstructure to support loading requirements. In-kind replacement of braces and other structural and substructure elements would not be considered adverse effects, and would have an overall beneficial effect of saving the bridge. The new pedestrian railing would be designed to have minor physical and visual impact, so as not to diminish the historic materials and aesthetic of the GSB. Alternative 1, when considered with other past, present, and reasonably foreseeable projects, would not result in cumulative impacts to the GSB.

Under Alternatives 3, 6, 7, and 9, the Project would result in adverse, direct, and permanent effects to the GSB because of the alteration or removal of the superstructure. The adverse effects of Alternatives 3, 6, 7, and 9, when considered with other past, present, and reasonably foreseeable projects, would result in a cumulative impact to historic resources in the area, since the removal of the GSB represents a loss of an important historic property in the region. The replacement of the historic bridge would result in the physical loss of an early, nationally-significant example of its engineering design; dwindling of the bridge type in New Hampshire and nationally; and the loss of this major link in the transportation network of the region, whose evolution is intertwined with the history of the region itself.

The GSB retains its historic significance, and this significance has been enhanced by the subsequent loss of comparable bridges, namely the Lake Champlain Bridge (Crown Point, NY and Chimney Point, VT), the Sarah Mildred Long Bridge (Portsmouth, NH and Kittery, ME), the Sellwood Bridge (Portland, OR), the US 36 Missouri River Bridge (St. Joseph, MO and Elmwood, KS), and the potential replacement of the Quincy Memorial Bridge (Quincy, IL) and the replacement of the Cape Cod Canal bridges

3.18.2.3 Visual Resources

Reasonably Foreseeable Future Impacts (without the Project)

Section 3.12, *Visual Resources*, identifies the visual resources that define the project area, which include the GSB, LBBs, Hilton Park, Piscataqua River, Little Bay, marine vessels and marinas, as well as the coastal shorelines of Newington and Dover. Future development proposed by others could diminish the quality of the aforementioned visual resources in the Newington and Dover area if the development created visual intrusions or other such changes to visual resources. However, no foreseeable future projects involve development within the limits of the GSB Project Study Area.

As stated above, the geographically closest planned project is approximately 0.4 mile south of the GSB abutment at 141 Shattuck Way in Newington. Due to its location, the potential development at 141 Shattuck Way is unlikely to impact the visual resources that exist within or can be seen from the GSB Project Study Area (*e.g.*, Hilton Park, the Piscataqua River, or coastal shoreline views). The GSB Project is unlikely to encourage further development within or adjacent to the Study Area because the bridge would only serve pedestrians and bicyclists, not vehicular traffic.

Cumulative Impacts

All Action Alternatives would conserve the natural landscape setting of the Piscataqua River and the Little Bay. None of the Action Alternatives would permanently reduce visibility or aesthetics of natural resources in the area. There would be no removal of trees or other established vegetation. Similarly, none of the Action Alternatives would degrade scenic views of the Piscataqua River and the Little Bay from areas of recreational activities (*e.g.*, boaters on the Piscataqua River or viewers in Hilton Park looking south to Little Bay or the Piscataqua River). Natural terrain features adjacent to and within the Study Area would not be altered or changed by the Project.

As discussed in **Section 3.12**, *Visual Resources*, Alternatives 1 and 3 would cause the least changes to the visual environment because the bridge would be rehabilitated. The notable truss design would be retained; therefore, under Alternatives 1 and 3, visual impacts would be negligible. It is anticipated that Alternatives 1 and 3, in combination with other reasonably foreseeable future actions, would result in negligible cumulative impacts on visual resources within the Study Area because the bridge's appearance would be fully retained. Views to the Piscataqua River, Little Bay, and Hilton Park from the GSB would also be retained.

Alternatives 6, 7, and 9 propose a new bridge structure to replace the GSB superstructure. Given the developed nature of the Study Area, specifically the immediate area surrounding the LBBs, a new bridge structure would be visually consistent with the recently constructed LBBs. However, as discussed in **Section 3.12**, *Visual Resources*, Alternatives 6, 7, and 9 would cause the most changes to the visual environment due to the addition of a new bridge design which would not be in the form of a truss. Therefore, Alternatives 6, 7, and 9 would cause adverse impacts due to the removal of the existing GSB and its replacement with a bridge of a different appearance. At the same time, removal of the exiting truss would open up views to the Piscataqua River, Little Bay, and Hilton Park, thereby benefiting pedestrians and bicyclists.

As discussed in **Section 3.12**, *Visual Resources*, Alternative 6 would cause the most adverse direct impacts on visual resources due to the different appearance of the new bridge, and the installation of chain link fencing which would limit pedestrian's and bicyclists' views of the Piscataqua River, Little Bay, and Hilton Park. Alternative 6 would result in moderate cumulative impacts on visual resources within the Study Area.

Alternatives 7 and 9 would result in minor cumulative impacts on visual resources within the Study Area. As with Alternative 6, Alternatives 7 and 9 would introduce a new, prominent structure into the viewshed that would be visually inconsistent with the GSB truss, but visually consistent with the new LBB structures. However, Alternatives 7 and 9 would cause minor beneficial direct impacts on views to the Piscataqua River, Little Bay, and Hilton Park.

3.18.3 Conclusion

This Project is intended to provide long-term pedestrian and bicycle access over Little Bay. The Project would not result in induced growth that was not previously analyzed in the 2007 FEIS. Any future or proposed developments discussed in this document or the 2007 FEIS are still dictated by broader market demand and supply characteristics, financial feasibility and developer capacities.

It is anticipated that overtime the improvements to the pedestrian bridge would benefit residents and visitors in the Newington and Dover areas. Minor beneficial impacts on public health, parks and recreation access, and socioeconomics resources would result from the Project. The beneficial impacts of the Project include, but are not limited to, increased active and passive recreational opportunities, improved safety, increased connectivity of parks and open space, beneficial impacts on persons with disabilities because the pedestrian bridge would meet current accessibility standards, and alternative commuting or transportation options. These beneficial impacts are minor and more difficult to quantify, (*i.e.,* more qualitative in nature).

Cumulative effects to the environment can be managed through the application of existing environmental and planning regulations or the adoption of new public policies to ensure sustained environmental quality for current and future residents of Newington and Dover and the surrounding areas.

4

Programmatic Section 4(f) Evaluation for the Use of Historic Bridges

4.1 Introduction

This Section 4(f) evaluation documents the analysis undertaken to determine compliance with Section 4(f) of the USDOT Act of 1966. Pursuant to Section 4(f) of the USDOT Act of 1966, 49 USC 303(c), and Section 18(a) of the Federal Highway Act of 1968, 23 USC 138 (as amended by the Federal-Aid Highway Act of 1983), the Secretary of Transportation shall not approve any program or project which "…requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance as so determined by federal, state, or local officials having jurisdiction thereof, or any land from a historic site of national, state, or local significance as so determined by such officials unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreation area, wildlife and waterfowl refuge, or historic site resulting from such use."

As defined in 23 CFR 774.17, the FHWA considers the following criteria to determine whether an action would result in a "use" of a Section 4(f) property, which can occur in one of three ways:

- When land is permanently incorporated into a transportation facility;
- When there is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose and determined by the criteria set forth at 23 CFR 774.13(d); or,
- When there is a constructive use of a Section 4(f) property as determined by the criteria set forth at 23 CFR 774.15.

If an alternative avoids Section 4(f) properties and is prudent and feasible to construct, then it must be selected. If no prudent and feasible avoidance alternative exists, only the alternative that causes the least overall harm and includes all possible planning to minimize harm to Section 4(f) properties may be approved.

As discussed further in this chapter, this Section 4(f) Evaluation follows the FHWA Programmatic Section 4(f) Evaluation for *Projects that Necessitate the Use of Historic Bridges*[67] since, as discussed below, the only Section 4(f) "use" is the General Sullivan Bridge (GSB), a historic bridge which is eligible for listing in the National Register of Historic Places. FHWA approval of this Programmatic Section 4(f) Evaluation is subject to the determination that the Project meets the following criteria:

1. The bridge is to be replaced or rehabilitated with Federal funds.
2. The project will require the use of a historic bridge structure which is on or is eligible for listing on the National Register of Historic Places.
3. The bridge is not a National Historic Landmark.
4. The FHWA Division Administrator determines that the facts of the project match those set forth in the sections of the Programmatic Evaluation labeled Alternatives, Findings, and Mitigation.
5. Agreement among the FHWA, the State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation has been reached through procedures pursuant to Section 106 of the National Historic Preservation Act of 1966 (Section 106).

Based on substantial engineering analysis and public input, the NHDOT has identified the replacement of the GSB truss with a new superstructure, on the existing piers, as the Preferred Alternative to provide a connection between Dover and Newington for bicycle and pedestrian users. This programmatic Section 4(f) evaluation provides the basis for a programmatic Section 4(f) approval by FHWA, demonstrating that there are no feasible and prudent avoidance alternatives to the use of the GSB and that the preferred alternative includes all possible planning to minimize harm resulting from such use. This evaluation also outlines coordination that has occurred and provides a list of draft mitigation measures.

4.2 Proposed Action

As described in **Chapter 2**, *Alternatives*, the Preferred Alternative for the Project has been determined to be Alternative 9: Superstructure Replacement - Girder Option, which involves the complete removal and replacement of the GSB superstructure. Alternative 9 has several advantages over other alternatives, which led NHDOT to identify this alternative as the Preferred Alternative. Under Alternative 9, the GSB superstructure would be replaced with a steel girder superstructure with a structural steel frame extending from the bottom of the girders to the top of the existing GSB piers. Two design options for the steel frame are under consideration – one

[67] Federal Highway Administration. 1983. *Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges*. US Department of Transportation. Accessed from https://www.environment.fhwa.dot.gov/ legislation/ section4f/4f_bridges.aspx.

in the form of a "V" longitudinally (the "V-Frame" option), and a second curved "Super Haunch" option. This alternative follows the existing GSB alignment, thereby allowing the reuse of the existing repointed GSB stone masonry piers without requiring substantial modifications. **Figure 2.3-5** depicts the conceptual design for Alternative 9, and more detailed plans are provided in **Appendix B**.[68]

Alternative 9 would fully meet the Project's Purpose and Need of providing access and connectivity between Newington and Dover, across Little Bay, for non-motorized use.[69]

Engineering analysis determined that Alternative 9 would be reasonable and practical from a technical standpoint. It could be implemented using conventional construction techniques and materials, within a practical duration, and without excessive impacts on the environment or to the transportation network.

Alternative 9 would have an estimated initial capital cost of $28.5 million and a life cycle cost of $31.25 million. In comparison to the other alternatives, Alternative 9 is among the least expensive reasonable alternatives.

Alternative 9 would have an approximately 18.3-foot wide deck (out-to-out), a 16-foot wide multiuse path consisting of the desirable 12-foot wide multi-use path with 2-foot wide shoulders on each side. The 16-foot wide multiuse path would comply with the ADA guidelines for accessibility and would have a steel pedestrian rail along both sides of the new bridge deck. The new path would be 22.5 feet from the LBB, approximately 7.4 feet further from the LBB than the existing GSB (at 15.1 feet). These characteristics contribute to the high performance of the design with respect to user safety, emergency access, and inspection safety. The new superstructure would not be in the form of a truss, and therefore would not be visually consistent with the existing GSB. However, there would be no changes to the northbound or southbound LBB which would preserve the existing transportation capacity of the LBB.

A recently constructed 2010 approach span at the Dover end of the bridge would not require substantial modifications as part of this alternative, as the alignment of the existing GSB would be maintained. The existing Newington abutment would be removed in its entirety and replaced. The overall footprint should be smaller than the existing abutment due to the proposed reduced deck width. Alternative 9 would require temporary impacts for construction access. It would avoid the need to reconstruct the approach span from Hilton Park which would minimize intertidal habitat impacts.

4.3 Description of Section 4(f) Properties

The Study Area is defined to include both the GSB and LBBs, as well as an area approximately 800 feet north and south of the bridges' abutments in Dover and Newington. This area is intended to include areas directly affected by project construction activities or immediately adjacent. Additionally, for purposes of identifying potential indirect effects to historic properties (*e.g.*, by changing the visual environment), an APE was developed for the evaluation of alternatives. (See **Figure 3.10-1**.)

4.3.1 Parks, Recreational Areas, and Refuges

4.3.1.1 Hilton Park

Hilton Park is a publicly-owned park located on Dover Point, and offers picnic areas, a boat launch, fishing dock, a play area, benches, a pavilion, and open green space. Hilton Park was created in 1938 following the GSB construction. Park visitors have relatively unobstructed views of the Piscataqua River, Little Bay, the GSB, and LBB. Hilton Park is open from 6:00 AM – 8:00 PM; overnight use is prohibited. NHDOT, Bureau of Turnpikes, owns the 16-acre park and is therefore the official with jurisdiction. No other parks or recreational areas are located within the Study Area.

4.3.1.2 Wildlife and Waterfowl Refuges

No wildlife and waterfowl refuges of national, state, or local significance are within the Study Area. The closest property that is formally part of the National Wildlife Refuge System refuge is the Great Bay National Wildlife Refuge, approximately 1.5 miles southwest of the GSB. The refuge is managed by the Parker River National Wildlife Refuge and encompasses over 1,000 acres along the seacoast.

4.3.2 Historic Sites

NHDOT and FHWA in collaboration with the NH Division of Historical Resources (NHDHR), which serves as the NH SHPO, reviewed the potential for the Project to impact historic Section 4(f) properties.

4.3.2.1 Archaeological Sites

Section 4(f) applies to archaeological sites that are on or eligible for the National Register and that warrant preservation in place, including those sites discovered during construction. The 2007 FEIS identifies areas of archaeological sensitivity for the Newington-Dover, 11238 project, based on a Phase IA archaeological analysis. Among these areas was the western side of Hilton Park in Dover (*i.e.*, Area 16 in the FEIS). This area includes an approximately 0.5-acre verified site, identified as a brickyard (27-ST-55 and 27-ST-56, *i.e.*, Area 17) within Hilton Park. Due to the presence of sensitive areas within or adjacent to the project construction access area, a Phase IB Intensive Archaeological Investigation was completed in 2019 to further investigate the APE within Hilton Park. The eligibility of this site was not determined; however, construction activities have been revised to avoid the brickyard site. The Project, therefore, would have no impact on known archaeological sites.

[68] A temporary bicycle and pedestrian detour was installed on the northbound LBB to provide non-motorized connectivity across Little Bay, in part due to the closure of the GSB. This temporary detour was opened to the public in August 2019 and will remain in place during construction of the Project. This temporary detour is part of the Preferred Alternative.

[69] A discussion of the development of the project Purpose and Need is provided in **Section 1.2** of this SEIS.

4.3.2.2 Newington Railroad Depot and Toll House

The Newington Railroad Depot and Toll House (NWN0618/ NR #10000187) qualifies as a Section 4(f) property, as it is listed in the National Register. The official with jurisdiction over the Newington Railroad Depot and Toll House is the NH SHPO (represented by NHDHR personnel). The Newington Railroad Depot and Toll House at 24 Bloody Point Road is located at the tip of Bloody Point in Newington on 3.8 acres of land and marks the former south approach of the Portsmouth and Dover Railroad at a dedicated railroad and highway bridge over the bay, just east of the GSB and LBBs. Constructed in 1873, the 2½-story building retains clapboard siding and wood trim and is a relatively rare example of a depot that also served as a toll house and residence for the stationmaster/toll taker, resulting in a residential form for a railroad-related resource. The railroad tracks and bridge were removed following the abandonment of the line and the operation of the station in 1934. The building is in fair condition, currently vacant but "mothballed" for potential future use.

The property was listed in the National Register in 2010 and is significant under Criteria A and C in the areas of transportation and architecture. It is noted in the nomination that the ending date for the period of significance, 1934, coincided with the construction of the GSB and the abandonment of the railroad line, which ended the utilization of the Depot property for transportation purposes.

4.3.2.3 Ira F. Pinkham House/Wentworth Summer Residence

The Ira F. Pinkham House/Wentworth Summer Residence (DOV0093) qualifies as a Section 4(f) property, as it is eligible for listing in the National Register. The official with jurisdiction over the Ira F. Pinkham House/Wentworth Summer Residence is the NH SHPO (represented by NHDHR personnel). The Ira F. Pinkham House/Wentworth Summer Residence at 430 Dover Point Road in Dover was constructed c. 1853 for farmer and brickmaker Ira Pinkham. The 1 ½-story house is located on a 0.8-acre property adjacent to the Spaulding Turnpike in Dover. The house has a sidehall plan, is oriented gable-end to the street, and features an early 20th century 1-story enclosed wraparound porch with a pedimented entrance. It was purchased as a summer residence by businessman Frank E. Wentworth and his wife Annie in 1912, who likely enclosed the porch and applied the asbestos shingles in the 1930s and 1940s. A 19th-century barn associated with the house was relocated off-site in 2011-2012.

The property, including the house and an associated barn, was determined eligible for listing in the National Register under Criteria A and C in 2005 for significant associations with Dover Point's former brick-making industry, and the 20th century development of Dover Point as a seasonal destination.

4.3.2.4 General Sullivan Bridge

The GSB qualifies as a Section 4(f) property, as it is eligible for listing in the National Register. The official with jurisdiction over the GSB is the NH SHPO (represented by NHDHR personnel). The GSB, built in 1934, is 1,528 feet long, with the primary superstructure consisting of a combination deck truss and partial through arch truss over Little Bay between the Town of Newington and the City of Dover, New Hampshire. The GSB is supported by two reinforced concrete abutments and eight concrete piers with granite block facing and caps. The main span traverses a navigable channel and is 275 feet long. The existing GSB deck is approximately 32 feet wide and is oriented southeast to northwest. For purposes of this document, the Dover end of the bridge is called north and the Newington end is called south. The nine spans of the GSB are numbered from north to south to maintain consistency with the original span numbering. The Dover abutment is located in Hilton Park. The approach to the GSB from Hilton Park is a pedestrian bridge constructed in 2011, and the south approach to the bridge in Newington is an on-grade pedestrian path. NHDOT's Bureau of Bridge Design-Existing Bridge Section designates the bridge as Dover 200/023.

Although originally designed to support two lanes of highway traffic over the mouth of the Little Bay, the bridge was closed to vehicular traffic in 1984, when the adjacent LBB, located to the east of the GSB, was completed. The north abutment was reconstructed in 2011, along with a new north approach bridge. Additional work in 2011 replaced the former paved vehicular south approach from Shattuck Way with a curved pedestrian path.

The general condition of the GSB has declined since the 2008 ROD was issued. Detailed inspections of the bridge determined it was in critical condition, and the exterior portions of the deck exhibit advanced deterioration. In 2015, chain link fencing was added to the center of the bridge along the entire length, as a safety measure to keep pedestrians away from the outside deck extremes. Truss members exhibit section loss, pack rust, and corrosion holes, and the underwater piers have damage from sulfates and need repointing. A more recent inspection completed in September 2018 found substantial additional deterioration of a critical floor beam under the bridge deck. Due to the unsafe condition of the GSB, it is currently closed to all traffic, including pedestrian/bicycle activities and fishing. Fencing and bridge closure signs were installed in late September 2018 to prevent access to the bridge due to its unsafe condition.

The bridge is eligible for listing in the National Register under Criterion C for national significance in engineering, and also under Criterion A in the area of transportation. The eligible property encompasses the bridge footprint including the abutments and the approaches on both sides, with modern replacement elements considered non-contributing. Fay, Spofford and Thorndike, bridge specialists from Boston, designed the bridge. The GSB was one of four major bridges of its type and style designed by Fay, Spofford and Thorndike within a decade (1927-1937), which defined the early development period for continuous truss highway bridge design in the United States. The bridge was the first highway bridge in New Hampshire to be designed as a continuous truss, without structural breaks at the supporting piers. Its design and construction contributed substantially to the advancement of twentieth century American bridge technology.

The GSB was an important step in the evolution of the continuous truss highway bridge for three reasons: it incorporated special features of the earlier continuous truss Lake Champlain Bridge that had proved economically sound, thereby encouraging widespread adaptation; it demonstrated the practical application of a new technology for weighing bridge reactions; and it helped establish a reduced economical span length for the continuous truss. The thru-arch continuous truss design was adopted for years to come, for major and minor highway bridges throughout the country where aesthetics and cantilever construction were necessary factors. When New Hampshire's bridges were evaluated for historical and engineering significance in 1982, the GSB attained the second highest ranking of any bridge in the state. Since that time the highest-ranking bridge (the Memorial Bridge in Portsmouth) has been removed. One of the

other highly influential continuous truss bridges designed by Fay, Spofford and Thorndike, the Lake Champlain Bridge, has also been demolished.

Before its full closure in 2018, the GSB provided an important bicycle/pedestrian connection across Little Bay, as well as other recreational activities. Although subsequent deterioration has affected the physical historic integrity of the bridge, the historically significant features of the structure are still evident. Thus, the bridge retains a high degree of integrity of location, design, materials, workmanship, feeling, and association, and is afforded protection under Federal (USDOT) law. The addition of a new LBB in 2015 directly adjacent to the GSB has affected the setting of the bridge, impeding viewsheds to and from the bridge on the east side. However, the setting on the west side of the bridge, overlooking the Little Bay, Dover Point, and Hilton Park, is largely intact, so while the integrity of setting has been diminished, it has not been eliminated.

4.4 Impacts to Section 4(f) Properties

This section describes the impacts of the Preferred Alternative on the Section 4(f) properties within the Study Area. As described below, the Preferred Alternative would not result in a Section 4(f) use of Hilton Park, archaeological resources, the Newington Railroad Depot and Toll House, or the Ira F. Pinkham House/Wentworth Summer Residence. However, the Preferred Alternative would result in a use of the GSB.

4.4.1 Hilton Park

Temporary occupancy of a portion of the western side of Hilton Park is anticipated during construction of the Preferred Alternative. As described in **Section 3.9**, *Parks, Recreation and Conservation Land*, the east side of Hilton Park provides more recreational opportunities for park visitors than the west side of Hilton Park (*i.e.,* boat launch, fishing dock, and play area). Approximately 48,000 square feet of Hilton Park would be temporarily occupied and fenced off for construction access, laydown, and staging (**Appendix D**). This temporary staging area represents approximately 12 percent of the total Hilton Park property in recreational use, or about 29 percent of the approximately 3.8-acre western portion of the park. To minimize land disturbance, unpaved staging areas within the fenced-off staging area are to be protected with temporary geotextile fabric under crushed stone or other means. The Hilton Park driveway off of Dover Point Road would be used for construction access but would not be fenced off, allowing for continued public use and access to the portion of the west side of Hilton Park outside of the staging area. More than 14.9 acres of Hilton Park would remain open and accessible to the public during the temporary occupancy for construction. Public access to the recreational opportunities provided by Hilton Park would be maintained. The sidewalk along Wentworth Terrace, which passes underneath the Spaulding Turnpike and runs along Dover Point Road, connects the east and west sides of Hilton Park. This sidewalk would remain open for continued public use, which would retain the existing connectivity of the east and west sides of Hilton Park, although the temporary staging area would require pedestrians to make a slight detour relative to the existing condition. During construction, Hilton Park visitors would still be able to use the existing picnic areas, boat launch, fishing dock, play area, benches, and open green space. The Hilton Park driveway off of Dover Point Road would be used for construction access but would not be fenced off. Disturbed areas would be restored to preexisting conditions once construction is complete. See **Appendix A** for site photographs of Hilton Park and the surrounding area.

For the Preferred Alternative, the temporary occupancy of Hilton Park would not constitute a Section 4(f) use, as defined in 23 CFR 774.13(d) since:

- The duration (of the occupancy of Hilton Park) will be temporary (*i.e.*, less than the time needed for construction, and there will be no change in ownership of the land);[70]
- The scope of the work is minor (*i.e.*, both the nature and the magnitude of the changes to the Section 4(f) property are minor);
- There are no anticipated permanent adverse physical impacts, nor will there be interference with the activities or purpose of the resource, on either a temporary or permanent basis;
- The land being used temporarily will be fully restored (*i.e.*, the resource will be returned to a condition which is at least as good as that which existed prior to the project); and
- NHDOT, as the "official having jurisdiction," is in agreement regarding the above-mentioned conditions.[71]

In addition to the temporary occupancy, the Preferred Alternative would involve relocation of the pavilion that is currently located on the west side of Hilton Park (**Appendix D**). The pavilion provides users with a shaded picnic area and offers scenic views of the waterfront and GSB. As described in **Section 4.3.1** and as shown in the site photos in **Appendix A**, there are multiple picnic tables and benches throughout Hilton Park that the public could utilize while the pavilion is being replaced or relocated. NHDOT Bureau of Turnpikes, as the official with jurisdiction, would determine relocation details for the pavilion, such as the structure's final location and how the structure would be moved during final design.

4.4.2 Archaeological Sites

The archaeological analysis completed for the 2007 FEIS was reassessed to determine potential impacts of the alternatives. Based on preliminary plans for construction access, the Preferred Alternative would not impact Area 18 or Area 22 in Dover. Therefore, no known archaeological resources within the eastern side of Hilton Park would be impacted by the Project. Within the western side of Hilton Park, the 2019 Phase IB investigation identified archaeological features related to a historic brickyard. Based on this investigation, the project construction access area has been configured to avoid this archaeologically-sensitive area.

Based on preliminary plans for construction access and the determination made by the archaeological analysis, the Preferred Alternative would not directly impact areas of archaeological sensitivity in Newington, as identified in the 2007 FEIS.

[70] The estimated duration of construction for the Preferred Alternative is 1.5 years.

[71] FHWA's Section 4(f) regulations (23 CFR 774) require written concurrence of the official(s) with jurisdiction in order to apply the exception for temporary occupancies (23 CFR 774.13[d]). Documentation of NHDOT's formal concurrence is provided in **Appendix K**.

4.4.3 Newington Railroad Depot and Toll House

Applying the Section 106 criteria of effect at 36 CFR 800.5(a)(2), it was determined that the Preferred Alternative will result in a finding of No Adverse Effect for the Newington Railroad Depot and Toll House. Based on preliminary plans for construction access and the definitions of a Section 4(f) use (codified in 23 CFR 774.17), the Preferred Alternative would not use land from the Newington Railroad Depot and Toll House. Therefore, the Preferred Alternative would not result in a use of this Section 4(f) property.

4.4.4 Ira F. Pinkham House/Wentworth Summer Residence

Applying the Section 106 criteria of effect at 36 CFR 800.5(a)(2), it was determined that the Preferred Alternative will result in a finding of No Historic Properties Affected for the Ira F. Pinkham House/Wentworth Summer Residence. Based on preliminary plans for construction access and the definitions of a Section 4(f) use (codified in 23 CFR 774.17), the Preferred Alternative would not use land from the Ira F. Pinkham House/Wentworth Summer Residence. Therefore, the Preferred Alternative would not result in a use of this Section 4(f) property.

4.4.5 General Sullivan Bridge

The Preferred Alternative would involve the complete removal of the GSB superstructure but would retain all eight of the original piers of the GSB. While a portion of the substructure would be retained under the Preferred Alternative, the removal of the GSB superstructure would result in a Section 4(f) use and an adverse effect pursuant to Section 106. Documentation of this adverse effect is provided in a Section 106 Adverse Effect Memo (**Appendix I**), which is used for NHDOT-sponsored projects to document concurrence on effects by FHWA, NHDOT, and NHDHR. Measures to mitigate these adverse effects will be included in a new MOA.

4.5 Programmatic Section 4(f) Evaluation for the Use of Historic Bridges

The Preferred Alternative would result in a use of the National Register-eligible GSB. Such use may be eligible under the FHWA's Programmatic Section 4(f) Evaluation, *Projects that Necessitate the Use of Historic Bridges*. The use of Section 4(f) property is prohibited unless there is no feasible and prudent avoidance alternative to the use of the land from the property. An avoidance alternative is prudent and feasible if it avoids using the Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) property. An avoidance alternative is not feasible if it cannot be built as a matter of sound engineering judgement.

According to 23 CFR 774.17, an alternative is not prudent if:

i. It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
ii. It results in unacceptable safety or operational problem;
iii. After reasonable mitigation, it still causes:
    a. Severe social, economic, or environmental impacts;
    b. Severe disruption to established communities;
    c. Severe disproportionate impacts to minority or low income populations;
    d. Severe impacts to environmental resources protected under other Federal statutes;
iv. It results in additional construction, maintenance, or operational cost of an extraordinary magnitude;
v. It causes other unique problems or unusual factors; or
vi. It involves multiple factors in paragraphs (3)(i) through (3)(v) of this definition, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

4.5.1 Applicability

The Programmatic Section 4(f) Evaluation for Projects that Necessitate the Use of Historic Bridges may be applied to projects which meet the following criteria:

› *Will the bridge be replaced with Federal funds?*

Yes. Federal funds have been applied to the Newington-Dover 11238 project, and federal funds may be applied to Contract S, the rehabilitation or replacement of the GSB.

› *Will the project require the use of an historic bridge structure, which is on or eligible for listing in the National Register of Historic Places?*

Yes. The GSB was first determined eligible for listing in the National Register in 1988 when representatives from FHWA, NHDHR, and NHDOT completed a thematic review of continuous steel truss bridges. This finding was later reinforced through the Section 106 Adverse Effect Memo for this project, executed January 2, 2020.

› *Is the bridge a National Historic Landmark?*

No. The GSB is considered historically significant at a national level, but it is not a National Historic Landmark.

› *Has the FHWA Division Administrator determined that the facts of the Project match those set forth in the sections of this Programmatic Evaluation labeled Alternatives, Findings, and Mitigation?*

Yes. Please see **Sections 4.5.2** through **4.8** below for more information.

› *Has agreement been reached among the FHWA, the SHPO (NHDHR), and the Advisory Council on Historic Preservation through procedures pursuant to Section 106 of the NHPA?*

Yes. The FHWA and NHDHR, together with NHDOT, executed an Adverse Effects Memo on January 2, 2020. The ACHP was notified of the adverse effect and on February 27, 2020 declined participation in the Section 106 consultation. The Section 106 process is on-going but is expected to be fully satisfied under the terms of a pending MOA.

4.5.2 Alternatives

With regard to alternatives, the Programmatic Section 4(f) Evaluation requires consideration of the following three alternatives to avoid the use of Section 4(f) property:

- Do nothing.
- Build on a new location without using the old bridge.
- Rehabilitation without affecting the historic integrity of the bridge.

In accordance with FHWA's Programmatic Section 4(f) Evaluation, this section analyzes the required list of three avoidance alternatives.

4.5.2.1 No-Action (Do-Nothing) Alternative

The No-Action Alternative would avoid use of the GSB; however, the No-Action Alternative would ignore the basic need to provide safe access across Little Bay for non-motorized transportation. Under the No-Action Alternative, such access across the Little Bay would be permanently eliminated. Therefore, the No-Action Alternative would not meet the Purpose and Need of the Project. Normal maintenance that would occur under this alternative would not be adequate to correct the existing state of substantial deterioration of the GSB. The No-Action Alternative would not correct the situation that causes the GSB to be considered structurally deficient and deteriorated, which would lead to serious and unacceptable safety hazards to the public, including hazards to navigation. Additionally, under the terms of the existing permit for the GSB and expanded LBB issued by the US Coast Guard (USCG), the GSB would eventually need to be removed.[72] For these reasons, this avoidance alternative is not considered prudent or feasible.

4.5.2.2 Build on New Location Without Using the Old Bridge

The alternatives development process considered building on a new location, without using the existing GSB.[73] Alternative 5: Reconfigure Southbound LBB would reconfigure the LBB roadway lanes and shoulders to accommodate a new multi-use path on the existing bridge deck without modifying the existing west bridge fascia,[74] thereby maintaining the existing width of the LBB.[75] Under this alternative, the four roadway lanes would remain 12 feet wide, and the roadway shoulders would be reduced from the desirable 12-foot width to the minimum 10-foot width. A 2-foot wide concrete barrier would separate the roadway shoulders from a new multi-use path. Without modifying the west fascia of the LBB, the multi-use path would only be 2 feet wide in total with no shoulders nor a pedestrian rail, which does not provide an adequate facility. Under Alternative 5, the multi-use path would only be 2 feet wide in total with no shoulders. A 2-foot wide multi-use path would not provide an adequate facility and would be unsafe (for both the public and emergency or inspection services). This avoidance alternative suffers an additional disadvantage in that the new path would be located directly adjacent to high speed vehicle traffic and would put users at risk of potential accidents as well as decreased air and noise quality from adjacent vehicles, thus adversely affecting safety and user experience. In addition, as with the No-Action Alternative, under the terms of the existing permit for the GSB and expanded LBB issued by the USCG, the GSB would eventually need to be removed. For these reasons, Alternative 5 would not meet the Purpose and Need nor provide a safe multi-use path and is not considered a feasible and prudent avoidance alternative.

4.5.2.3 Rehabilitation Without Affecting the Historic Integrity of the Bridge

In the 2007 FEIS, rehabilitation of the GSB was a component of the Selected Alternative. For purposes of the DSEIS, rehabilitation of the GSB was reconsidered as a reasonable alternative, titled Alternative 1: Rehabilitation of the General Sullivan Bridge. Under Alternative 1, the GSB would be rehabilitated and the bridge deck would be replaced. The substructure and truss superstructure would be repaired and rehabilitated to support loading requirements. A total of 39 members and 54 gusset plates comprising the truss would require repairs or replacement in kind. In addition, eight of the nine spans of the upper lateral bracing and all nine spans of the lower lateral bracing would require repairs or replacement in kind. A pedestrian bridge railing would be installed, and the Newington abutment would be rehabilitated. Work would also include cleaning, repainting, and repointing bridge elements. **Figure 2.3-1** depicts a rendering of Alternative 1, and more detailed plans are provided in **Appendix B**.

The 2008 MOA stipulated that NH SHPO agreed that "*…the removal and replacement of the floor system and any necessary replacement of rivets with bolts are not considered to be adverse effects.*" Similarly, it is assumed that in-kind replacement of braces and other structural and substructure elements would not be considered adverse effects under Section 106 and would have an overall beneficial effect of saving the bridge. The new pedestrian railing would be designed to have minor physical and visual impact, so as not to diminish the historic materials and aesthetic of the GSB. Therefore, Alternative 1 would result in no adverse effect to this historic property and would avoid a Section 4(f) use.

However, the GSB is deteriorated and structurally deficient to a point where a substantial number of structural elements would need to be replaced or extensively repaired. The initial

[72] On November 30, 2006, Gary Kassof of the USCG sent a letter to Marc G. Laurin, Senior Environmental Manager of NHDOT, regarding the Draft Environmental Impact Statement for the Newington-Dover, 11238 Project. The USCG advised NHDOT that the GSB should be removed as it no longer served a transportation purpose, and that a clear and reasonable rationale must be presented for retaining or rebuilding the structure. The letter also stipulated that the bridge permit application to be submitted must address the need to retain or rebuild the GSB and, if the old bridge is to be removed, should include complete removal of all parts not utilized in the new structure.

[73] As described in Section 4.5.2.2 of the 2007 FEIS, a set of "Widen East" alternatives was considered during the initial screening, but they were not advanced for detailed design due to the greater impacts to Hilton Park and the estuarine wetlands near Bloody Point.

[74] A bridge "fascia" is defined as an external, covering member designed on the basis of architectural effect rather than strength and rigidity although its function may involve both; fascia girder - an exposed outermost girder of a span sometimes treated architecturally or otherwise to provide an attractive appearance

[75] **Section 2.2** provides additional description of Alternative 5, and explains the reasons why it was eliminated during the screening process.

capital cost for this extensive rehabilitation work is estimated to be $43 million.[76,77] Additionally, extraordinary maintenance would be required to preserve the rehabilitated bridge, including extensive routine paint system touch-up and sealing, overcoating, and multiple full repainting cycles, in addition to rehabilitation of members which continue to deteriorate. Therefore, the total life cycle costs for Alternative 1, when considered over a 75-year design life, rises to $74 million.[78] These life cycle costs are almost than two and a half times the estimated life cycle costs of the Preferred Alternative over the same period ($31.25 million). Because of the extraordinary magnitude of the construction, maintenance, and operational costs associated with Alternative 1, this avoidance alternative is not considered prudent or feasible.

4.6 Measures to Minimize Harm

NHDOT and FHWA have met with NHDHR sixteen times since December 2015, to evaluate potential alternatives and identify a Preferred Alternative. Since April 2018, these meetings have included the participation of a number of Consulting Parties that were identified through the Section 106 process. Once a Preferred Alternative was identified and its effects determined, the Consulting and Interested Parties began discussing potential mitigation measures for the loss of the GSB. During cultural resource agency coordination meetings with the FHWA, NHDOT, NHDHR, the City of Dover, the Town of Newington, and various Consulting and Interested Parties, it was determined that the adverse effect to the GSB could be mitigated.

Consultation regarding the final mitigation is ongoing. A detailed list of draft mitigation measures, entitled *"Newington-Dover 11238S, Section 106 – Draft Mitigation Stipulations,"* dated March 31, 2021, is presented in **Appendix I**. Note that other measures will be considered in response to public comments on this DSEIS. Currently, these include the following:

- Marketing the GSB for re-use in compliance with 23 USC Section 144;
- Documentation of the GSB in accordance with the Historic American Engineering Record standards;
- Promotion and providing access to the NHDOT Historic Bridge Inventory and Management Plan;
- Development of an interpretive program including on-site interpretive panels and an installation at the Woodman Museum in Dover;
- Development of a plan for the rehabilitation of the Newington Railroad Depot and possible transfer of the building along with the state-owned land on Bloody Point to the Town of Newington; and
- Completion of a feasibility study of a future link between the Dover Community Trail and the new/rehabilitated GSB, including development of interpretive signage to highlight the history of the Newington-Dover Branch Line.

The mitigation measures for the use of the GSB will be finalized and stipulated in a new MOA pursuant to Section 106, to be concluded following public comment on this DSEIS.

4.7 Coordination and Public Participation

The NHDOT is committed to engagement and coordination with the public and other stakeholders to solicit input and ensure that project decisions meet public transportation needs, community goals, and protect and enhance the environment.

The *Coordination Plan for Agency and Public Involvement* was completed in October 2017 in order to facilitate and document the communication process for the Project.[79] Information regarding Section 106 consultation meetings and public information meetings can be found in **Chapter 7**, *Public, Agency and Tribal Coordination*. During the process, the NHDHR Project Area Form (PAF) update, inventory forms, and effects determinations were distributed to the Consulting and Interested Parties for comments and input. These documents and meeting notes were also made available on the Project's website, at http://www.newington-dover.com/gsb_subsite/index.html.

In December 2017, FHWA sent Cooperating or Participating Agency invitation letters to the following list of Federal and state agencies, local governments, organizations, and Tribal Nations. Accepted invitations are noted with an asterisk and italics.

Federal Agencies

Advisory Council on Historic Preservation	*US Coast Guard**
US Department of the Interior, Office of Environmental Policy and Compliance	US Department of Agriculture, Natural Resource Conservation Service
Federal Emergency Management Agency	Federal Aviation Administration
National Oceanic and Atmospheric Administration	*US Department of the Interior, US Fish and Wildlife Service**
*US Army Corps of Engineers**	US Environmental Protection Agency

State Agencies

New Hampshire Department of Agriculture, Food, and Markets	New Hampshire Department of Business and Economic Affairs
New Hampshire Department of Business and Economic Affairs	New Hampshire Division of Historical Resources
*New Hampshire Department of Environmental Services**	*New Hampshire Department of Natural and Cultural Resources**
New Hampshire Fish and Game Department	New Hampshire Office of Strategic Initiatives

[76] Detailed cost estimates for each reasonable alternative were developed during this study. These cost estimates include initial capital costs for design and construction of the alternative. A separate life cycle cost estimate was also developed which includes both the initial capital costs as well as the costs to maintain and operate the alternative over a 75-year design life. These data are provided in **Appendix C**.

[77] Initial capital costs include the total cost of materials and construction to bring the alternative into initial service. It does not include design engineering, permitting or maintenance items.

[78] Life cycle costs are the sum of the initial capital costs and the total maintenance cost throughout the planning horizon of the structure (a 75-year planning horizon was used).

[79] The *Coordination Plan for Agency and Public Involvement* is available for viewing online at http://www.newington-dover.com/gsb_subsite/index.html.

Local Governments

City of Dover	Town of Newington
*Town of Durham**	

Organizations

University of New Hampshire	Pease Development Authority
*Strafford Regional Planning Commission**	Rockingham Planning Commission
Rockingham County Conservation District	

Tribal Nations

Mashantucket Pequot Tribal Nation	Wampanoag Tribe of Gay Head-Aquinnah
Mohegan Tribal Council	Abenaki Nation of New Hampshire
Narragansett Indian Tribe	Cowasuck Band - Pennacook/Abenaki People
Passamaquoddy Tribe	Koasek Abenaki of the Koas
Penobscot Nation	Koasek Traditional Abenaki Nation
Eastern Pequot Reservation	Nulhegan Band of the Coosuk - Abenaki Nation
Golden Hill Indian Reservation	Sovereign Abenaki Nation of Missisquoi
Paucatuck Eastern Pequot Tribe	Schaghticaoke Tribal Nation of Kent

Meetings have been held periodically throughout the development and planning process for the Project, with various Federal, state, and local agencies, as well as with the public. Specifically, coordination has included those stakeholders noted in italics above, and several Consulting Parties under Section 106, elected officials, and local citizens. These meetings have occurred since 2003, related to the larger Newington-Dover, Spaulding Turnpike Transportation Improvements Project and more recently, as of 2015, specific to the current Project. A summary of the meetings distinct to the GSB is provided in **Table 4.1-1**.

At the three recent public informational meetings that have been held to date regarding the GSB, members of the public were informed of the Project, alternatives, the ongoing Section 106 consultation, the opportunity to become a Consulting Party, as well as additional Project updates and schedule. The public was given the opportunity to provide written or oral comments to notify the NHDOT of any concerns and opinions associated with the Project.

As of January 2021, FHWA has received six requests for Consulting Party status from the public: Nathan Holth (historicbridges.org); Kitty Henderson, Executive Director of the Historic Bridge Foundation; Karen Saltus, President of the Seacoast Area Bicycle Riders (Requested removal from Consulting Party list on 01/02/2020); Lulu Pickering of the Newington Historic District Commission (HDC), Anne Rugg, Manager at CommuteSMART Seacoast (Retired; removed from Consulting Party list on 10/01/2020), and Christopher Parker, Dover Assistant City Manager. Additionally, three individuals are identifying as Interested Parties: Senator David Watters, New Hampshire Senator; Karen Anderson, Newington Special Project Coordinator; and Martha Roy, Newington City Administrator. Senator David Watters has participated in several meetings with the NHDHR and Consulting Parties, although the Senator has not requested formal Consulting Party status. **Table 4.1-1** notes the meetings where Consulting Parties were in attendance.

Agency and public comments and concerns raised during project development indicate a variety of opinions regarding the GSB. NHDHR has expressed concern about the removal of the GSB, especially since other historic bridges in New Hampshire have recently been removed, which is a concern expressed by a few members of the public. Most comments from the public support Alternative 9, with a few supporting Alternative 1. NHDOT and FHWA has taken all comments received into consideration to inform the decision-making process for the Project.

In addition to meetings, other forms of communication have been implemented to solicit input and inform the public and other stakeholders of Project updates and general information. The Project website (http://www.newington-dover.com) provides the public with important information about the Project through a variety of methods. The Project website provides a specific link for the GSB at http://www.newington-dover.com/gsb_subsite/ index.html and offers the following communication methods and opportunities, in addition to general project information:

- Press Releases
- Email List Subscriptions
- Feedback and Comment Submissions
- Project Manager Contact Information
- Newsletters
- Project Documents
- Meeting Presentations
- Meeting Notes

NHDOT will continue to engage and coordinate with the public and other stakeholders to ensure that public transportation needs and community goals are met.

4.8 Preliminary Determination

4.8.1 Historic Resources

The Project would not impact any known archaeological sites. The effects to the historic Ira F. Pinkham House/Wentworth Summer House and the Newington Railroad Depot and Toll House are not adverse and do not constitute a use under Section 4(f).

The Section 4(f) use of the GSB has been determined to meet the criteria for the *Programmatic Section 4(f) Evaluation for FHWA Projects that Necessitate the Use of Historic Bridges*, as discussed in **Section 4.5.1**. Additionally, the alternatives analysis described in **Section 4.5.2** assessed the following three avoidance alternatives: do nothing; build on a new location without using the old bridge; and rehabilitation without affecting the historic integrity of the bridge. The findings of this analysis demonstrate that there are no feasible and prudent avoidance alternatives to the use of the historic bridge structures to be replaced.

Upon completion of the DSEIS and public involvement process, FHWA may issue a combined FSEIS/SROD which would include a determination that the Project facts meet all of the criteria included in this Programmatic Section 4(f) Evaluation, and that the Project includes all possible planning to minimize harm to the Section 4(f) property resulting from such use.

Table 4.1-1 Summary of Cultural Resource Agency Meetings and Public Coordination

Date	Type	Participants	Topics Discussed
12/10/2015	Cultural Resources Agency Meeting	FHWA, HDR, NHDHR, NHDOT, FHWA, HDR, VHB	Project location, goals, background information, preliminary alternatives, and a draft schedule.
08/11/2016	Cultural Resources Agency Meeting	FHWA, NHDHR, NHDOT, VHB	TSL Study, background information, graphics and photo simulations of the alternatives, and summary tables and figures of cost estimates.
10/25/2016	Public Informational Meeting	Members of the Public NHDOT, Senator Watters, VHB,	Project overview, contract updates, goals, MOA stipulations, existing GSB conditions, TSL Study, and preliminary alternative renderings.
12/14/2017	Cultural Resources Agency Meeting	FHWA, NHDHR, NHDOT, VHB	SEIS Coordination Plan for Agency and Public Involvement, proceedings for SEIS, and the process to solicit and consider input from agencies and the public.
01/30/2018	Public Informational Meeting	FHWA, Members of the Public, NHDOT, Senator Watters, VHB,	Project overview, SEIS, Section 4(f), Section 106 Consultation, alternatives, and other upcoming Spaulding Turnpike projects.
04/12/2018	Cultural Resources Agency Meeting	FHWA, Consulting Parties, NHDHR, NHDOT, Senator Watters, US Army Corps of Engineers, VHB	Reasonable range of alternatives and SEIS.
07/12/2018	Cultural Resources Agency Meeting	FHWA, Consulting Parties, NHDHR, NHDOT, Senator Watters, VHB	Section 106 consultation, updates on historic resource inventory efforts, anticipated timeframes for upcoming public information meetings, preliminary screening process, and cost estimates.
09/05/2018	Public Informational Meeting	Consulting Parties, FHWA, Members of the Public, NHDOT, VHB	Project background information, alternatives screening results, preliminary cost estimates, bicycle/pedestrian construction access, next steps for the 11238S Contract, and a Contract Q construction update.
09/13/2018	Cultural Resources Agency Meeting	FHWA, Consulting Parties, NHDHR, NHDOT, Senator Watters, VHB	Project status update, changes to range of alternatives, summary of the September Public Information Meeting.
10/11/2018	Cultural Resources Agency Meeting	FHWA, NHDOT, NHDHR, VHB	Closure of the GSB, Project Area Form, potential mitigation.
02/12/2019	Cultural Resources Agency Meeting	FHWA, Consulting Parties, NHDHR, NHDOT, VHB	SDEIS draft alternatives analysis and Section 106 Consultation.
6/13/2019	Cultural Resources Agency Meeting	FHWA, Consulting Parties, NHDHR, NHDOT, VHB	Historic property evaluation update, alternatives analysis, adverse effects table, potential mitigation approaches.
07/11/2019	Cultural Resources Agency Meeting	FHWA, Consulting Parties, Sen. Watters, NHDHR, NHDOT, VHB	Adverse effect table and memo drafts discussion, timeline, and potential mitigation.
8/8/2019	Cultural Resources Agency Meeting	FHWA, Consulting Parties, Sen. Watters, NHDHR, NHDOT, VHB	Discussion regarding effects to the GSB and other historic properties identified in the APE, additional mitigation suggestions, and the Phase IB investigation at a construction access area within Hilton Park.
10/10/2019	Cultural Resources Agency Meeting	FHWA, Consulting Parties, Sen. Watters, NHDHR, NHDOT, VHB	Updated Adverse Effect Memo, eligibility determination for the Bloody Point Area, mitigation discussion and integration into the DSEIS.
01/09/2020	Cultural Resources Agency Meeting	NHDOT, FHWA, NHDHR, ACOE, VHB, Consulting Parties	Potential mitigation measures.
01/24/2020	Cultural Resources Agency Meeting	NHDOT, NHDHR, ACOE, VHB, Consulting Parties	Potential mitigation measures.
10/08/2020	Cultural Resources Agency Meeting	FHWA, Consulting Parties, Sen. Watters, NHDHR, NHDOT, VHB	Potential mitigation measures.
03/11/2021	Cultural Resources Agency Meeting	NHDOT, NHDHR, FHWA, VHB, Consulting Parties	Potential mitigation measures.

4.8.2 Parkland and Recreational Resources

The temporary occupancy of Hilton Park would not constitute a use under Section 4(f), as defined in 23 CFR 774.13(d) since:

- The duration (of the occupancy of Hilton Park) will be temporary (*i.e.*, less than the time needed for construction, and there will be no change in ownership of the land);
- The scope of the work is minor (*i.e.*, both the nature and the magnitude of the changes to the Section 4(f) property are minor);
- There are no anticipated permanent adverse physical impacts, nor will there be interference with the activities or purpose of the resource, on either a temporary or permanent basis;
- The land being used temporarily will be fully restored (*i.e.*, the resource will be returned to a condition which is at least as good as that which existed prior to the project); and
- NHDOT, as the "official having jurisdiction," agrees regarding the above-mentioned conditions.

5

Project Commitments

This chapter reviews the commitments contained in the 2007 FEIS and the 2008 ROD in light of project changes and updated environmental conditions and regulatory standards. The 2008 ROD documents the commitments for the larger Newington-Dover, Spaulding Turnpike Improvements Project, which has been under construction since 2010. The 2007 FEIS and 2008 ROD are available on the Project's website, at http://www.newington-dover.com/index.html.

In addition to the review of previous environmental commitments, this chapter also discusses new mitigation elements for new impacts identified within this DSEIS, including measures to minimize wetland impacts, minimize the visual impact of the project, mitigate or minimize adverse effects on cultural resources, and avoid impacts to fisheries.

5.1 Status of the 2007 FEIS and 2008 ROD Environmental Commitments

As part of the NEPA process for the larger Newington-Dover, Spaulding Turnpike Improvements Project, the 2008 ROD stipulated a number of mitigation measures to avoid, lessen, remedy, or compensate for impacts. The mitigation measures outlined in the 2007 FEIS and 2008 ROD were identified to address the Spaulding Turnpike Improvements Project's direct and indirect effects, which in turn, minimized, rectified, or compensated for negative impacts. These mitigation measures and commitments were determined through coordination with Federal and state agencies with jurisdiction over the resources in question. **Appendix L**, *Newington-Dover 11238 FEIS Environmental Commitments (2007)*, documents the current status of the 2007 FEIS and 2008 ROD commitments. Commitments which are identified as "on-going" would apply to the GSB Project ("Contract S").

5.2 New Recommended Commitments

Mitigation measures and BMPs to be incorporated to minimize or eliminate impacts to natural, cultural, and social resources are described in further detail in the resource-specific sections of **Chapter 3** of this DSEIS. Final mitigation measures and environmental commitments will be memorialized in a single document that consists of the FSEIS and SROD pursuant to 49 USC 304a(b) [and 23 USC 139(n)(2)] unless FHWA determines that statutory criteria or practicability considerations preclude issuance of such a combined document, in which case a separate FSEIS and SROD would be issued.

Wetlands and Surface Waters

- NHDOT will submit a permit application to the NHDES Wetlands Bureau for the wetland impacts resulting from the Preferred Alternative. NHDOT will coordinate with state and federal resource agencies, and the communities of Newington and Dover to identify the project-specific mitigation required for the GSB Project.
- NHDOT will apply for a US Army Corps of Engineers permit for the wetland impacts resulting from the Preferred Alternative.[80]
- Applicable erosion and sediment control BMPs would be used throughout construction to protect wetlands and surface waters from sediment, erosion, pollution, and contaminants.
- Unpaved staging areas are to be protected with temporary geotextile fabric under crushed stone.
- Disturbed areas will be restored to as near pre-existing conditions as practicable once construction is complete. All disturbed and graded areas would be seeded and mulched as needed. Disturbed areas that have been seeded and mulched would be considered stable once 85-percent vegetative growth has been achieved.
- Appropriate pollution preventative measures and BMPs as outlined within the *New Hampshire Stormwater Manual Vol. 3 – Erosion Control and Sediment Controls During Construction* (December 2008), available online at NHDES's website, shall be employed to assure that any detrimental impacts are minimized to the extent practicable.

Water Quality and Pollutant Loading

- NHDOT will require contractors to address the provisions of USEPA's Construction General Permit (CGP), submit a Notice of Intent (NOI) to USEPA, and develop a combined Stormwater Pollution Prevention Plan (SWPPP) and marine sediment containment/protection measures, which will describe how the construction methods will minimize disturbance of marine sediments and contain the movement of sediment, as well as minimize any land-based erosion or discharge of stormwater during construction.

[80] It is expected that the US Army Corps of Engineers will authorize the project via a NH Statewide Programmatic General Permit (*i.e.*, the removal and restoration will not require an individual permit).

- NHDOT will require contractors to receive NHDOT's approval of their SWPPP prior to initiation of construction activities.
- NHDOT will require contractors to have a qualified environmental and erosion control monitor onsite to inspect, document and report on daily activities within the proposed project limits and construction staging areas.
- Where dewatering activity may be needed, NHDOT will require contractors to provide a dewatering and erosion control plan that is consistent with NPDES Remedial Permit for Dewatering Activity in New Hampshire including contingency measures for extreme wet weather events.

Floodplains and Hydrodynamics

- Upon completion of construction, the temporary stone causeways and trestles in the Little Bay shall be removed. Disturbed areas will be restored to as near pre-existing conditions as practicable once construction is complete.

Wildlife and Fisheries

- Erosion and sediment control BMPs composed of wildlife friendly materials such as woven organic material would be used during the construction period, as recommended by the NHF&GD.
- Tree and shrub clearing and ground disturbing impacts would be reduced to the extent practicable during design and construction to limit unnecessary impacts on wildlife habitat.
- Areas of disturbance along the shoreline of Little Bay would be stabilized and plantings installed as appropriate as part of site restoration.
- The contractor would be required to inspect all construction BMPs on a daily basis to ensure that they are properly installed and maintained.
- Standard BMPs will be required for in-water and shoreside construction to address potential fuel or oil spills from the construction equipment, and to mitigate the potential for suspension of sediments and consequent siltation.
- The Project would comply with the *NMFS/FHWA Best Management Practices Manual for Transportation Activities in the Greater Atlantic Region* (April 2018).
- Care will be taken to minimize impacts to shellfish beds, particularly those adjacent to Dover Point. If needed and determined practical, shellfish may be relocated outside of the temporary impact area associated with the temporary construction causeway.

Threatened and Endangered Species

- If a threatened, endangered, or rare plant species is encountered during construction that was not documented prior to construction, construction activities in that area would temporarily cease until the plant has been relocated.
- The existing bridge structure will be re-surveyed to identify any use by NLEB following the procedures in Appendix D of the *Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat* (revised February 5, 2018).
- The following AMMs shall be followed to comply with the NLEB effect determination (refer to the USFWS concurrence letter in **Appendix H**).
  - 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.
  - Direct temporary lighting away from suitable habitat during the active season.
  - When installing new or replacing existing permanent lights, use downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting).
  - Modify all phase/aspects of the project (*e.g.*, temporary work areas) to minimize tree removal.
  - Ensure tree removal is minimized to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field.
- Wildlife friendly erosion control methods shall be implemented during construction such as woven organic material for erosion control blankets. Welded plastic, biodegradable plastic, or threaded erosion control materials shall not be used as part of construction.
- Since soil disturbance is anticipated to occur as part of the Project, the contractor(s) shall be required to develop and implement an appropriate Invasive Species Control and Management Plan which adheres to NHDOT's publication *Best Management Practices for the Control of Invasive and Noxious Plant Species* (2018) during construction to minimize the spread of invasive plant species within the area of ground disturbance. Only clean equipment that is free of plant material and debris shall be delivered to the Project site and utilized during construction. All machinery entering and leaving any area containing invasive plants will be inspected for foreign plant matter (stems, flowers roots, etc.) and embedded soil. If foreign plant matter/soil is present, the operator shall remove the plant material and soil from the machine using acceptable methods.

Air Quality

- The NHDOT will require the contractors involved with construction to include air pollution control devices on heavy diesel construction equipment, in accordance with applicable state and federal laws at the time of construction.
- Construction mitigation measures will include wetting and stabilization to suppress dust generation, cleaning paved roadways, and scheduling construction to minimize the amount and duration of exposed earth.

Parks, Recreation, and Conservation Lands

- Public access to Hilton Park, outside of the staging and construction work zone, shall be maintained. However, temporary restrictions on public access may be necessary during delivery of materials to the staging areas.
- Unpaved areas within the fenced-off staging area of Hilton Park are to be protected with temporary geotextile fabric under crushed stone.

- Disturbed areas of Hilton Park shall be restored to pre-existing conditions once construction is complete.
- The replacement or relocation of the Hilton Park pavilion will be evaluated in coordination with the NHDOT Bureau of Turnpikes.
- Potential periodic closures of the navigational channel during work on the GSB's center spans will be closely coordinated with the USCG, the NH Port Authority, and the NH Marine Patrol to minimize impacts to marine traffic.

Cultural Resources

- The identification of measures to mitigate the adverse effects resulting from the Preferred Alternative is ongoing at this time and will be stipulated in a new MOA. Note that other measures will be considered in response to public comments on this DSEIS. The draft mitigation measures, entitled *"Newington-Dover 11238S, Section 106 – Draft Mitigation Stipulations,"* dated March 31, 2021, are included in **Appendix I**, and currently include the following:
  - Marketing the GSB for re-use in compliance with 23 USC Section 144;
  - Documentation of the GSB in accordance with the Historic American Engineering Record standards;
  - Promotion and providing access to the NHDOT Historic Bridge Inventory and Management Plan;
  - Development of an interpretive program including on-site interpretive panels and an installation at the Woodman Museum in Dover;
  - Development of a plan for the rehabilitation of the Newington Railroad Depot and possible transfer of the building along with the state-owned land on Bloody Point to the Town of Newington; and
  - Completion of a feasibility study of a future link between the Dover Community Trail and the new/rehabilitated GSB, including development of interpretive signage to highlight the history of the Newington-Dover Branch Line.
- The archeological remnants of the Enoch Pinkham brickyard located within Hilton Park shall be protected by temporary fencing and avoided from staging and construction activities during construction.

Contamination and Hazardous Materials

- The OSHA Lead in Construction Standard (29 CFR 1926.62) must be invoked during any activities that disturb the lead paint on the GSB. Other hazardous materials such as heavy metals may be present in the coating which will also require management under the applicable OSHA Standards.
- Arsenic impacted soils will be managed in accordance with a Project-specific Soil Management Plan (SMP).
- Undocumented releases of OHM will be reported to NHDES as appropriate and remediated per applicable regulations.
- Hazardous materials (asbestos, lead-based paint, PCBs, mercury, etc.) will be inventoried prior to any structural demolition or renovation work in accordance with Section 5.2 of the NHDOT *Standard Specifications for Road and Bridge Construction*. If these hazardous materials are found to be present in the structures, they would be properly abated by a licensed contractor in accordance with state and local regulations and shipped to a receiving facility licensed to handle the specific type of solid waste under the appropriate shipping documents such as manifests.
- A SMP shall be developed in accordance with NHDOT specifications that would be based upon the results of subsurface investigations for the Project. A typical SMP outlines standards and procedures for the identification and disposal of contaminated materials that may be encountered during construction.
- Tracking protocols for contaminated soils will be detailed from the point of excavation to designated testing areas and to the ultimate disposal site or within the project limits.
- A Health and Safety Plan shall be developed which provides the minimum health and safety specifications that contractors must meet during construction including requirements for environmental monitoring, personnel protective equipment, site control and security, and training.
- The NHDOT has determined that roadside Limited Reuse Soils (LRS) may be encountered in all topsoil within the limits of the existing right-of-way, regardless of its depth. Contractors will be advised that roadside LRS occurs within the limits of disturbance. In instances where topsoil is not present, soil from the top of ground to a depth of 6 inches is considered to be LRS. Soils excavated from beyond and/or below the specified LRS limits that do not exhibit visual or olfactory evidence of potential contamination shall not require handling as impacted material.
- The SMP will provide guidance for the identification, handling, storage, reuse, and disposal of LRS soils generated during construction activities.
- In the event that PFAS-impacted groundwater is encountered during construction phases, dewatering activities shall be conducted in accordance with applicable NHDES rules and/or Groundwater Management Plans.
- The Contractor will develop a Project Operations Plan, which shall specify the Contractor's means and methods for handling and managing LRS, and Contaminated Soil and Groundwater. This will include the implementation of the BMPs described in the SMP. Following approval of the Project Operations Plan, the Contractor shall be required to notify the NHDOT's Bureau of Environment at least two weeks prior to beginning excavation.

Visual

- Disturbed areas in Dover and Newington used for construction staging would be restored to as near pre-existing conditions as practicable once construction is complete.
- As needed, the visual character of the disturbed areas would be restored with replacement plantings. Replacement plantings should be native and indigenous to the area for visual consistency with the surrounding landscape and natural environment.

Construction

- Mitigation measures would be implemented in accordance with applicable laws and regulations during construction. Examples of resource-specific, construction-related mitigation measures include but are not limited to siltation or erosion control barriers, spill prevention plans, and wetting soils during excavation.

Social and Economic Resources and Environmental Justice

- Public involvement efforts will be undertaken to accommodate and encourage participation by traditionally underserved groups, to ensure program access and minimize the potential for disproportionate project impacts on protected groups.

Navigation

- Potential periodic closures of the navigational channel during construction will be closely coordinated with the USCG, the NH Port Authority, and the NH Marine Patrol to minimize impacts to marine traffic.
- The plans for construction of the Project will be submitted to the USCG to address the reasonable needs of navigation and to procure the necessary USCG permit.[81]

Public Involvement

- NHDOT will continue to engage and coordinate with the public and other stakeholders to ensure that public transportation needs and community goals are considered.

[81] A USCG permit review would require a Coastal Zone Management Consistency Determination and may require a Water Quality Certificate.

6

Federal and State Actions Required

This chapter summaries the anticipated permits, approvals, certifications and regulatory compliance required by federal and state agencies to construct the Preferred Alternative. These permits, approvals, and certifications are required to be obtained before construction begins. No local permits, approvals, or authorizations are required prior to construction, since federal and state law preempts local review. NHDOT will serve as the permit applicant for the permits and reviews listed below.

6.1 Federal Compliance

Federal requirements to construct the Preferred Alternative include several permits, approvals, certifications, and reviews from Federal agencies. **Table 6.1-1** outlines the applicable Federal compliance requirements.

Table 6.1-1 Required Federal Permits, Approvals, Certifications or Regulatory Compliance

Regulation	Issuing Agency	Name of Approval
National Environmental Policy Act	FHWA	Final SEIS; SROD
Clean Water Act, Section 404; Federal Rivers and Harbors Act, Section 10	USACE	NH Statewide Programmatic General Permit[1]
Clean Water Act, 33 USC §1251 et sq.	USEPA	National Pollutant Discharge Elimination System Construction General Permit[2]
National Historic Preservation Act, Section 106	ACHP and FHWA	Section 106 Consultation[3]
Section 4(f) of the US Department of Transportation Act	FHWA	Section 4(f) Approval
Magnuson-Stevens Fishery Conservation and Management Act	NOAA – NMFS	Essential Fish Habitat Assessment[4]
Endangered Species Act	NOAA – NMFS	Designated Critical Habitat[5]
Endangered Species Act	USFWS	Section 4(d) Rule[6]
US Coast Guard Bridge Permit	USCG	Bridge Initiation Request

1 It is expected that the Army Corps will authorize the project via a Statewide Programmatic General Permit (*i.e.*, the removal and restoration will not require an individual permit).
2 Includes the preparation of a Notice of Intent, Notice of Termination, and combined Stormwater Pollution Protection Plan (SWPPP) and Marine Sediment Containment/Protection Plan. The National Pollutant Discharge Elimination System Construction General Permit is to be prepared just before construction begins.
3 An Adverse Effects Memo was executed for the Project on January 2, 2020 which determined that the Preferred Alternative would result in an Adverse Effect to the General Sullivan Bridge (DOV0158). Refer to the executed Adverse Effects Memo in **Appendix I**. Applicable Section 106 consultation documents and correspondence can be found on the project website (www.newington-dover.com/gsb_subsite/contract_documents.html). An MOA will be finalized following public input on the DSEIS.
4 Essential Fish Habitat consultation with NOAA - NMFS was completed on May 17, 2019. See **Section 3.4**.
5 Designated Critical Habitat consultation with NOAA - NMFS was completed on June 18, 2019. See **Section 3.4**.
6 The Preferred Alternative complies with the ESA 4(d) rule (NLEB conservation) per the Streamlined Consultation Form. See **Section 3.5**.

6.2 State Compliance

Several state approvals are required for the Project. These permits and approvals are outlined below in **Table 6.1-2**.

Table 6.1-2 Required State Permits, Approvals, Certifications or Regulatory Compliance

Regulation	Issuing Agency	Name of Approval
NH RSA 482-A, Fill and Dredge in Wetlands	NHDES, Wetlands Bureau	Wetlands Permit
NH RSA 483-B, Shoreland Water Quality Protection Act	NHDES, Shoreland Program	Shoreland Permit
Section 307, Coastal Zone Management Act	NHDES, Coastal Program	Coastal Zone Management Consistency[1]
Section 401, Clean Water Act	NHDES, Watershed Management Bureau	Water Quality Certification[2]

1 While the Coastal Zone Management Act is a federal statute, it delegates responsibility to the states to federal consistency statements. In NH, the NH Coastal Program is responsible for finalizing all federal CZMA Section 307 consistency determinations.
2 Again, the Clean Water Act is a federal statute, but authority for issuing water quality certificates lies with the NHDES.

7

Public, Agency and Tribal Coordination

The NHDOT is committed to engagement and coordination with the public and other stakeholders to solicit input and ensure that project decisions meet public transportation needs, community goals, and protect and enhance the environment.

A *Coordination Plan for Agency and Public Involvement* was completed in October 2017 to facilitate and document the communication process for the Project.[82] In December 2017, FHWA sent Cooperating or Participating Agency invitation letters to the following list of federal and state agencies, local governments, organizations, and Tribal Nations. Agencies which accepted invitations are noted with an asterisk. These letters were followed by publication of a Notice of Intent to Prepare an EIS in the Federal Register (January 18, 2018).

Federal Agencies

Advisory Council on Historic Preservation
US Department of the Interior, Office of Environmental Policy and Compliance
Federal Emergency Management Agency
US Army Corps of Engineers*
National Oceanic and Atmospheric Administration
US Coast Guard*
US Department of Agriculture, Natural Resource Conservation Service
Federal Aviation Administration
US Environmental Protection Agency
US Department of the Interior, US Fish and Wildlife Service*

State Agencies

New Hampshire Department of Agriculture, Food, and Markets
New Hampshire Department of Business and Economic Affairs
New Hampshire Department of Environmental Services*
New Hampshire Fish and Game Department
New Hampshire Department of Business and Economic Affairs
New Hampshire Division of Historical Resources
New Hampshire Department of Natural and Cultural Resources*
New Hampshire Office of Strategic Initiatives

Local Governments

City of Dover
Town of Durham*
Town of Newington

Organizations

University of New Hampshire
Strafford Regional Planning Commission*
Rockingham County Conservation District
Pease Development Authority
Rockingham Planning Commission

Tribal Nations

Mashantucket Pequot Tribal Nation
Mohegan Tribal Council
Narragansett Indian Tribe
Passamaquoddy Tribe
Penobscot Nation
Eastern Pequot Reservation
Golden Hill Indian Reservation
Paucatuck Eastern Pequot Tribe
Wampanoag Tribe of Gay Head-Aquinnah
Abenaki Nation of New Hampshire
Cowasuck Band - Pennacook/Abenaki People
Koasek Abenaki of the Koas
Koasek Traditional Abenaki Nation
Nulhegan Band of the Coosuk - Abenaki Nation
Sovereign Abenaki Nation of Missisquoi
Schaghticaoke Tribal Nation of Kent

Meetings have been held periodically throughout the development and planning process for the Project, with various Federal, state, and local agencies, as well as with the public. Specifically, coordination has included those stakeholders noted in italics above, and several Consulting Parties under Section 106 of the NHPA, elected officials, and local citizens. These meetings have occurred since 2003 related to the larger Newington-Dover, Spaulding Turnpike Transportation Improvements Project and more recently, as of 2015, specific to the GSB Project. A summary of the meetings distinct to the GSB is provided in **Table 7.1-1**.

At the three public informational meetings that have been held to date, on the status of the GSB, members of the public were informed of the Project, alternatives, the on-going Section 106 consultation, the opportunity to become a Consulting Party, as well as additional project updates and schedule. The public was given the opportunity to provide written or oral comments to notify the NHDOT of any concerns and opinions associated with the Project.

[82] The *Coordination Plan for Agency and Public Involvement* is available for viewing online at http://www.newington-dover.com/gsb_subsite/index.html.

Table 7.1-1 Summary of Agency Meetings and Public Coordination

Date	Type	Participants	Topics Discussed
12/10/2015	Cultural Resources Agency Meeting	FHWA, HDR, NHDHR, NHDOT, FHWA, HDR, VHB	Project location, goals, background information, preliminary alternatives, and a draft schedule.
08/11/2016	Cultural Resources Agency Meeting	FHWA, NHDHR, NHDOT, VHB	TSL Study, background information, graphics and photo simulations of the alternatives, and summary tables and figures of cost estimates.
10/25/2016	Public Informational Meeting	Members of the Public NHDOT, Senator Watters, VHB	Project overview, contract updates, goals, MOA stipulations, existing GSB conditions, TSL Study, and preliminary alternative renderings.
12/14/2017	Cultural Resources Agency Meeting	FHWA, NHDHR, NHDOT, VHB	SEIS Coordination Plan for Agency and Public Involvement, proceedings for SEIS, and the process to solicit and consider input from agencies and the public.
12/20/2017	Natural Resources Agency Meeting	NHDOT, ACOE, EPA, FHWA, NHDES, NHF&G, NHNHB, VHB	SEIS Coordination Plan for Agency and Public Involvement, proceedings for SEIS, preliminary alternatives, and the process to solicit and consider input from agencies and the public.
01/30/2018	Public Informational Meeting	FHWA, Members of the Public, NHDOT, Senator Watters, VHB,	Project overview, SEIS, Section 4(f), Section 106 Consultation, alternatives, and other upcoming Spaulding Turnpike projects.
04/12/2018	Cultural Resources Agency Meeting	FHWA, Consulting Parties, NHDHR, NHDOT, Senator Watters, US Army Corps of Engineers, VHB	Reasonable range of alternatives and SEIS.
04/18/2018	Natural Resources Agency Meeting	NHDOT, ACOE, EPA, FHWA, USCG, NHDES, NHF&G, NHNHB, NH Office of Energy and Planning, NH Department of Business & Economic Affairs, VHB	Project overview, purpose and need, alternatives, public and agency coordination efforts, and alternatives screening process.
07/12/2018	Cultural Resources Agency Meeting	FHWA, Consulting Parties, NHDHR, NHDOT, Senator Watters, VHB	Section 106 consultation, updates on historic resource inventory efforts, anticipated timeframes for upcoming public information meetings, preliminary screening process, and cost estimates.
09/05/2018	Public Informational Meeting	Consulting Parties, FHWA, Members of the Public, NHDOT, VHB	Project background information, alternatives screening results, preliminary cost estimates, bicycle/pedestrian construction access, next steps for the 11238S Contract, and a Contract Q construction update.
09/13/2018	Cultural Resources Agency Meeting	NHDOT, NHDHR, Consulting Parties, Senator Watters, VHB	Project status update, changes to range of alternatives, summary of the September Public Information Meeting.
10/11/2018	Cultural Resources Agency Meeting	FHWA, NHDOT, NHDHR, VHB	Closure of the GSB, Project Area Form, potential mitigation.
02/12/2019	Cultural Resources Agency Meeting	Consulting Parties, NHDHR, NHDOT, VHB	SEIS draft alternatives analysis and Section 106 Consultation.
06/13/2019	Cultural Resources Agency Meeting	FHWA, Consulting Parties, NHDHR, NHDOT, VHB	Historic property evaluation update, alternatives analysis, effects table and memo, potential mitigation approaches, impacts to the Town of Newington.
06/19/2019	Natural Resources Agency Meeting	NHDOT, ACOE, EPA, NHDES, NHF&G, NHNHB, VHB	Project status update, NHDOT's preferred alternative, preliminary construction plans, potential blue mussel bed impacts, and essential fish habitat and sturgeon species coordination with NOAA.
07/11/2019	Cultural Resources Agency Meeting	NHDOT, FHWA, NHDHR, VHB, Consulting Parties	Effects table and memo review, adverse effect criteria, bridge maintenance funding and public process, bridge inventory and management plan, Newington historic district.
08/08/2019	Cultural Resources Agency Meeting	NHDOT, FHWA, NHDHR, VHB, Consulting Parties	Phase IB Investigation findings, effects table and memo, potential mitigation approaches.
10/10/2019	Cultural Resources Agency Meeting	NHDOT, FHWA, NHDHR, VHB, Consulting Parties	Bloody Point Area inventory form, updated adverse effects memo, potential mitigation approaches, next steps.
01/09/2020	Cultural Resources Agency Meeting	NHDOT, FHWA, NHDHR, ACOE, VHB, Consulting Parties	Potential mitigation measures.
01/24/2020	Cultural Resources Agency Meeting	NHDOT, NHDHR, ACOE, VHB, Consulting Parties	Potential mitigation measures.
10/08/2020	Cultural Resources Agency Meeting	FHWA, Consulting Parties, Sen. Watters, NHDHR, NHDOT, VHB	Potential mitigation measures.
03/11/2021	Cultural Resources Agency Meeting	NHDOT, FHWA, NHDHR, VHB, Consulting Parties	Potential mitigation measures.

As of January 2021, FHWA has received six requests for Consulting Party status from the public: Nathan Holth (historicbridges.org); Kitty Henderson, Executive Director of the Historic Bridge Foundation; Karen Saltus, President of the Seacoast Area Bicycle Riders (Requested removal from Consulting Party list on 01/02/2020); Lulu Pickering of the Newington Historic District Commission (HDC), Anne Rugg, Manager at CommuteSMART Seacoast (Retired; removed from Consulting Party list on 10/01/2020), and Christopher Parker, Dover Assistant City Manager. Additionally, three individuals are identifying as Interested Parties: Senator David Watters, New Hampshire Senator; Karen Anderson, Newington Special Project Coordinator; and Martha Roy, Newington City Administrator. Senator David Watters has participated in several meetings with the NHDHR and Consulting Parties, although the Senator has not requested formal Consulting Party status. **Table 7.1-1** notes the meetings where Consulting Parties were in attendance.

Agency and public comments and concerns raised during project development indicate a variety of opinions regarding the GSB. NHDHR has expressed concern about the removal of the GSB,

especially since other historic bridges in New Hampshire have recently been removed, which is a concern expressed by a few members of the public. Most comments from the public support Alternative 9, with a few supporting Alternative 1. NHDOT and FHWA will take all comments received into consideration to inform the decision-making process for the Project.

In addition to meetings, other forms of communication have been implemented to solicit input and inform the public and other stakeholders of Project updates and general information. The Project website (http://www.newington-dover.com) provides the public with important information about the Project through a variety of methods. The Project website provides a specific link for the GSB at http://www.newington-dover.com/gsb_subsite/ index.html and offers the following communication methods and opportunities, in addition to general project information:

- Press Releases
- Email List Subscriptions
- Feedback and Comment Submissions
- Project Manager Contact Information
- Newsletters
- Project Documents
- Meeting Presentations
- Meeting Notes

NHDOT will continue to engage and coordinate with the public and other stakeholders to ensure that public transportation needs and community goals are met.

8

References Cited

Advisory Council on Historic Preservation. 2019. *Court Rules on Definitions; Informs Agencies on Determining Effects*. June 10, 2019. Accessed from https://www.achp.gov/news/court-rules-definitions-informs-agencies-determining-effects. Accessed on July 15, 2019.

AECOM. 2010. *Hydraulic Modeling Analysis – Spaulding Turnpike Improvements, Little Bay Bridges Newington to Dover, New Hampshire*. Prepared for VHB.

American Association of State Highway and Transportation Officials. 2011. *A Policy on Geometric Design of Highways and Streets, 6th edition*. Chapter 8, Sections 2.4 and 4.2.

American Association of State Highway and Transportation Officials. 2012. *Guide for the Development of Bicycle Facilities*, *4th edition*. Chapter 5, Sections 2.1 and 2.10.

American Association of State Highway and Transportation Officials. 2016. *Practitioner's Handbook #12: Assessing Indirect Effects and Cumulative Impacts under NEPA*. Accessed from https://environment.transportation.org/center/products_programs /practitioners_handbooks.aspx. Accessed on July 30, 2019.

Celikkol, B., T. Shevenell, Z. Aydinoglu, and J. Scott. 2006. *Hydrodynamic Computer Model Study of the Great Bay Estuarine System, New Hampshire, In Support of the Little Bay Bridge Project*. Computer Modeling Group, Ocean Engineering, University of New Hampshire, Durham, NH.

CHA. 2013. *Spaulding Turnpike Contract #M, Stormwater Management Report, Volume 1, Slope and Drain, Newington prepared by VHB and Contract #L Stormwater Management Report, Slope and Drain.* Technical Report prepared by CHA, dated February 11, 2013.

Council on Environmental Quality. 1981. *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*. 46 Federal Register 18026. Accessed from https://www.energy.gov/sites/prod/files/G-CEQ-40Questions.pdf. Accessed on October 10, 2018.

Department of Planning and Community Development. *City of Dover, New Hampshire Master Plan: 2009 Update to the Recreation Chapter.* Accessed from https://www.dover.nh.gov/government/city-operations/planning/master-plan/index.html. Accessed on July 19, 2019.

Federal Highway Administration. 2002. *Life-Cycle Cost Analysis Primer.* Technical Report IF-02-047. US Department of Transportation, Office of Asset Management. Issued August 2002.

Federal Highway Administration. 1983. *Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges*. US Department of Transportation. Accessed from https://www.environment.fhwa.dot.gov/ legislation/ section4f/4f_bridges.aspx.

Federal Highway Administration. 2007. *Spaulding Turnpike Improvements, Final Environmental Impact Statement*. US Department of Transportation. Accessed from http://www.newington-dover.com/html-studydocs/feis.html.

Federal Highway Administration. 2008. *Spaulding Turnpike Improvements, Record of Decision*. US Department of Transportation. Accessed from http://www. newington-dover.com/documents/studydocs/Record_of_Decision_11238_signed.pdf.

Federal Highway Administration. 2015. *White Paper: Evaluating the Economic Benefits of Nonmotorized Transportation.* US Department of Transportation. FHWA-HEP-15-027.

Grizzle, R. and M. Brodeur. 2003. *Spaulding Turnpike Environmental Impact Study: Technical Report for Phase 1 – Data Collection and Coordination (Assessment of Existing Conditions in Little Bay*). Progress Report on Jackson Estuarine Laboratory Work Tasks 1-4. Jackson Estuarine Laboratory, University of New Hampshire, Durham, NH.

Independent Archaeological Consulting. 2019. *End-of-Field Report, Hilton Park 11238, Phase IB Intensive Archaeological Investigation, Proposed Staging Area*. Unpublished Technical Report issued July 12, 2019.

Independent Archaeological Consulting, LLC. 2011. *Phase I Intensive Archaeological Investigation and Phase II Determination of Eligibility, Contract L; Newington-Dover NHS-027-I(37), 11238 (Part C), Spaulding Turnpike Project, Dover and Newington, New Hampshire.* Portsmouth, NH.

Independent Archaeological Consulting, LLC. 2012. *Phase I Intensive Archaeological Investigation and Phase II Determination of Eligibility, Contract M; Newington-Dover NHS-027-I(37), 11238 (Part C), Spaulding Turnpike Project, Dover and Newington, New Hampshire.* Portsmouth, NH.

Johnson, Mike. US Department of Commerce, NOAA Fisheries, Greater Atlantic Regional Fisheries Office, Habitat Conservation Division. Personal communication, May 17, 2019.

KTA-Tator, Inc. 2016. *Coating Condition Assessment of the General Sullivan Bridge over the Little Bay, Dover, NH*. Technical Report issued to VHB, Inc., April 1, 2016.

Morrissey, E., and C. Nash. 2013. *Identifying Blue Mussel* (Mytilus edulis) *Resource in Coastal New Hampshire*. NH Department of Environmental Services' Shellfish Program. Accessed https://www.des.nh.gov/organization/divisions/water/wmb/shellfish/redtide/aquaculture.htm. Accessed on January 14, 2019.

National Oceanic and Atmospheric Administration Fisheries. 2018. *Section 7 Mapper*. Greater Atlantic Region. Accessed from https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e03b250ac11f9914a27. Accessed on January 11, 2019.

NH Department of Transportation. 2016. *Policy and Procedural Guidelines for the Assessment and Abatement of Highway Traffic Noise for Type I & Type II Highway Projects*.

Town of Newington Planning Department. 2019. *Town Planner Report Spring 2019*. Accessed from https://www.newington.nh.us/sites/newingtonnh/files/uploads/town_planner_report_spring_2019.pdf. Accessed on July 29, 2019.

US Census Bureau. *2017 American Community Survey Data*. Updated February 4, 2019. Accessed from https://www.census.gov/programs-surveys/acs/news/data-releases.2017.html. Accessed on July 3, 2019.

US Census Bureau. *2010 Census Urban Area Reference Maps*. Revised October 16, 2019. Accessed from https://www.census.gov/geographies/reference-maps/2010/geo/2010-census-urban-areas.html. Accessed on June 25, 2019.

US Court of Appeals. 2019. *National Parks Conservation Association v. Todd T. Semonite, ACOE Chief, et al*. Appeal from the US District Court from the District of Columba. USCA Case No. 18-5179.

US Environmental Protection Agency. *Green Book Website*. Accessed from https://www.epa.gov/green-book. Accessed on July 15, 2019.

Victoria Bunker, Inc. 2003. *Technical Report: Phase I-A Preliminary Archaeological Reconnaissance, Newington-Dover NHS-027-I(37), 11238 (Part B).* Alton, NH.

9

List of Preparers

NH Department of Transportation

Name/Title: Jennifer Reczek, PE, Project Manager

Qualifications: B.S., Civil Engineering, Bucknell University

Responsibilities: Overall project coordination and management.

Years of Experience: 16

Name/Title: Keith Cota, Chief Project Manager (Retired)

Qualifications: B.S., Civil Engineering, Clarkson College

Responsibilities: Project coordination and management.

Years of Experience: 41

Name/Title: Margarete Baldwin, PE, Roadway Section Group Leader

Qualifications: B.S., Civil Engineering Technology, Wentworth Institute of Technology

Responsibilities: Engineering design review.

Years of Experience: 18

Name/Title: Robert Juliano, PE, Senior Bridge Project Engineer

Qualifications: B.S., Civil Engineering, University of New Hampshire

Responsibilities: Engineering design review.

Years of Experience: 36

Name/Title: Marc Laurin, Senior Environmental Manager

Qualifications: B.A., Biology, Potsdam State University of New York

Responsibilities: Principal reviewer of environmental documentation.

Years of Experience: 32

Name/Title: Jillian Edelmann, Cultural Resources Manager

Qualifications: B.A., Cultural & Historic Preservation, Salve Regina University

Responsibilities: Historical and archaeological review and Section 106 Consultation.

Years of Experience: 15

Name/Title: Sheila Charles, Cultural Resource Program Specialist – Archaeologist (36 CFR 61 Qualified)

Qualifications: B.A., M.A., Anthropology/Archaeology, California State University Northridge

Responsibilities: Historical and archaeological review and Section 106 Consultation.

Years of Experience: 40+

Federal Highway Administration

Name/Title: Jamison Sikora, NH Division Environmental Program Manager

Qualifications: A.S., Architectural and Building Engineering Technology, Vermont Technical College; B.S., Civil Engineering, Norwich University

Responsibilities: Principal FHWA reviewer of Supplemental Environmental Impact Statement.

Years of Experience: 26

Vanasse Hangen, Brustlin, Inc.

Name/Title: Peter J. Walker, Principal, Environmental Services

Qualifications: M.S., Ecology and Evolutionary Biology, University of Vermont; B.A., Biology and Environmental Studies, Williams College

Responsibilities: Overall supervision of environmental analysis and the preparation of the Supplemental Environmental Impact Statement.

Years of Experience: 27

Name/Title: Gregory Goodrich, PE, Civil Engineer – Bridge Design

Qualifications: B.S., Civil Engineering, Purdue University

Responsibilities: Bridge design discipline leader and team leader, task management, design review, and quality assurance.

Years of Experience: 22

Name/Title: Michael Chervincky III, PE, Civil Engineer – Bridge Design

Qualifications: B.S., Civil Engineering, University of New Hampshire

Responsibilities: Senior project engineer.

Years of Experience: 12

Name/Title: Hannah Beato, Environmental Planner

Qualifications: M.S., Environmental Biology, University of Massachusetts Lowell; B.S., Ecology, University of Massachusetts Lowell

Responsibilities: Assistant editor. Author of parks, recreation, and conservation lands; visual resources; navigation; relationship of local short-term uses vs. long-term productivity; cumulative impacts; and, the Programmatic Section 4(f) Evaluation.

Years of Experience: 4

Name/Title: Kristopher Wilkes, CWS, CPESC, Project Manager, Energy and Environmental Services

Qualifications: B.S., Environmental Studies, University of Vermont

Responsibilities: Author of wetlands and surface waters, wildlife and fisheries, and threatened and endangered species sections.

Years of Experience: 14

Name/Title: Bill Arcieri, CPESC, CPSWQ, Senior Water Quality Specialist

Qualifications: M.S., Water Resources, University of Rhode Island; B.S., Hydrology, University of New Hampshire

Responsibilities: Author of water quality and pollutant loading and floodplains and hydrodynamics sections.

Years of Experience: 34

Name/Title: Mark Arnoldy, Air Quality and Noise Planner

Qualifications: B.S., Civil Engineering, George Washington University

Responsibilities: Technical support for air quality and noise analyses.

Years of Experience: 6

Name/Title: Heidi Richards, PE, Senior Project Manager, Air Quality and Noise Services

Qualifications: B.S., Civil Engineering, University of Vermont

Responsibilities: Prepared air quality analysis.

Years of Experience: 29

Name/Title: Jason Ross, PE, Director, Noise and Vibration Services

Qualifications: M.E., Acoustics, Pennsylvania State University; B.S., Mechanical Engineering, University of Colorado

Responsibilities: Prepared noise and vibration analysis.

Years of Experience: 23

Name/Title: Nicole Benjamin-Ma, Senior Preservation Planner

Qualifications: B.S., Anthropology, Rutgers University

Responsibilities: Lead historian. Prepared cultural resources section. Contributor to the Programmatic Section 4(f) Evaluation.

Years of Experience: 21

Name/Title: Paige Cornell, Environmental Scientist

Qualifications: B.S., Environmental Science, University of Vermont

Responsibilities: Technical support for hazardous materials analysis.

Years of Experience: 7

Name/Title: Katie Kudzma, LSP Remediation Team Leader

Qualifications: M.S., Sustainability and Environmental Management, Harvard University; B.S., Environmental Geosciences, Boston College

Responsibilities: Supervised hazardous materials analysis.

Years of Experience: 12

Name/Title: Stephanie Pelletier, GIS Specialist

Qualifications: B.S., Environmental Science/Geography and Regional Planning, Westfield State University

Responsibilities: GIS Analyst responsible for spatial analysis.

Years of Experience: 6

Independent Archaeological Consulting, LLC

Name/Title: Kathleen Wheeler, Ph.D., RPA, Director and Principal Archaeologist

Qualifications: Ph.D., Anthropology, University of Arizona; M.A., Anthropology, University of Arizona; B.A., Anthropology, University of New Hampshire

Responsibilities: Developed Phase IA and IB archaeological investigations. Contributing author to cultural resources section.

Years of Experience: 26

10

Distribution of the Draft Supplemental EIS

Federal Agencies

Advisory Council on Historic Preservation Office of Federal Agency Programs Attn: Reid Nelson, Director 401 F Street NW, Suite 308 Washington, DC 20001-2637	Federal Aviation Administration New England Region Attn: Colleen D'Alessandro, Regional Administrator 1200 District Avenue Burlington, MA 01803
Federal Aviation Administration Office of the Administrator Attn: Steve Dickson, Administrator 800 Independence Avenue, SW Washington, DC 20591	National Oceanic and Atmospheric Administration Greater Atlantic Region Fisheries Office Attn: Michael Pentony, Regional Administrator 55 Great Republic Drive Gloucester, MA 01930
Federal Emergency Management Agency Attn: Paul Ford, Regional Administrator for FEMA, Region 1 99 High Street Boston, MA 02110	US Army Corps of Engineers New England District Attn: Col. John A. Atilano II 696 Virginia Road Concord, MA 01742-2751
US Coast Guard Attn: Rear Admiral Thomas G. Allan, Jr. Commander, First Coast Guard District 408 Atlantic Avenue Boston, MA 02110	US EPA New England Headquarters Attn: Deborah Szaro, Regional Administrator 5 Post Office Square, Suite 100 Boston, MA 02109
US Department of the Interior Office of Environmental Policy & Compliance Attn: Stephen G. Tryon, Director 1849 C Street NW Washington, DC 20240	US EPA New England Headquarters Attn: Timothy Timmermann, NEPA Office 5 Post Office Square, Suite 100 Boston, MA 02109
US Fish and Wildlife Service Northeast Regional Office Attn: Wendi Weber, Regional Director 300 Westgate Center Drive Hadley, MA 01035	US Fish and Wildlife Service New England Field Office Attn: David Simmons, Supervisor 70 Commercial Street, Suite 300 Concord, NH 03301
US Department of Agriculture Natural Resources Conservation Service Attn: Becky Ross, State Conservationist 273 Locust Street, Suite 2D Dover, NH 03820	

State Agencies

NH Department of Environmental Services Attn: Robert R. Scott, Commissioner 29 Hazen Drive Concord, NH 03301	NH Office of Strategic Initiatives Attn: Jared Chicoine, Director Governor Hugh J. Gallen State Office Park Johnson Hall, 3rd Floor 107 Pleasant Street Concord, NH 03301
NH Department of Natural and Cultural Resources Attn: Sarah Stewart, Commissioner 19 Pillsbury Street Concord, NH 03301	NH Division of Historical Resources Attn: Benjamin Wilson, Director & SHPO 19 Pillsbury Street Concord, NH 03301
NH Department of Agriculture, Markets, and Food Attn: Shawn Jasper, Commissioner 25 Capitol Street Concord, NH 03301	NH Department of Business and Economic Affairs Attn: Taylor Caswell, Commissioner 172 Pembroke Road Concord, NH 03301
NH Fish and Game Department Attn: Scott Mason, Executive Director 11 Hazen Drive Concord, NH 03301	

Municipalities and Local Organizations

Piscataqua River Estuaries Project University of New Hampshire Attn: Rachel Rouillard, Director 131 Main Street Durham, NH 03824	Pease Development Authority Attn: Paul Brean, Executive Director 55 International Drive Portsmouth, NH 03801
Town of Durham Attn: Katherine Marple, Town Council Chair 82 Madbury Road Durham, NH 03824	City of Dover Attn: Robert Carrier, Mayor 288 Central Avenue Dover, NH 03820
City of Dover Heritage Commission Attn: Jeffrey Spires, Chairperson 288 Central Avenue Dover, NH 03820	City of Dover Planning Board Attn: Gina Cruikshank, Chairperson 288 Central Avenue Dover, NH 03820
City of Dover Conservation Commission Attn: William Hunt, Chair 288 Central Avenue Dover, NH 03820	City of Dover Recreation Advisory Board Attn: Heather Twombly, Vice Chairperson 61 Locust Street Dover, NH 03820
Town of Newington Board of Selectmen Attn: Ted Connors, Chair 205 Nimble Hill Road Newington, NH 03801	Town of Newington Conservation Commission Attn: Jane Hislop, Chair 205 Nimble Hill Road Newington, NH 03801
Town of Newington Planning Board Attn: Denis Hebert, Chair 205 Nimble Hill Road Newington, NH 03801	Rockingham Planning Commission Attn: Tim Roache, Executive Director 156 Water Street Exeter, NH 03833
Town of Newington Recreation Committee Attn: Laura Stone, Co-Chair 205 Nimble Hill Road Newington, NH 03801	Rockingham County Conservation District Attn: Vicky Nelson, District Manager 110 North Road Brentwood, NH 03833
Strafford Regional Planning Commission Attn: Jen Czysz, Executive Director 150 Wakefield Street, Suite 12 Rochester, NH 03867	

Section 106 Consulting and Interested Parties

Historic Bridges.org Attn: Nathan Holth 2767 Eastway Drive Okemos, MI 48864	Historic Bridge Foundation Attn: Kitty Henderson, Executive Director PO Box 66245 Austin, TX 78766
Town of Newington Historic District Commission Attn: Lulu Pickering, Member 205 Nimble Hill Road Newington, NH 03801	City of Dover Attn: Christopher G. Parker, Assistant City Manager: Director of Planning and Strategic Initiatives 288 Central Avenue Dover, NH 03820-4169
Senate Office Legislative Office Building Attn: Senator David Watters (Interested Party) 33 North State Street Concord, NH 03301	Newington Special Project Coordinator Attn: Karen Anderson (Interested Party) 205 Nimble Hill Road Newington, NH 03801
Newington Town Administrator Attn: Martha Roy (Interested Party) 205 Nimble Hill Road Newington, NH 03801	

Note: Hard copies of the DSEIS were provided to the Town of Newington and City of Dover. Electronic copies were provided to other recipients, with hard copies available on request.

11

Comments and Coordination

This chapter is to be compiled following public and agency review of the DSEIS.

Appendices

Appendix A – Site Photographs

Newington-Dover 11238 – General Sullivan Bridge

1. Aerial of the GSB and LBB decks over Little Bay, view north (toward Dover). April 17, 2019.

2. Newington side – pedestrian view north toward the GSB from the approach. June 19, 2018.

Newington-Dover 11238 – General Sullivan Bridge

3. Dover side – pedestrian view south toward GSB from the approach. June 19, 2018.

4. Pedestrian view south on GSB deck without fencing, facing Newington. June 24, 2009.

5. Pedestrian view north on the GSB deck toward Dover. July 12, 2018.

6. Aerial of the Little Bay navigational channel, view east toward Maine. April 17, 2019.

7. View east of the GSB from a boater's perspective. September 13, 2018.

8. Looking to south toward GSB from west side of Hilton Park. July 12, 2018.

9. Looking southwest from Hilton Park towards the Great Bay Marine, Inc. in Newington. July 12, 2018.

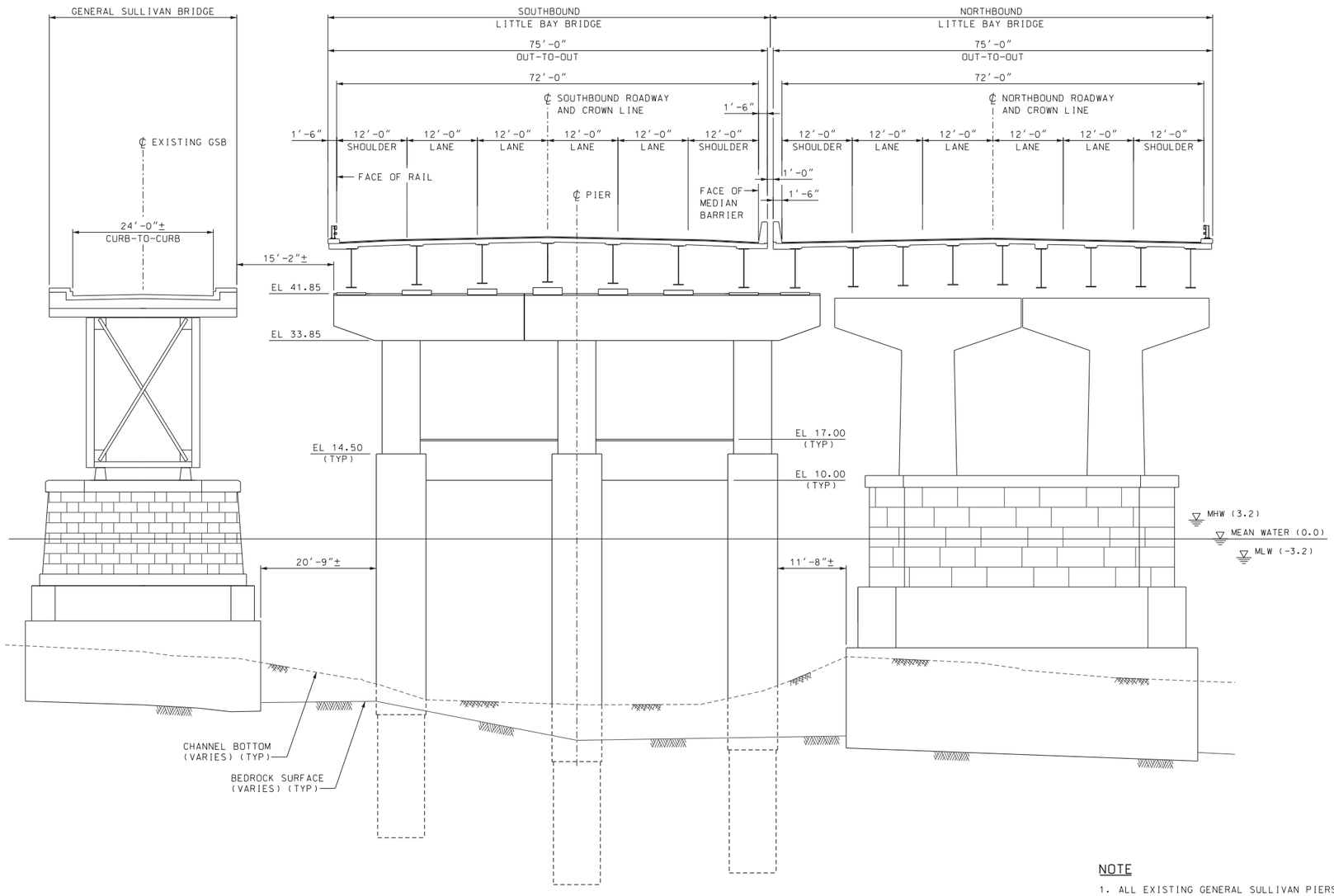
10. View east from Hilton Park's tree-lined access road of the GSB. July 12, 2018.

11. View south from the east side of Hilton Park. September 13, 2018.

12. View south of the Hilton Park pavilion. July 12, 2019.

Appendix B – Reasonable Alternatives Typical Section Plans

EXISTING CONDITION



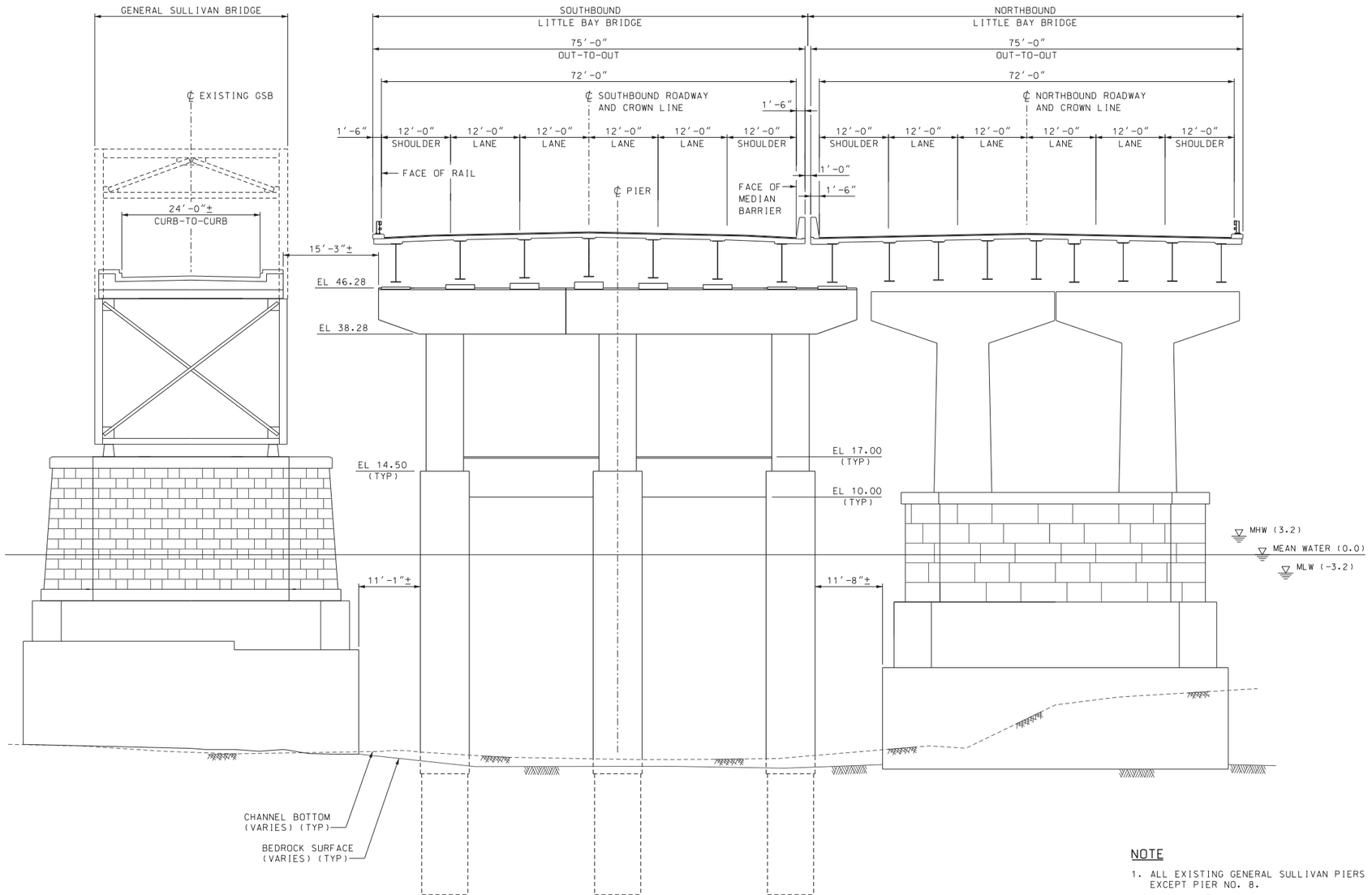
TYPICAL BRIDGE SECTION (PIERS 1, 2, 7 & 8) – EXISTING

SCALE: $\frac{3}{32}$″ = 1′-0″

NOTE

1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH LBB BRIDGE PIERS EXCEPT PIER NO. 8.

EXISTING CONDITION



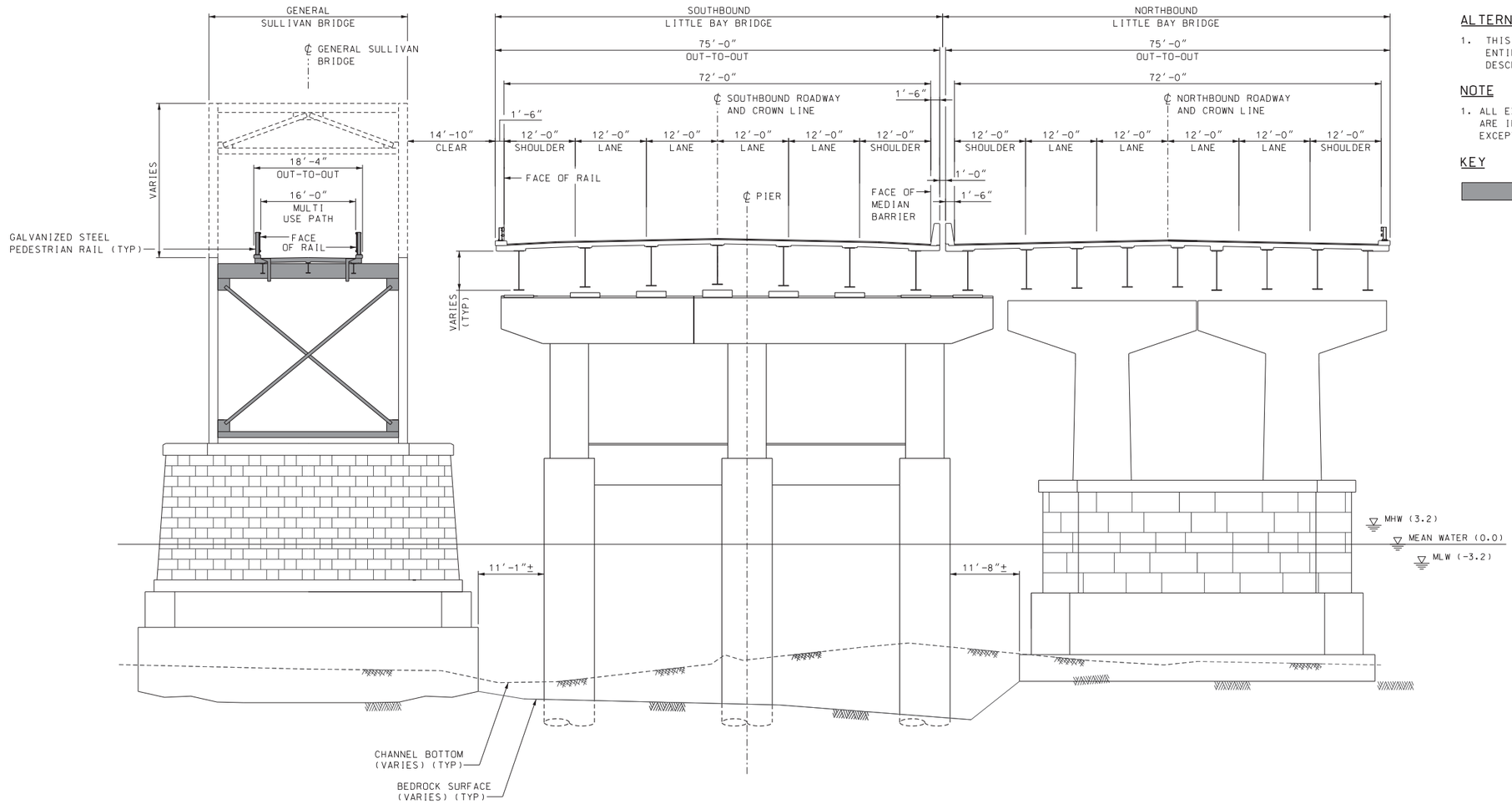
TYPICAL BRIDGE SECTION (PIERS 3, 4, 5, & 6) - EXISTING

SCALE: $\frac{3}{32}$″ = 1′-0″

NOTE

1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH LBB BRIDGE PIERS EXCEPT PIER NO. 8.

ALTERNATIVE 1 – REHABILITATION OF GENERAL SULLIVAN BRIDGE



ALTERNATIVE 1 NOTES:

1. THIS ALTERNATIVE REHABILITATES THE ENTIRE GENERAL SULLIVAN BRIDGE AS DESCRIBED IN THE TS&L REPORT.

NOTE

1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH LBB BRIDGE PIERS EXCEPT PIER NO. 8.

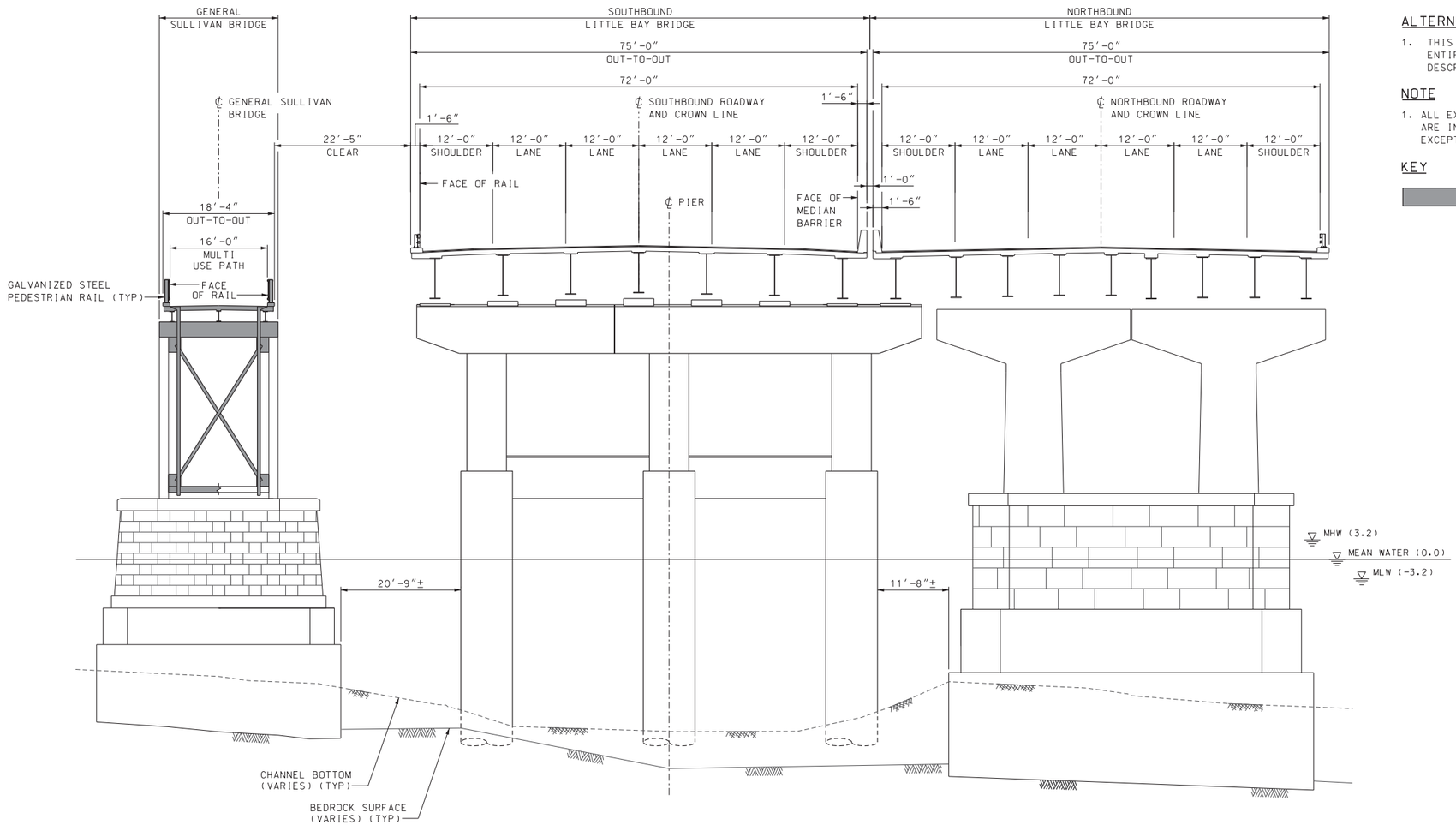
KEY

= NEW STRUCTURE

TYPICAL BRIDGE SECTION (PIERS 3, 4, 5, & 6) – ALTERNATIVE 1

SCALE: $\frac{3}{32}$″ = 1′-0″

ALTERNATIVE 1 – REHABILITATION OF GENERAL SULLIVAN BRIDGE



ALTERNATIVE 1 NOTES:

1. THIS ALTERNATIVE REHABILITATES THE ENTIRE GENERAL SULLIVAN BRIDGE AS DESCRIBED IN THE TS&L REPORT.

NOTE

1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH LBB BRIDGE PIERS EXCEPT PIER NO. 8.

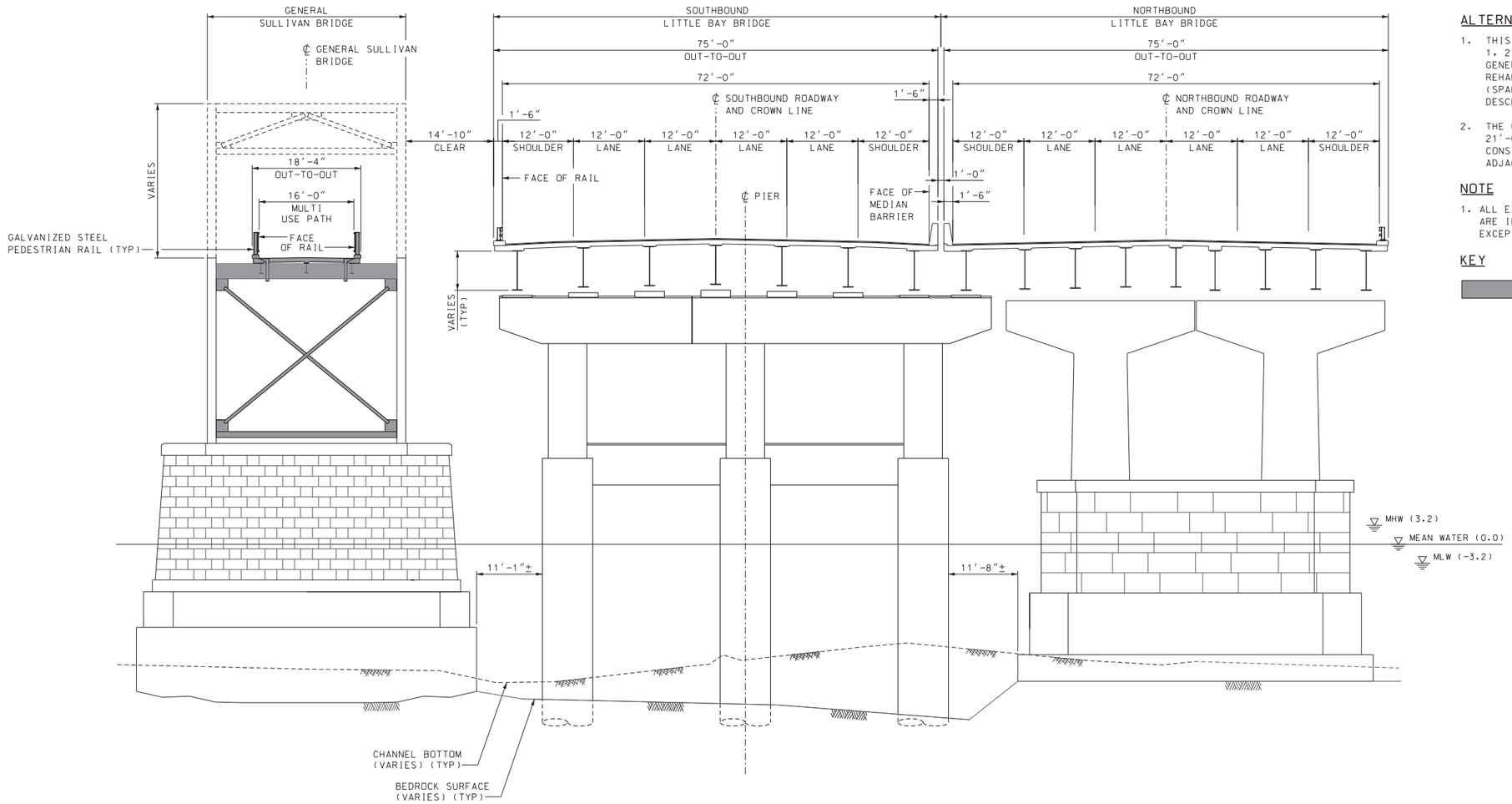
KEY

= NEW STRUCTURE

TYPICAL BRIDGE SECTION (PIERS 1, 2, 7, & 8) – ALTERNATIVE 1

SCALE: $\frac{3}{32}$" = 1'-0"

ALTERNATIVE 3 - PARTIAL REHABILITATION



TYPICAL BRIDGE SECTION (PIERS 3, 4, 5, & 6) - ALTERNATIVE 3

SCALE: $\frac{3}{32}$″ = 1′-0″

ALTERNATIVE 3 NOTES:

1. THIS ALTERNATIVE REPLACES SPANS 1, 2, 3, 7, 8, AND 9 OF THE GENERAL SULLIVAN BRIDGE AND REHABILITATES SPANS 4, 5 AND 6 (SPANS BETWEEN PIERS 3-6) AS DESCRIBED IN THE TS&L REPORT.
2. THE OUT-TO-OUT DECK WIDTH OF 21′-0″ MATCHES INTO THE NEWLY CONSTRUCTED NORTH APPROACH BRIDGE ADJACENT TO DOVER POINT ROAD.

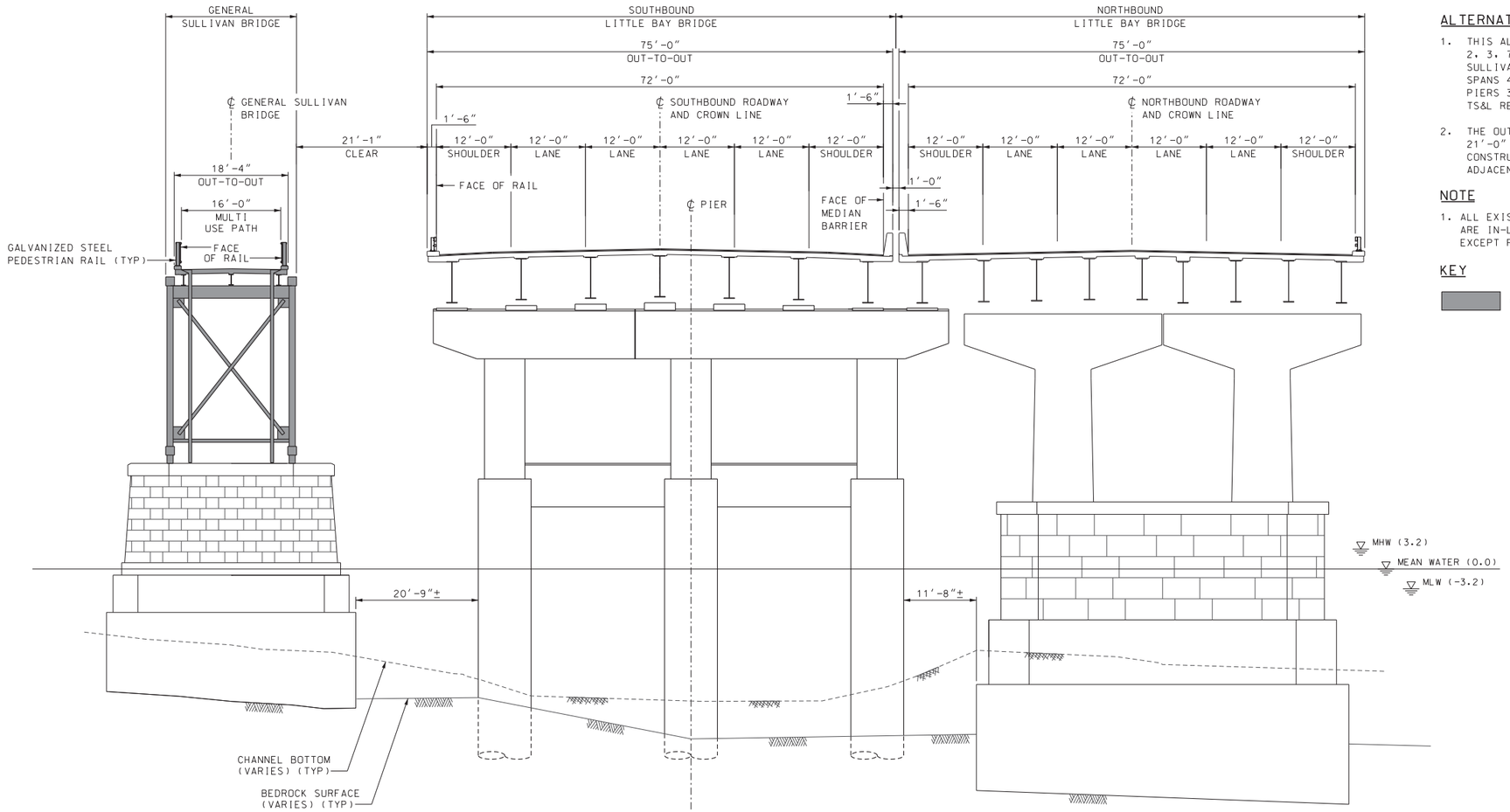
NOTE

1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH LBB BRIDGE PIERS EXCEPT PIER NO. 8.

KEY

= NEW STRUCTURE

ALTERNATIVE 3 - PARTIAL REHABILITATION



ALTERNATIVE 3 NOTES:

1. THIS ALTERNATIVE REPLACES SPANS 1, 2, 3, 7, 8, AND 9 OF THE GENERAL SULLIVAN BRIDGE AND REHABILITATES SPANS 4, 5 AND 6 (SPANS BETWEEN PIERS 3-6) AS DESCRIBED IN THE TS&L REPORT.
2. THE OUT-TO-OUT DECK WIDTH OF 21'-0" MATCHES INTO THE NEWLY CONSTRUCTED NORTH APPROACH BRIDGE ADJACENT TO DOVER POINT ROAD.

NOTE

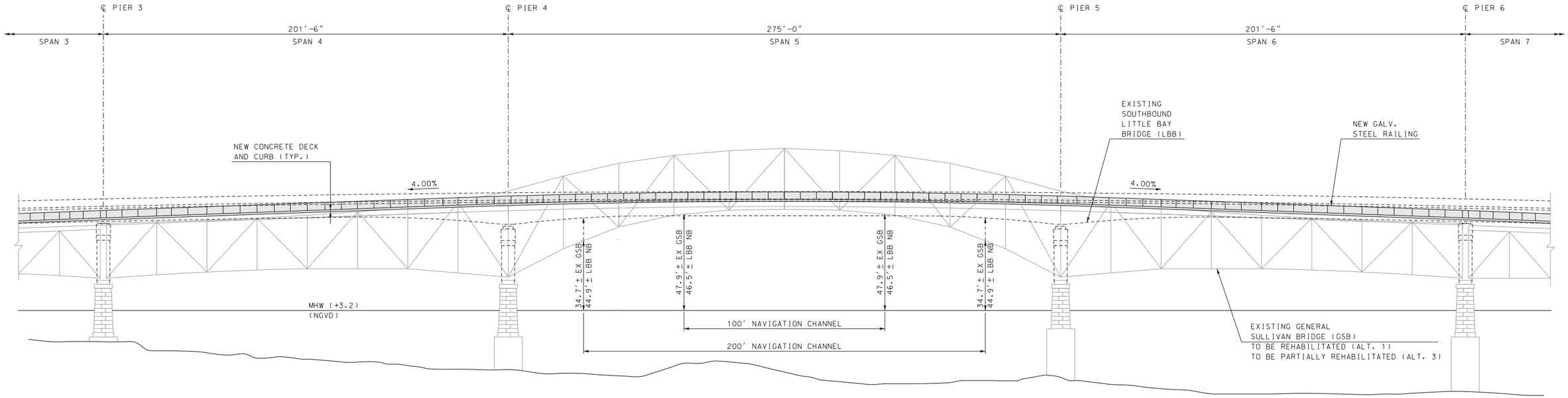
1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH LBB BRIDGE PIERS EXCEPT PIER NO. 8.

KEY

= NEW STRUCTURE

TYPICAL BRIDGE SECTION (PIERS 1, 2, 7, & 8) - ALTERNATIVE 3

SCALE: $\frac{3}{32}$" = 1'-0"



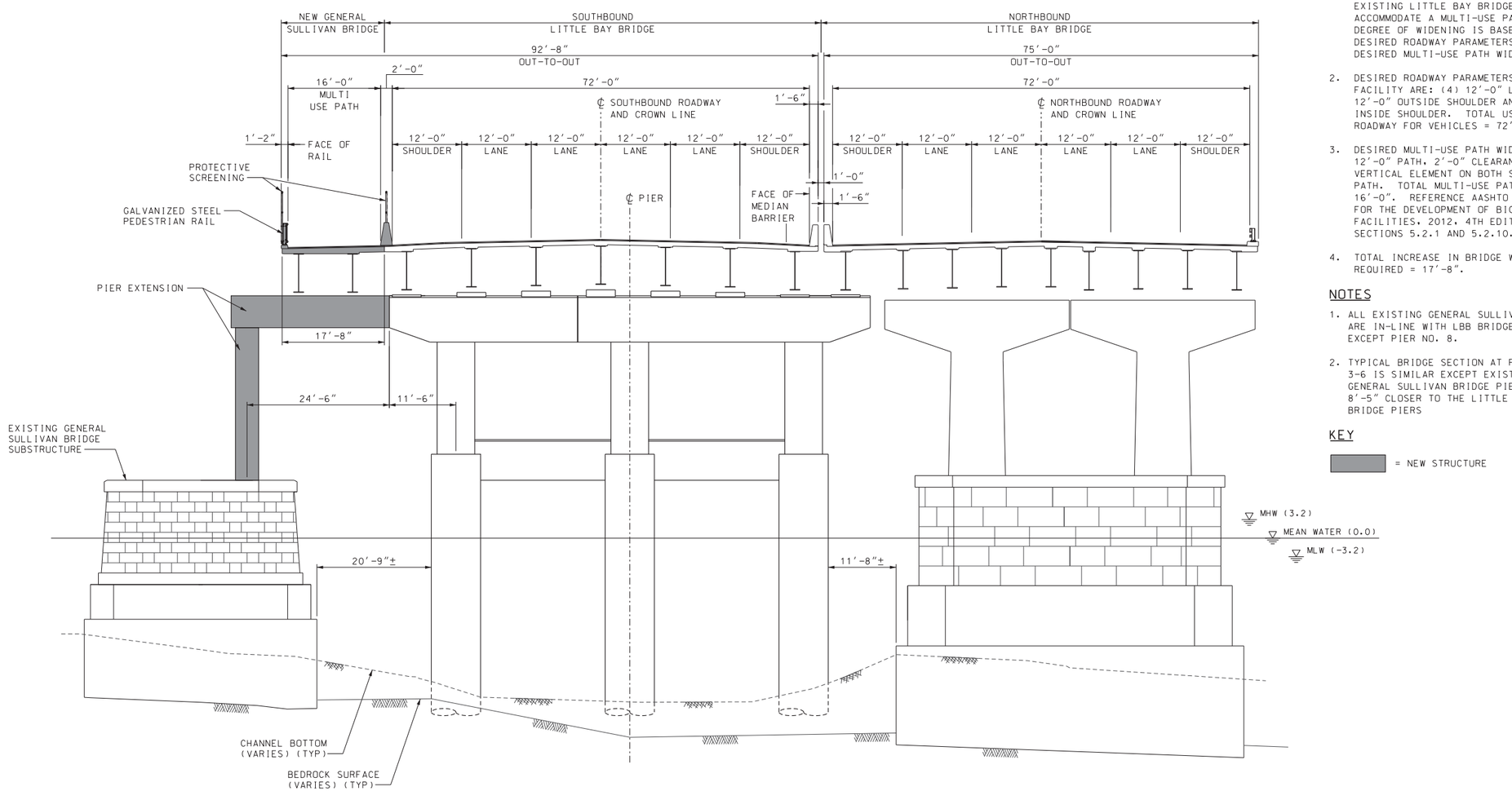
NAVIGATIONAL CLEARANCES
ELEVATION: ALTERNATIVES 1 & 3 – SPANS 4, 5, & 6

ALT. 1 – REHABILITATION OF THE GENERAL SULLIVAN BRIDGE
ALT. 3 – PARTIAL REHABILITATION

NOTE:

1. VERTICAL NAVIGATIONAL CLEARANCE DIMENSIONS FOR THE NORTHBOUND LITTLE BAY BRIDGE CONTROL OVER THE SOUTHBOUND LITTLE BAY BRIDGE AND ARE DESCRIBED ON THIS SHEET ACCORDINGLY.

ALTERNATIVE 6 - SOUTH BOUND LITTLE BAY BRIDGE - WIDEN DECK ON PIER EXTENSION



ALTERNATIVE 6 NOTES:

1. THIS ALTERNATIVE WIDENS THE EXISTING LITTLE BAY BRIDGE TO ACCOMMODATE A MULTI-USE PATH. THE DEGREE OF WIDENING IS BASED ON DESIRED ROADWAY PARAMETERS AND DESIRED MULTI-USE PATH WIDTH.
2. DESIRED ROADWAY PARAMETERS FOR THIS FACILITY ARE: (4) 12'-0" LANES, 12'-0" OUTSIDE SHOULDER AND 12'-0" INSIDE SHOULDER. TOTAL USABLE ROADWAY FOR VEHICLES = 72'-0".
3. DESIRED MULTI-USE PATH WIDTH IS: 12'-0" PATH, 2'-0" CLEARANCE TO VERTICAL ELEMENT ON BOTH SIDES OF PATH. TOTAL MULTI-USE PATH WIDTH = 16'-0". REFERENCE AASHTO "GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES, 2012, 4TH EDITION", SECTIONS 5.2.1 AND 5.2.10.
4. TOTAL INCREASE IN BRIDGE WIDTH REQUIRED = 17'-8".

NOTES

1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH LBB BRIDGE PIERS EXCEPT PIER NO. 8.
2. TYPICAL BRIDGE SECTION AT PIERS 3-6 IS SIMILAR EXCEPT EXISTING GENERAL SULLIVAN BRIDGE PIERS ARE 8'-5" CLOSER TO THE LITTLE BAY BRIDGE PIERS

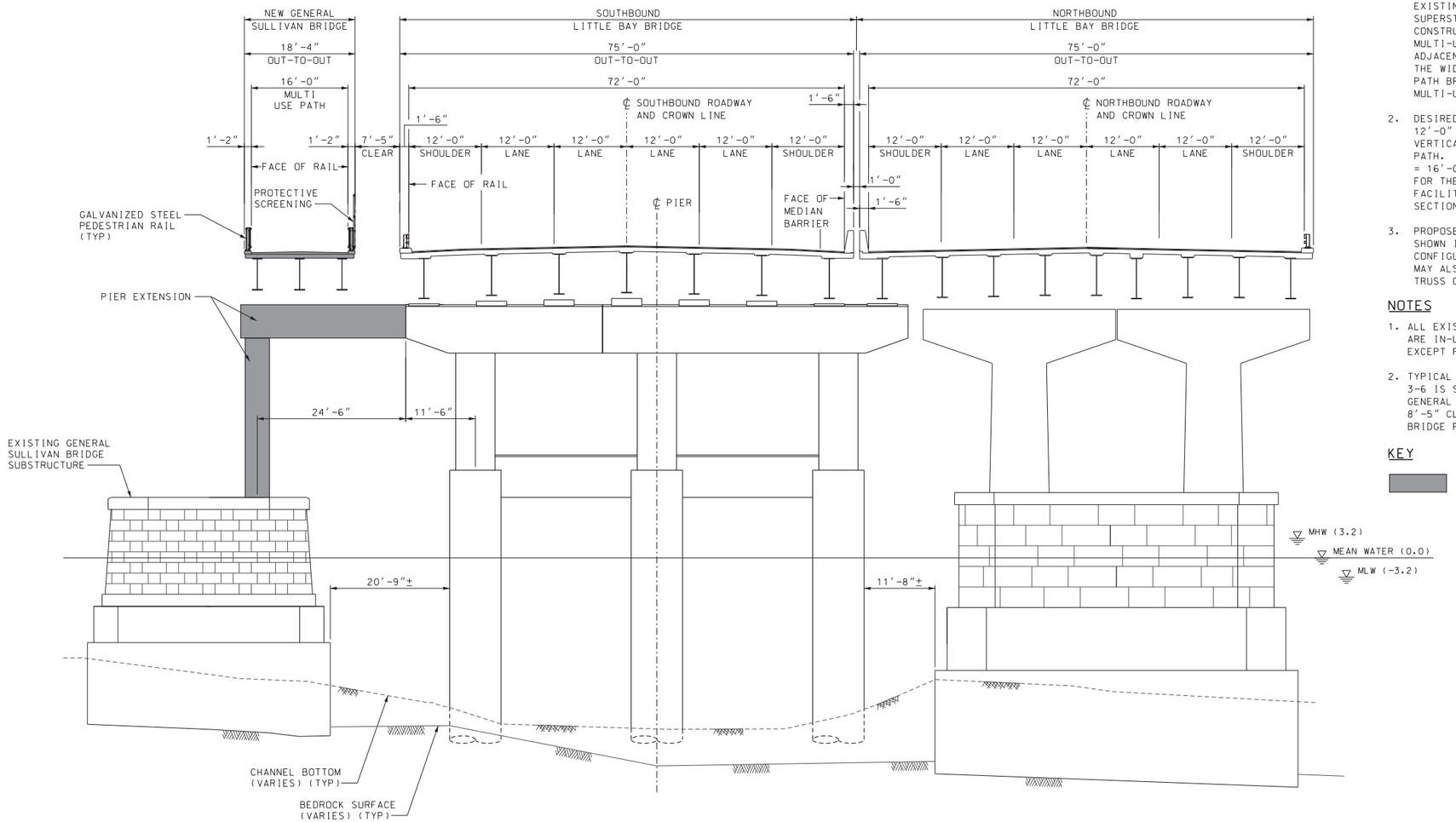
KEY

= NEW STRUCTURE

TYPICAL BRIDGE SECTION (PIERS 1, 2, & 7) - ALTERNATIVE 6

SCALE: $\frac{3}{32}$" = 1'-0"

ALTERNATIVE 7 - SOUTHBOUND LITTLE BAY BRIDGE - INDEPENDENT DECK ON PER EXTENSION



ALTERNATIVE 7 NOTES:

1. THIS ALTERNATIVE LEAVES THE EXISTING LITTLE BAY BRIDGE SUPERSTRUCTURE AS IS AND CONSTRUCTS AN INDEPENDENT MULTI-USE PATH SUPERSTRUCTURE ADJACENT TO THE LITTLE BAY BRIDGE. THE WIDTH OF PROPOSED MULTI-USE PATH BRIDGE IS BASED ON DESIRED MULTI-USE PATH WIDTH.

2. DESIRED MULTI-USE PATH WIDTH IS: 12'-0" PATH, 2'-0" CLEARANCE TO VERTICAL ELEMENT ON BOTH SIDES OF PATH. TOTAL MULTI-USE PATH WIDTH = 16'-0". REFERENCE AASHTO "GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES, 2012, 4TH EDITION", SECTIONS 5.2.1 AND 5.2.10.

3. PROPOSED ADJACENT SUPERSTRUCTURE SHOWN IS A STEEL GIRDER/SLAB CONFIGURATION. THIS ALTERNATIVE MAY ALSO CONSIDER A PRE-FABRICATED TRUSS OPTION.

NOTES

1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH LBB BRIDGE PIERS EXCEPT PIER NO. 8.

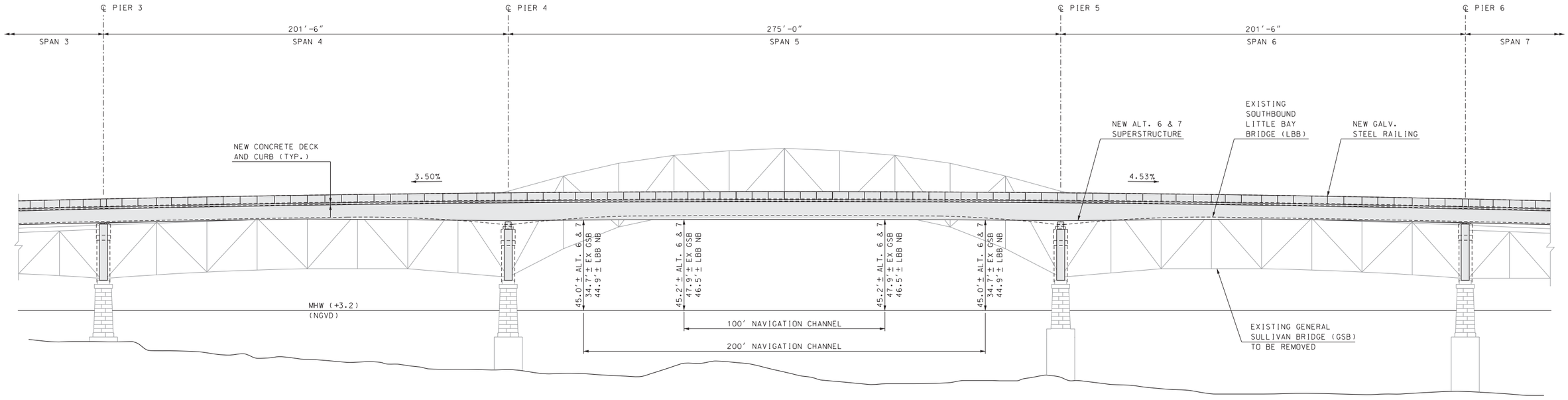
2. TYPICAL BRIDGE SECTION AT PIERS 3-6 IS SIMILAR EXCEPT EXISTING GENERAL SULLIVAN BRIDGE PIERS ARE 8'-5" CLOSER TO THE LITTLE BAY BRIDGE PIERS

KEY

= NEW STRUCTURE

TYPICAL BRIDGE SECTION (PIERS 1, 2, & 7) - ALTERNATIVE 7

SCALE: $\frac{3}{32}$" = 1'-0"



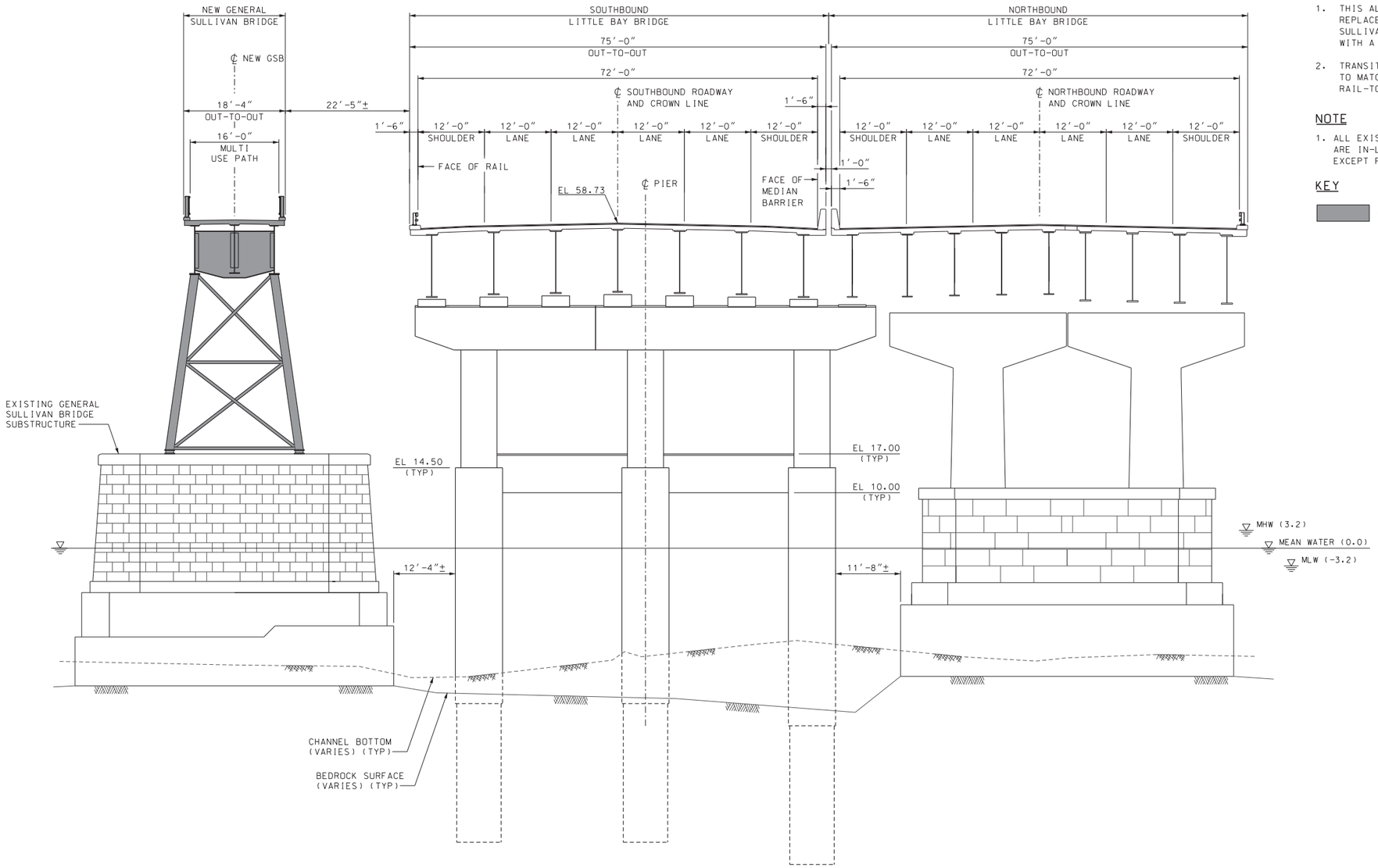
NAVIGATIONAL CLEARANCES
ELEVATION: ALTERNATIVES 6 & 7 – SPANS 4, 5, & 6

ALT. 6 – SOUTHBOUND LITTLE BAY BRIDGE – WIDENED DECK ON PIER EXTENSION
ALT. 7 – SOUTHBOUND LITTLE BAY BRIDGE – IN DEPENDANT DECK ON PIER EXTENSION

NOTE:

1. VERTICAL NAVIGATIONAL CLEARANCE DIMENSIONS FOR THE NORTHBOUND LITTLE BAY BRIDGE CONTROL OVER THE SOUTHBOUND LITTLE BAY BRIDGE AND ARE DESCRIBED ON THIS SHEET ACCORDINGLY.

ALTERNATIVE 9 - GENERAL SULLIVAN BRIDGE SUPERSTRUCTURE REPLACEMENT - GIRDER OPTION



ELEVATION
SCALE: 3/32" = 1'-0"

TYPICAL BRIDGE SECTION (PIERS 4 & 5, OTHER PIERS SIMILAR) - ALTERNATIVE 9
SCALE: 3/32" = 1'-0"

ALTERNATIVE 9 NOTES:

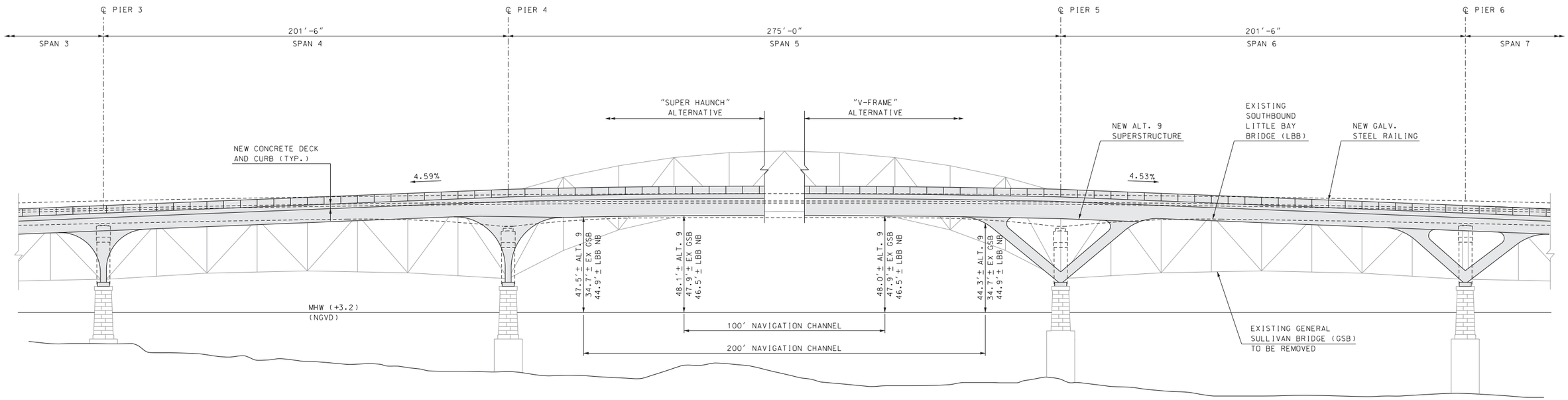
1. THIS ALTERNATIVE COMPLETELY REPLACES THE EXISTING GENERAL SULLIVAN BRIDGE SUPERSTRUCTURE WITH A GIRDER/FRAME SYSTEM.
2. TRANSITION THE NORTH END OF SPAN 1 TO MATCH THE NORTH APPROACH BRIDGE RAIL-TO-RAIL WIDTH OF 21'-0".

NOTE

1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH LBB BRIDGE PIERS EXCEPT PIER NO. 8.

KEY

= NEW STRUCTURE



NAVIGATIONAL CLEARANCES
ELEVATION: ALTERNATIVE 9 – SPANS 4, 5, & 6

SUPERSTRUCTURE REPLACEMENT – GIRDER OPTION

NOTE:

1. VERTICAL NAVIGATIONAL CLEARANCE DIMENSIONS FOR THE NORTHBOUND LITTLE BAY BRIDGE CONTROL OVER THE SOUTHBOUND LITTLE BAY BRIDGE AND ARE DESCRIBED ON THIS SHEET ACCORDINGLY.

Appendix C – Cost Estimates

Computations

Project **General Sullivan Bridge over Little Bay** Project # **52381.01**
Location **Newington/Dover, NH** Sheet
Calculated by **MAC** Date **1/15/2019**
Reviewed by **GSG** Date **1/15/2019**
Title **Conceptual Cost Estimate Summary**

Conceptual Cost Estimate Summary

General Sullivan Bridge - Alternative Initial Capital and Life Cycle Cost Estimate Summary

SEIS Cost Estimates:

Alt:	Description:	Initial Capital Cost	Life Cycle Cost *(2018 Dollars)*
No Action	Remove the General Sullivan Bridge and Supporting Substructure Entirely	$8,000,000	N/A
1D	Rehabilitation of the General Sullivan Bridge - 16' Path	$43,000,000	$74,000,000
2E	Superstructure Replacement - Truss Alternative - 16' Path	$37,750,000	(See Note 3)
3C	Partial Rehabilitation - 16' Path	$42,250,000	$61,750,000
4C	Complete Replacement - 16' Path	$31,750,000	(See Note 3)
6C	Southbound Little Bay Bridge - Widened Deck on Pier Extension - 16' Path	$28,000,000	$31,250,000
7B	Southbound Little Bay Bridge - Independent Deck on Pier Extension - 16' Path	$29,500,000	$32,250,000
9B	Superstructure Replacement - Girder Alternative - 16' Path	$28,500,000	$31,250,000

Notes:
1. "*Initial Capital Cost*" Is the cost of initial construction to bring the alternative into service.
2. "*Life Cycle Cost (2018 Dollars)*" Is the total cost to construct and maintain the alternative in todays dollars.
3. Life Cycle Cost estimates for Alternatives 2E and 4C were not completed since these alternatives were eliminated from consideration for other reasons.
4. The costs presented do not include Design Engineering, Permitting or Cultural Resource Mitigation costs.

Conceptual Cost Estimate

Project: General Sullivan Bridge over Little Bay | Project # 52381.01
Location: Newington/Dover, NH | Sheet:
Calculated by: MAC | Date: 2/7/2020
Reviewed by: | Date:
Title: Bridge Removal Only Alternative

Conceptual Cost Estimate - Bridge Removal Only

CONCEPTUAL ESTIMATE OF QUANTITIES AND COST

Item No.	Item Description	Unit	Quantity	Unit Cost	Total Cost
500	ACCESS PLATFORM FOR BRIDGE REMOVAL - SPANS 1-3, 8 AND 9 (684 LF)	U	1	$ 1,300,000	$ 1,300,000
502.01	SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND ENTIRE TRUSS	U	1	$ 1,600,000	$ 1,600,000
502.02	SUBSTRUCTURE REMOVAL - ABUTMENTS & PIERS	U	1	$ 1,900,000	$ 1,900,000

Major Assumptions:

1) Item ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-3, 8 AND 9 (684 LF) is a causeway needed for removal of the bridge where water is too shallow for barges.

2) Item *SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND ENTIRE TRUSS* cost considers cost reduction due to no members needing to be salvaged.

3) Item SUBSTRUCTURE REMOVAL - ABUTMENTS AND PIERS cost consider removing the abutments and piers in their entirety.

Items Sub Total	$ *4,800,000*
20% Standard Contingency	$ 960,000
Sub Total	$ *5,760,000*
10% Mobilization	$ 576,000
5% Construction Inspection	$ 288,000
Total	$ *6,624,000*
Construction Engineering	$ *165,600*
Risk Contingency	$ *1,250,000*
Total Cost[E]	**$ 8,000,000**

Notes:

A) Standard Contingency cost based on "*Items Sub Total*" Value
B) Mobilization and Construction Inspection costs based on "*Sub Total*" Value
C) Construction Engineering = **2.50%** of "*Total*" value, and is based on **1.0** year assumed construction duration
D) Risk Contingency Cost is approximately = **22%** of "*Sub Total*" value
E) Total Cost is the sum of "*Total*", "*Construction Engineering*" and "*Risk Contingency*" costs rounded to the nearest $250,000
F) Cultural Resource mitigation cost is not included in this conceptual estimate.

\\vhb\gbl\proj\Bedford\52381.01\tech\Bridge\Cost Estimates - SEIS\Bridge Removal Only\Bridge Removal Only - Conceptual Estimate\Bridge Removal Only - Conceptual Estimate

Conceptual Cost Estimate

Project: General Sullivan Bridge over Little Bay | Project # 52381.01
Location: Newington/Dover, NH | Sheet:
Calculated by: MAC | Date: 1/15/2019
Reviewed by: GSG | Date: 1/15/2019
Title: Alternative 1D

Conceptual Cost Estimate - Alternative 1D

Rehabilitation of Existing General Sullivan Bridge - 75 Year Service Life, 16' Multiuse Path Width

CONCEPTUAL ESTIMATE OF QUANTITIES AND COST

Item No.	Item Description	Unit	Quantity	Unit Cost	Total Cost
500	ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF)	U	1	$ 4,800,000	$ 4,800,000
502.01	SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND SELECT MEMBERS	U	1	$ 1,600,000	$ 1,600,000
502.02	SUBSTRUCTURE REMOVAL - NEWINGTON ABUTMENT (PARTIAL)	U	1	$ 10,000	$ 10,000
520.7	CONCRETE BRIDGE DECK (QC/QA) (F)	CY	920	$ 1,150	$ 1,058,000
544.2	REINFORCING STEEL, EPOXY COATED (F)	LB	237,000	$ 1.50	$ 355,500
548.01	FIXED BEARINGS	EA	10	$ 5,000	$ 50,000
548.02	EXPANSION BEARINGS	EA	18	$ 5,000	$ 90,000
548.03	JACKING FOR BEARING REPLACEMENT	EA	28	$ 5,000	$ 140,000
550.01	TEMPORARY STRUCTURAL SHORING - SPAN 7	U	1	$ 115,000	$ 115,000
550.02	STEEL TRUSS REPAIRS - LOCALIZED REPAIR DETAILS, ALL SPANS	LB	54,000	$ 15	$ 810,000
550.03	STEEL TRUSS REPAIRS - CHORD MEMBER REPLACEMENT, SPAN 7	LB	12,000	$ 15	$ 180,000
550.04	STEEL TRUSS REPAIRS - REPLACE RIVETS WITH BOLTS, ALL SPANS	EA	20,000	$ 115	$ 2,300,000
550.05	STEEL TRUSS REPAIRS - NEW BOLT LOCATIONS, ALL SPANS	EA	4,000	$ 115	$ 460,000
550.06	STRUCTURAL STEEL - FLOOR SYSTEM, ALL SPANS	LB	455,000	$ 6.00	$ 2,730,000
550.07	STRUCTURAL STEEL - BRACING MEMBERS, ALL SPANS	LB	186,000	$ 8.00	$ 1,488,000
556	CLEAN AND PAINT EXISTING STRUCTURAL STEEL - ALL SPANS	U	1	$ 6,436,900	$ 6,436,900
559.41	ASPHALTIC PLUG FOR CRACK CONTROL (F)	LF	37	$ 100	$ 3,700
560.1	PREFABRICATED COMPRESSION SEAL EXPANSION JOINT (F)	LF	19	$ 700	$ 13,300
561.1	PREFABRICATED STRIP SEAL EXPANSION JOINT (F)	LF	19	$ 800	$ 15,200
561.2	PREFABRICATED MODULAR BRIDGE JOINT SYSTEM (F)	LF	37	$ 1,400	$ 51,800
563	PEDESTRIAN BRIDGE RAIL	LF	3,056	$ 300	$ 916,800
571	REPOINT STONE MASONRY PIERS	LF	11,200	$ 175	$ 1,960,000
1001	PERMANENT ACCESS PLATFORM - SPANS 1-4 & 6-9	U	1	$ 530,000	$ 530,000
1002	TEMPORARY MULTI-USE PATH ON NB LITTLE BAY BRIDGE	U	1	$ 700,000	$ 700,000
1003	PERMANENT PATH APPROACH WORK	U	1	$ 10,000	$ 10,000

Major Assumptions:

1) Item *ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF)* is a causeway (460 LF) & trestle (793 LF) needed for all stages of construction.

2) Item *SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND SELECT MEMBERS* cost considers complexity of removal without damaging members that are to remain.

3) Unit cost for Item *STRUCTURAL STEEL - BRACING MEMBERS, ALL SPANS* accounts for more complex connection detailing and field fitting.

4) Item *PERMANENT PATH APPROACH WORK* carries cost for minor approach work behind the Newington abutment - no work anticipated behind the Dover abutment.

5) Life cycle costs are NOT included in this estimate.

Items Sub Total	$ *26,824,200*
20% Standard Contingency	$ 5,364,840
Sub Total	$ *32,189,040*
10% Mobilization	$ 3,218,904
5% Construction Inspection	$ 1,609,452
Total	$ *37,017,396*
Construction Engineering	$ *1,665,783*
Risk Contingency	$ *4,250,000*
Total Cost[E]	**$ 43,000,000**

Notes:

A) Standard Contingency cost based on "*Items Sub Total*" Value
B) Mobilization and Construction Inspection costs based on "*Sub Total*" Value
C) Construction Engineering = **4.5%** of "*Total*" value, and is based on **3.0** year assumed construction duration
D) Risk Contingency Cost is approximately = **13%** of "*Sub Total*" value
E) Total Cost is the sum of "*Total*", "*Construction Engineering*" and "*Risk Contingency*" costs rounded to the nearest $250,000
F) Vessel Collision loading/protection criteria is to be waived by the New Hampshire DOT, Bureau of Bridge Design
G) Cultural Resource mitigation cost is not included in this conceptual estimate.

\\vhb\gbl\proj\Bedford\52381.01\tech\Bridge\Cost Estimates - SEIS\Alternative 1\Alternative 1D - 16' Path - Conceptual Estimate\Alternative 1D - 16' Path - Conceptual Estimate

Conceptual Cost Estimate

Project **General Sullivan Bridge over Little Bay** | Project # **52381.01**
Location **Newington/Dover, NH** | Sheet
Calculated by **MAC** | Date **1/15/2019**
Reviewed by GSG | Date 1/15/2019
Title **Alternative 2E**

Conceptual Cost Estimate - Alternative 2E

Replacement of Existing General Sullivan Bridge Superstructure with New Truss Superstructure, 16' Multiuse Path Width

CONCEPTUAL ESTIMATE OF QUANTITIES AND COST

Item No.	Item Description	Unit	Quantity	Unit Cost	Total Cost
500	ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF)	U	1	$ 4,800,000	$ 4,800,000
502.01	SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND ENTIRE TRUSS	U	1	$ 1,100,000	$ 1,100,000
502.02	SUBSTRUCTURE REMOVAL - NEWINGTON ABUTMENT & PIER 7 (PARTIAL)	U	1	$ 45,000	$ 45,000
520.12	CONCRETE CLASS A, ABOVE FOOTINGS (F)	CY	120	$ 1,300	$ 156,000
520.7002	CONCRETE BRIDGE DECK (QC/QA) (F)	CY	880	$ 1,150	$ 1,012,000
544.2	REINFORCING STEEL, EPOXY COATED (F)	LB	247,000	$ 1.50	$ 370,500
548.21	ELASTOMERIC BEARING ASSEMBLIES (F)	EA	32	$ 5,000	$ 160,000
559.41	ASPHALTIC PLUG FOR CRACK CONTROL (F)	LF	55	$ 100	$ 5,500
560.1001	PREFABRICATED COMPRESSION SEAL EXPANSION JOINT (F)	LF	37	$ 700	$ 25,900
561.2	PREFABRICATED MODULAR BRIDGE JOINT SYSTEM (F)	LF	55	$ 1,400	$ 77,000
563	PEDESTRIAN BRIDGE RAIL	LF	3,056	$ 300	$ 916,800
569.01	PREFABRICATED TRUSS - FAB. & DELIVERED, SPANS 1-3 & 7-9, 18'-4" WIDE	LB	1,300,000	$ 4.00	$ 5,200,000
569.02	PREFABRICATED TRUSS - FAB. & DELIVERED, SPANS 4-6, 21'-0" WIDE	LB	1,070,000	$ 4.00	$ 4,280,000
569.03	PREFABRICATED TRUSS - METALIZED & COLORED, ALL SPANS	SF	125,000	$ 13.50	$ 1,687,500
569.04	PREFABRICATED TRUSS - ERECTED, ALL SPANS	LB	2,370,000	$ 1.40	$ 3,318,000
571	REPOINT STONE MASONRY PIERS	LF	11,200	$ 175	$ 1,960,000
1002	TEMPORARY MULTI-USE PATH ON NB LITTLE BAY BRIDGE	U	1	$ 700,000	$ 700,000
1003	PERMANENT PATH APPROACH WORK	U	1	$ 10,000	$ 10,000

Items Sub Total	$ *25,824,200*
20% Standard Contingency	$ 5,164,840
Sub Total	$ *30,989,040*
10% Mobilization	$ 3,098,904
5% Construction Inspection	$ 1,549,452
Total	$ *35,637,396*
Construction Engineering	$ *890,935*
Risk Contingency	$ *1,250,000*
Total Cost[E]	**$ 37,750,000**

Major Assumptions:

1) Item ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF) is a causeway (460 LF) & trestle (793 LF) needed for all stages of construction.
2) Item *SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND ENTIRE TRUSS* cost considers cost reduction due to no members needing to be salvaged.
3) Item *SUBSTRUCTURE REMOVAL - NEWINGTON ABUTMENT & PIER 7 (PARTIAL)* includes the removal of the Newington abutment structural topping slab, and the top portion of Pier 7.
4) In item *PREFABRICATED TRUSS - FAB & DELIVERED, SPANS 1-3 & 7-9, 18'-4" WIDE* the out-to-out spacing of truss chords is set equal to the overall bridge deck width (path width plus curb widths) as these spans are not governed by wind overturning forces.
5) In item *PREFABRICATED TRUSS - FAB & DELIVERED, SPANS 4-6, 21'-0" WIDE,* the out-to-out spacing of truss chords is determined by comparing wind overturning forces to truss and deck system self weight, and chord spacing. Heavier structure & wider spacing = more overturning resistance.
6) Item *PERMANENT PATH APPROACH WORK* carries cost for minor work behind the Newington abutment - no work anticipated behind the Dover abutment.
7) Life cycle costs are NOT included in this estimate.

Notes:

A) Standard Contingency cost based on "*Items Sub Total*" Value
B) Mobilization and Construction Inspection costs based on "*Sub Total*" Value
C) Construction Engineering = **2.5%** of "*Total*" value, and is based on **1.0** year assumed construction duration
D) Risk Contingency Cost is approximately = **4%** of "*Sub Total*" value
E) Total Cost is the sum of "*Total*", "*Construction Engineering*" and "*Risk Contingency*" costs rounded to the nearest $250,000
F) Vessel Collision loading/protection criteria is to be waived by the New Hampshire DOT, Bureau of Bridge Design
G) Cultural Resource mitigation cost is not included in this conceptual estimate.

\\vhb\gbl\proj\Bedford\52381.01\tech\Bridge\Cost Estimates - SEIS\Alternative 2\Alternative 2E - 16' Path - Conceptual Estimate\Alternative 2E - 16' Path - Conceptual Estimate

Conceptual Cost Estimate

Project **General Sullivan Bridge over Little Bay** | Project # **52381.01**
Location **Newington/Dover, NH** | Sheet
Calculated by **MAC** | Date **1/15/2019**
Reviewed by **GSG** | Date **1/15/2019**
Title **Alternative 3C**

Conceptual Cost Estimate - Alternative 3C

Replacement of General Sullivan Bridge Approach Spans (1-3 & 7-9) with New Truss Superstructure, 16' Multiuse Path Width

CONCEPTUAL ESTIMATE OF QUANTITIES AND COST

Item No.	Item Description	Unit	Quantity	Unit Cost	Total Cost
500	ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF)	U	1	$ 4,800,000	$ 4,800,000
502.01	SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND TRUSS SPANS 1-3 & 7-9	U	1	$ 1,300,000	$ 1,300,000
502.02	SUBSTRUCTURE REMOVAL - NEWINGTON ABUTMENT & PIER 7 (PARTIAL)	U	1	$ 45,000	$ 45,000
520.12	CONCRETE CLASS A, ABOVE FOOTINGS (F)	CY	120	$ 1,300	$ 156,000
520.7002	CONCRETE BRIDGE DECK (QC/QA) (F)	CY	920	$ 1,150	$ 1,058,000
544.2	REINFORCING STEEL, EPOXY COATED (F)	LB	257,000	$ 1.50	$ 385,500
548.03	JACKING FOR BEARING REPLACEMENT	EA	8	$ 5,000.00	$ 40,000
548.21	ELASTOMERIC BEARING ASSEMBLIES (F)	EA	32	$ 5,000	$ 160,000
550.02	STEEL TRUSS REPAIRS - LOCALIZED REPAIR DETAILS, SPANS 4, 5 & 6	LB	33,000	$ 15	$ 495,000
550.04	STEEL TRUSS REPAIRS - REPLACE RIVETS WITH BOLTS, SPANS 4, 5 & 6	EA	14,500	$ 115.00	$ 1,667,500
550.05	STEEL TRUSS REPAIRS - NEW BOLT LOCATIONS, SPANS 4, 5 & 6	EA	1,250	$ 115.00	$ 143,750
550.06	STRUCTURAL STEEL - FLOOR SYSTEM, SPANS 4, 5 & 6	LB	285,000	$ 6.00	$ 1,710,000
550.07	STRUCTURAL STEEL - BRACING MEMBERS, SPANS 4, 5 & 6	LB	82,000	$ 8.00	$ 656,000
556	CLEAN AND PAINT EXISTING STRUCTURAL STEEL	U	1	$ 3,399,100	$ 3,399,100
559.41	ASPHALTIC PLUG FOR CRACK CONTROL (F)	LF	55	$ 100	$ 5,500
560.1001	PREFABRICATED COMPRESSION SEAL EXPANSION JOINT (F)	LF	37	$ 700	$ 25,900
561.2	PREFABRICATED MODULAR BRIDGE JOINT SYSTEM (F)	LF	55	$ 1,400	$ 77,000
563	PEDESTRIAN BRIDGE RAIL	LF	3,056	$ 300	$ 916,800
569.01	PREFABRICATED TRUSS - FAB. & DELIVERED, SPANS 1-3 & 7-9, 18'-4" WIDE	LB	1,300,000	$ 4.00	$ 5,200,000
569.03	PREFABRICATED TRUSS - METALIZED & COLORED, SPANS 1-3 & 7-9	SF	69,000	$ 13.50	$ 931,500
569.04	PREFABRICATED TRUSS - ERECTED, SPANS 1-3 & 7-9	LB	1,300,000	$ 1.40	$ 1,820,000
571	REPOINT STONE MASONRY PIERS	LF	11,200	$ 175	$ 1,960,000
1001	PERMANENT ACCESS PLATFORM, SPANS 4 & 6	U	1	$ 170,000	$ 170,000
1002	TEMPORARY MULTI-USE PATH ON NB LITTLE BAY BRIDGE	U	1	$ 700,000	$ 700,000
1003	PERMANENT PATH APPROACH WORK	U	1	$ 10,000	$ 10,000

Items Sub Total	$ *27,832,550*
20% Standard Contingency	$ 5,566,510
Sub Total	$ *33,399,060*
10% Mobilization	$ 3,339,906
5% Construction Inspection	$ 1,669,953
Total	$ *38,408,919*
Construction Engineering	$ *1,344,312*
Risk Contingency	$ *2,500,000*
Total Cost[E]	**$ 42,250,000**

Major Assumptions:

1) Item ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF) is a causeway (460 LF) & trestle (793 LF) needed for all stages of construction.
2) Item *SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND TRUSS SPANS 1-3 & 7-9* considers removal of entire deck system, spans 1-3 and 7-9, and select bracing members in spans 4-6. The cost considers cost reduction due to no members being salvaged in spans 1-3 and 7-9, and cost increase due to complexity of removal of members within spans to remain.
3) In item *PREFABRICATED TRUSS - FAB. & DELIVERED, SPANS 1-3 & 7-9, 18'-4" WIDE* the out-to-out spacing of truss chords is set equal to the overall bridge width (path width plus curb widths) as these spans are not governed by wind overturning forces.
4) Life cycle costs are NOT included in this estimate.

Notes:

A) Standard Contingency cost based on "*Items Sub Total*" Value
B) Mobilization and Construction Inspection costs based on "*Sub Total*" Value
C) Construction Engineering = **3.5%** of "*Total*" value, and is based on **2.0** year assumed construction duration
D) Risk Contingency Cost is approximately = **7%** of "*Sub Total*" value
E) Total Cost is the sum of "*Total*", "*Construction Engineering*" and "*Risk Contingency*" costs rounded to the nearest $250,000
F) Vessel Collision loading/protection criteria is to be waived by the New Hampshire DOT, Bureau of Bridge Design
G) Cultural Resource mitigation cost is not included in this conceptual estimate.

\\vhb\gbl\proj\Bedford\52381.01\tech\Bridge\Cost Estimates - SEIS\Alternative 3\Alternative 3C - 16' Path - Conceptual Estimate\Alternative 3C - 16' Path - Conceptual Estimate

Conceptual Cost Estimate

Project **General Sullivan Bridge over Little Bay** — Project # **52381.01**
Location **Newington/Dover, NH** — Sheet
Calculated by **MAC** — Date **1/15/2019**
Reviewed by GSG — Date 1/15/2019
Title **Alternative 4C**

Conceptual Cost Estimate - Alternative 4C

Complete Replacement of General Sullivan Bridge, 16' Multiuse Path Width

CONCEPTUAL ESTIMATE OF QUANTITIES AND COST

Item No.	Item Description	Unit	Quantity	Unit Cost	Total Cost
500	ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF)	U	1	$ 5,400,000	$ 5,400,000
502.01	SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND ENTIRE TRUSS	U	1	$ 1,100,000	$ 1,100,000
502.02	SUBSTRUCTURE REMOVAL - ABUTMENTS & PIERS	U	1	$ 1,900,000	$ 1,900,000
509	DRILLED SHAFT PIER, CAP AND REINFORCEMENT	EA	8	$ 640,000	$ 5,120,000
520	ABUTMENT	EA	2	$ 250,000	$ 500,000
520.7002	CONCRETE BRIDGE DECK (QC/QA) (F)	CY	920	$ 1,150	$ 1,058,000
544.2	REINFORCING STEEL, EPOXY COATED (F)	LB	240,000	$ 1.50	$ 360,000
548.21	ELASTOMERIC BEARING ASSEMBLIES (F)	EA	30	$ 5,000	$ 150,000
550.1	STRUCTURAL STEEL - WEATHERING (F)	LB	1,790,000	$ 2.10	$ 3,759,000
561.2	PREFABRICATED MODULAR BRIDGE JOINT SYSTEM (F)	LF	37	$ 1,400	$ 51,800
563	PEDESTRIAN BRIDGE RAIL	LF	3,056	$ 300	$ 916,800
1002	TEMPORARY MULTI-USE PATH ON NB LITTLE BAY BRIDGE	U	1	$ 700,000	$ 700,000
1003	PERMANENT PATH APPROACH WORK	U	1	$ 10,000	$ 10,000

Items Sub Total $ *21,025,600*
20% Standard Contingency $ 4,205,120
Sub Total $ *25,230,720*
10% Mobilization $ 2,523,072
5% Construction Inspection $ 1,261,536
Total $ *29,015,328*
Construction Engineering $ *1,015,536*
Risk Contingency $ *1,750,000*
Total Cost[E] **$ 31,750,000**

Major Assumptions:

1) Item ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF) is a causeway (460 LF) & trestle (793 LF) needed for all stages of construction.
2) Item *SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND ENTIRE TRUSS* cost considers cost reduction due to no members needing to be salvaged.
3) Item *DRILLED SHAFT PIER, CAP AND REINFORCEMENT* is a single drilled shaft pier of similar dimensions to the SBLBB. Cost includes rock socket, shaft casing, stainless steel reinforcement (within drilled shaft only), epoxy reinforcement, specialized equipment mobilization and concrete. Cost derived from SBLBB bid tabulation and increased by 16% as recommended by consumer price index.
4) Item *PERMANENT PATH APPROACH WORK* carries cost for minor approach work behind the Newington abutment - no work anticipated behind the Dover abutment.
5) Life cycle costs are NOT included in this estimate.
6) A minimum path width of 16' (18'-4" overall deck width) is recommended as the minimum witdth. A 12' path technically meets aeroelastic instability limits defined by the AASHTO LRFD Manual; however there is concern from an engineering judgement standpoint with anything narrower than the 16' path for this particular alternative.

Notes:

A) Standard Contingency cost based on "*Items Sub Total*" Value
B) Mobilization and Construction Inspection costs based on "*Sub Total*" Value
C) Construction Engineering = **3.50%** of "*Total*" value, and is based on **2.0** year assumed construction duration
D) Risk Contingency Cost is approximately = **7%** of "*Sub Total*" value
E) Total Cost is the sum of "*Total*", "*Construction Engineering*" and "*Risk Contingency*" costs rounded to the nearest $250,000
F) Vessel Collision loading/protection criteria is to be waived by the New Hampshire DOT, Bureau of Bridge Design
G) Cultural Resource mitigation cost is not included in this conceptual estimate.

\\vhb\gbl\proj\Bedford\52381.01\tech\Bridge\Cost Estimates - SEIS\Alternative 4\Alternative 4C - 16' Path - Conceptual Estimate\Alternative 4C - 16' Path - Conceptual Estimate

Conceptual Cost Estimate

Project **General Sullivan Bridge over Little Bay** — Project # **52381.01**
Location **Newington/Dover, NH** — Sheet
Calculated by **MAC** — Date **1/15/2019**
Reviewed by **GSG** — Date **1/15/2019**
Title **Alternative 6C**

Conceptual Cost Estimate - Alternative 6C

Southbound Little Bay Bridge Superstructure Widening and Extended Substructure, 16' Multiuse Path Width

CONCEPTUAL ESTIMATE OF QUANTITIES AND COST

Item No.	Item Description	Unit	Quantity	Unit Cost	Total Cost
500	ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF)	U	1	$ 4,800,000	$ 4,800,000
502.01	SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND ENTIRE TRUSS	U	1	$ 1,100,000	$ 1,100,000
502.02	SUBSTRUCTURE REMOVAL - ABUTMENTS, PIER 1, & PIER 7 (PARTIAL)	U	1	$ 195,000	$ 195,000
502.03	STRUCTURE REMOVAL - DOVER APPROACH BRIDGE	U	1	$ 160,000	$ 160,000
509	DRILLED SHAFT PIER, CAP AND REINFORCEMENT	EA	2	$ 650,000	$ 1,300,000
520	ABUTMENTS	U	2	$ 250,000	$ 500,000
520.01	CONCRETE CLASS AA - PRECAST PIER COLUMN	CY	120	$ 2,000	$ 240,000
520.02	CONCRETE CLASS AA - PIER CAP EXTENSION	CY	345	$ 2,000	$ 690,000
520.7002	CONCRETE BRIDGE DECK (QC/QA) (F)	CY	980	$ 1,250	$ 1,225,000
544.2	REINFORCING STEEL, EPOXY COATED (F)	LB	349,000	$ 1.50	$ 523,500
548	PINNED BEARING FOR PIER COLUMN	EA	7	$ 10,000.00	$ 70,000
548.21	ELASTOMERIC BEARING ASSEMBLIES (F)	EA	32	$ 5,000	$ 160,000
550.1	STRUCTURAL STEEL - WEATHERING (F)	LB	1,325,828	$ 2.10	$ 2,784,239
559.41	ASPHALTIC PLUG FOR CRACK CONTROL (F)	LF	37	$ 100	$ 3,700
561.2	PREFABRICATED MODULAR BRIDGE JOINT SYSTEM (F)	LF	37	$ 1,400	$ 51,800
563	PEDESTRIAN BRIDGE RAIL	LF	2,654	$ 300	$ 796,302
563.01	PROTECTIVE SCREENING	LF	3,381	$ 55	$ 185,974
571	REPOINT STONE MASONRY PIERS	LF	9,800	$ 175	$ 1,715,000
592	DOVER APPROACH MSE WALL	SF	6,739	$ 85	$ 572,832
606	CONCRETE BARRIER, DOUBLE-FACED	LF	1,173	$ 390	$ 457,470
606.41741	PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL - BRIDGE	LF	1,375	$ 45	$ 61,875
619.1	MAINTENANCE OF TRAFFIC	U	1	$ 150,000	$ 150,000
1002	TEMPORARY MULTI-USE PATH ON NB LITTLE BAY BRIDGE	U	1	$ 700,000	$ 700,000
1003	PERMANENT PATH APPROACH WORK	U	1	$ 180,000	$ 180,000

Items Sub Total $ *18,622,692*
20% Standard Contingency $ 3,724,538
Sub Total $ *22,347,230*
10% Mobilization $ 2,234,723
5% Construction Inspection $ 1,117,362
Total $ *25,699,315*
Construction Engineering $ *770,979*
Risk Contingency $ *1,500,000*
Total Cost[E] **$ 28,000,000**

Major Assumptions:

1) Item ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF) is a causeway (460 LF) & trestle (793 LF) needed for all stages of construction.
2) Item *SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND ENTIRE TRUSS* cost considers cost reduction due to no members needing to be salvaged.
3) Item *DRILLED SHAFT PIER, CAP AND REINFORCEMENT* is a single drilled shaft pier of similar dimensions to the SBLBB. Cost includes rock socket, shaft casing, stainless steel reinforcement (within drilled shaft only), epoxy reinforcement, specialized equipment mobilization and concrete. Cost derived from SBLBB bid tabulation and increased by 16% as recommended by consumer price index.
4) Item *PERMANENT PATH APPROACH WORK* carries cost for required approach work behind the Newington abutment due to profile raise, Dover approach work is structural.
5) Dover approach bridge and elevated MSE wall path to be removed and replaced due to significant grade differential of incoming proposed superstructure and existing abutment elevation (difference = 7.2' +/-) due to maintaining 5% grade.
6) Unit cost of Item *CONCRETE BRIDGE DECK (QC/QA) (F)* is higher than other alt's. due to more difficult deck forming off of SBLBB

Notes:

A) Standard Contingency cost based on "*Items Sub Total*" Value
B) Mobilization and Construction Inspection costs based on "*Sub Total*" Value
C) Construction Engineering = **3.0%** of "*Total*" value, and is based on **1.5** year assumed construction duration
D) Risk Contingency Cost is approximately = **7%** of "*Sub Total*" value
E) Total Cost is the sum of "*Total*", "*Construction Engineering*" and "*Risk Contingency*" costs rounded to the nearest $250,000
F) Vessel Collision loading/protection criteria is to be waived by the New Hampshire DOT, Bureau of Bridge Design
G) Cultural Resource mitigation cost is not included in this conceptual estimate.
H) This alternative carriers durability concerns with drilling into existing pier caps - needs further protection of existing structure consideration

\\vhb\gbl\proj\Bedford\52381.01\tech\Bridge\Cost Estimates - SEIS\Alternative 6\Alternative 6C - 16' Path - Conceptual Estimate\Alternative 6C - 16' Path - Conceptual Estimate

Conceptual Cost Estimate

Project **General Sullivan Bridge over Little Bay** | Project # **52381.01**
Location **Newington/Dover, NH** | Sheet
Calculated by **MAC** | Date **1/15/2019**
Reviewed by **GSG** | Date **1/15/2019**
Title **Alternative 7B**

Conceptual Cost Estimate - Alternative 7B

Independent Superstructure on Southbound Little Bay Bridge Extended Substructure, 16' Multiuse Path Width

CONCEPTUAL ESTIMATE OF QUANTITIES AND COST

Item No.	Item Description	Unit	Quantity	Unit Cost	Total Cost
500	ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF)	U	1	$ 4,800,000	$ 4,800,000
502.01	SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND ENTIRE TRUSS	U	1	$ 1,100,000	$ 1,100,000
502.02	SUBSTRUCTURE REMOVAL - ABUTMENTS, PIER 1, & PIER 7 (PARTIAL)	U	1	$ 195,000	$ 195,000
502.03	STRUCTURE REMOVAL - DOVER APPROACH BRIDGE	U	1	$ 160,000	$ 160,000
509	DRILLED SHAFT PIER, CAP AND REINFORCEMENT	EA	2	$ 650,000	$ 1,300,000
520	ABUTMENTS	U	2	$ 250,000	$ 500,000
520.01	CONCRETE CLASS AA - PRECAST PIER COLUMN	CY	120	$ 2,000	$ 240,000
520.02	CONCRETE CLASS AA - PIER CAP EXTENSION	CY	345	$ 2,000	$ 690,000
520.7002	CONCRETE BRIDGE DECK (QC/QA) (F)	CY	1,010	$ 1,150	$ 1,161,500
544.2	REINFORCING STEEL, EPOXY COATED (F)	LB	357,000	$ 1.50	$ 535,500
548	PINNED BEARING FOR PIER EXTENSION COLUMNS	EA	7	$ 10,000.00	$ 70,000
548.21	ELASTOMERIC BEARING ASSEMBLIES (F)	EA	32	$ 5,000	$ 160,000
550.1	STRUCTURAL STEEL - WEATHERING (F)	LB	1,978,084	$ 2.10	$ 4,153,976
561.2	PREFABRICATED MODULAR BRIDGE JOINT SYSTEM (F)	LF	37	$ 1,400	$ 51,800
563	PEDESTRIAN BRIDGE RAIL	LF	3,827	$ 300	$ 1,148,202
563.01	PROTECTIVE SCREENING	LF	1,691	$ 55	$ 92,987
571	REPOINT STONE MASONRY PIERS	LF	9,800	$ 175	$ 1,715,000
592	DOVER APPROACH MSE WALL	SF	6,739	$ 85	$ 572,832
606.41741	PORTABLE CONCRETE BARRIER FOR TRAFFIC CONTROL - BRIDGE	LF	1,375	$ 45	$ 61,875
619.1	MAINTENANCE OF TRAFFIC	U	1	$ 150,000	$ 150,000
1002	TEMPORARY MULTI-USE PATH ON NB LITTLE BAY BRIDGE	U	1	$ 700,000	$ 700,000
1003	PERMANENT PATH APPROACH WORK	U	1	$ 180,000	$ 180,000

Major Assumptions:

1) Item ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF) is a causeway (460 LF) & trestle (793 LF) needed for all stages of construction.

2) Item *SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND ENTIRE TRUSS* cost considers cost reduction due to no members needing to be salvaged.

3) Item *DRILLED SHAFT PIER, CAP AND REINFORCEMENT* is a single drilled shaft pier of similar dimensions to the SBLBB. Cost includes rock socket, shaft casing, stainless steel reinforcement (within drilled shaft only), epoxy reinforcement, specialized equipment mobilization and concrete. Cost derived from SBLBB bid tabulation and increased by 16% as recommended by consumer price index.

Items Sub Total	$ *19,738,672*
20% Standard Contingency	$ 3,947,734
Sub Total	$ *23,686,406*
10% Mobilization	$ 2,368,641
5% Construction Inspection	$ 1,184,320
Total	$ *27,239,367*
Construction Engineering	$ *817,181*
Risk Contingency	$ *1,500,000*
Total Cost[E]	**$ 29,500,000**

4) Item *PERMANENT PATH APPROACH WORK* carries cost for required approach work behind the Newington abutment due to profile raise, Dover approach work is structural.

5) Dover approach bridge and elevated MSE wall path to be removed and replaced due to significant grade differential of incoming proposed superstructure and existing abutment elevation (difference = 7.2' +/-) due to maintaining 5% grade.

6) A minimum path width of 16' (18'-4" overall deck width) is recommended as the minimum witdth. A 12' path technically meets aeroelastic instability limits defined by the AASHTO LRFD Manual; however there is concern from an engineering judgement standpoint with anything narrower than the 16' path for this particular alternative.

Notes A) Standard Contingency cost based on "*Items Sub Total*" Value
B) Mobilization and Construction Inspection costs based on "*Sub Total*" Value
C) Construction Engineering = **3.0%** of "*Total*" value, and is based on **1.5** year assumed construction duration
D) Risk Contingency Cost is approximately = **6%** of "*Sub Total*" value
E) Total Cost is the sum of "*Total*", "*Construction Engineering*" and "*Risk Contingency*" costs rounded to the nearest $250,000
F) Vessel Collision loading/protection criteria is to be waived by the New Hampshire DOT, Bureau of Bridge Design
G) Cultural Resource mitigation cost is not included in this conceptual estimate.
H) This alternative carriers durability concerns with drilling into existing pier caps - needs further protection of existing structure consideration

\\vhb\gbl\proj\Bedford\52381.01\tech\Bridge\Cost Estimates - SEIS\Alternative 7\Alternative 7B - 16' Path - Conceptual Estimate\Alternative 7B - 16' Path - Conceptual Estimate

Conceptual Cost Estimate

Project **General Sullivan Bridge over Little Bay** | Project # **52381.01**
Location **Newington/Dover, NH** | Sheet
Calculated by **MAC** | Date **1/15/2019**
Reviewed by **GSG** | Date **1/15/2019**
Title **Alternative 9B**

Conceptual Cost Estimate - Alternative 9B

Replacement of Existing General Sullivan Bridge Superstructure with "V-Shaped" Rigid Steel Frame Superstructure - 16'-0" Path

CONCEPTUAL ESTIMATE OF QUANTITIES AND COST

Item No.	Item Description	Unit	Quantity	Unit Cost	Total Cost
500	ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF)	U	1	$ 4,800,000	$ 4,800,000
502.01	SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND ENTIRE TRUSS	U	1	$ 1,100,000	$ 1,100,000
502.02	SUBSTRUCTURE REMOVAL - ABUTMENTS, & PIER 7 (PARTIAL)	U	1	$ 100,000	$ 100,000
520	ABUTMENTS	U	2	$ 250,000	$ 500,000
520.12	CONCRETE CLASS A, ABOVE FOOTINGS (F)	CY	120	$ 1,300	$ 156,000
520.7002	CONCRETE BRIDGE DECK (QC/QA) (F)	CY	930	$ 1,150	$ 1,069,500
544.2	REINFORCING STEEL, EPOXY COATED (F)	LB	263,000	$ 1.50	$ 394,500
548	BEARING ASSEMBLIES	EA	30	$ 5,000	$ 150,000
550.1	STRUCTURAL STEEL - WEATHERING (F)	LB	2,330,000	$ 3.00	$ 6,990,000
550.9	STRUCTURAL STEEL - METALIZED & COLORED (LEGS ONLY)	SF	26,000	$ 13.50	$ 351,000
561.2	PREFABRICATED MODULAR BRIDGE JOINT SYSTEM (F)	LF	37	$ 1,400	$ 51,800
563	PEDESTRIAN BRIDGE RAIL	LF	3,056	$ 300	$ 916,800
571	REPOINT STONE MASONRY PIERS	LF	11,200	$ 175	$ 1,960,000
1002	TEMPORARY MULTI-USE PATH ON NB LITTLE BAY BRIDGE	U	1	$ 700,000	$ 700,000
1003	PERMANENT PATH APPROACH WORK	U	1	$ 10,000	$ 10,000

Major Assumptions:

1) Item ACCESS PLATFORM FOR BRIDGE CONSTRUCTION - SPANS 1-4 & 6-9 (1253 LF) is a causeway (460 LF) & trestle (793 LF) needed for all stages of construction.

2) Item *SUPERSTRUCTURE REMOVAL - DECK SYSTEM AND ENTIRE TRUSS* cost considers cost reduction due to no members needing to be salvaged.

3) Item *SUBSTRUCTURE REMOVAL - ABUTMENTS & PIER 7 (PARTIAL)* includes the removal of both abutments, and the top portion of Pier 7.

4) Item *PERMANENT PATH APPROACH WORK* carries cost for minor work behind the Newington abutment - no work anticipated behind the Dover abutment.

5) Life cycle costs are NOT included in this estimate.

6) A minimum path width of 16' (18'-4" overall deck width) is recommended as the minimum witdth. A 12' path technically meets aeroelastic instability limits defined by the AASHTO LRFD Manual; however there is concern from an engineering judgement standpoint with anything narrower than the 16' path for this particular alternative.

Items Sub Total	$ *19,249,600*
20% Standard Contingency	$ 3,849,920
Sub Total	$ *23,099,520*
10% Mobilization	$ 2,309,952
5% Construction Inspection	$ 1,154,976
Total	$ *26,564,448*
Construction Engineering	$ *796,933*
Risk Contingency	$ *1,250,000*
Total Cost[E]	**$ 28,500,000**

Notes:
A) Standard Contingency cost based on "*Items Sub Total*" Value
B) Mobilization and Construction Inspection costs based on "*Sub Total*" Value
C) Construction Engineering = **3.0%** of "*Total*" value, and is based on **1.5** year assumed construction duration
D) Risk Contingency Cost is approximately = **5%** of "*Sub Total*" value
E) Total Cost is the sum of "*Total*", "*Construction Engineering*" and "*Risk Contingency*" costs rounded to the nearest $250,000
F) Vessel Collision loading/protection criteria is to be waived by the New Hampshire DOT, Bureau of Bridge Design
G) Cultural Resource mitigation cost is not included in this conceptual estimate.

\\vhb\gbl\proj\Bedford\52381.01\tech\Bridge\Cost Estimates - SEIS\Alternative 9\Alternative 9B - 16' Path - Conceptual Estimate\Alternative 9B - 16' Path - Conceptual Estimate

Computations

Project: General Sullivan Bridge over Little Bay | Project #: 52381.01
Location: Newington/Dover, NH | Sheet:
Calculated by: MAC | Date: 1/15/2019
Reviewed By: GSG | Date: 1/15/2019
Title: Alternative 1D

Life Cycle Cost Analysis:

Planning Horizon	75	Years	Fiscal planning time span for the General Sullivan Bridge Project
Design Life	75	Years	Anticipated useful life of bridge before major repair/replacement
Discount Rate	3%		Typically between 3% and 5% per FHWA LCCA Primer

Alternative Cost Summary:	
Initial Capital Cost	$43,000,000
Total Cost - Constant Year	$74,000,000
Total Cost - Present Value	$52,500,000

$$PV = \frac{FV}{(1+R)^N}$$ Present Value Equation

PV = Present Value
FV = Future Value (Assume same as Present Value)
R = Discount Rate
N = Number of Years from Year 0 (now) to time of Preservation Work

Life Cycle Cost Analysis and Breakdown

Preservation Item During Service Life:	*Cost per Occurrence*	*Preservation Work Schedule (Years)*											*Sub-Total Cost: Constant Year*	*Sub-Total Cost: Present Value*
		Interval[5]	*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*	*7th*	*8th*	*9th*	*10th*		
Maintenance - Clean Deck, Joints, Piers and Drainage Systems	$6,550	1	-	-	-	-	-	-	-	-	-	-	$491,250	$194,547
Coating System - Touch-Up Painting	$2,238,920	-	20	-	-	-	-	-	-	-	-	-	$2,238,920	$1,239,636
Coating System - Maintenance Repaint (Overcoat)	$3,918,110	-	27	-	-	-	-	-	-	-	-	-	$3,918,110	$1,763,890
Coating System - Abrasive Blast Clean and Paint	$7,556,355	-	37	-	-	-	-	-	-	-	-	-	$7,556,355	$2,531,250
Coating System - Touch-Up Painting	$3,022,542	-	57	-	-	-	-	-	-	-	-	-	$3,022,542	$560,597
Coating System - Maintenance Repaint (Overcoat)	$5,289,449	-	64	-	-	-	-	-	-	-	-	-	$5,289,449	$797,679
Coating System - Touch-Up Painting[7]	$3,022,542	-	74	-	-	-	-	-	-	-	-	-	$3,022,542	$339,170
Detailed Bridge Inspection and Maintenance	$151,000	3	-	-	-	-	-	-	-	-	-	-	$3,775,000	$1,451,026
Joints - Replacement	$110,880	-	25	50	-	-	-	-	-	-	-	-	$221,760	$78,249
Concrete Deck - Rehabilitation	$174,997	-	50	-	-	-	-	-	-	-	-	-	$174,997	$39,918
Piers - Repointing	$635,250	-	25	50	-	-	-	-	-	-	-	-	$1,270,500	$448,304
Residual Value	$0	-	75	-	-	-	-	-	-	-	-	-	$0	$0

Total	$30,981,425	$9,444,266
Say	$31,000,000	$9,500,000

Notes/Assumptions:

1) "Initial Capital Cost" is the cost in todays dollars to perform all work necessary to bring the proposed alternative structure into initial Service.
2) "Constant Year" is the cost in todays dollars assuming no annual discount of Preservation Work.
3) "Present Value" is the cost in todays dollars assuming an annual discount at the assumed "Discount Rate" from year 0 until the year the Preservation Work is performed.
4) "Cost per Occurrence" is the cost in todays dollars to complete the item of Preservation Work one time.
5) "Interval" is used for preservation work items that occur on a regular basis (Examples: Annually = 1, Bi-Annually = 2, Every Five Years = 5)
6) "Residual Value" calculates the value of the remaining design life of the structure based on the Planning Horizon
7) A full blast and recoat at year 74 is recomended by KTA Tator if the structure is planned to stay in service beyond 75 years. The planned design life is 75 years; however it is anticipated that the bridge will stay in active service for several years after the planned design life while replacement decisions and new structure design are completed. Therefore, it is reasonable to account for a coating maintenance cost to keep the bridge safe service during this anticipated planning period.

Item Cost Calculations:

Computations

Project: General Sullivan Bridge over Little Bay | Project #: 52381.01
Location: Newington/Dover, NH | Sheet:
Calculated by: MAC | Date: 1/15/2019
Reviewed By: GSG | Date: 1/15/2019
Title: Alternative 3C

Life Cycle Cost Analysis:

Planning Horizon	75	Years	Fiscal planning time span for the General Sullivan Bridge Project
Design Life	75	Years	Anticipated useful life of bridge before major repair/replacement
Discount Rate	3%		Typically between 3% and 5% per FHWA LCCA Primer

Alternative Cost Summary:	
Initial Capital Cost	$42,250,000
Total Cost - Constant Year	$61,750,000
Total Cost - Present Value	$48,000,000

$$PV = \frac{FV}{(1+R)^N}$$ Present Value Equation

PV = Present Value
FV = Future Value (Assume same as Present Value)
R = Discount Rate
N = Number of Years from Year 0 (now) to time of Preservation Work

Life Cycle Cost Analysis and Breakdown

Preservation Item During Service Life:	*Cost per Occurrence*	*Preservation Work Schedule (Years)*											*Sub-Total Cost: Constant Year*	*Sub-Total Cost: Present Value*
		Interval[5]	*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*	*7th*	*8th*	*9th*	*10th*		
Maintenance - Clean Deck, Joints, Piers and Drainage Systems	$6,550	1	-	-	-	-	-	-	-	-	-	-	$491,250	$194,547
Coating System - Touch-Up Painting[7]	$1,182,280	-	20	-	-	-	-	-	-	-	-	-	$1,182,280	$654,600
Coating System - Maintenance Repaint (Overcoat)[7]	$2,068,990	-	27	-	-	-	-	-	-	-	-	-	$2,068,990	$931,437
Coating System - Abrasive Blast Clean and Paint[7]	$3,990,195	-	37	-	-	-	-	-	-	-	-	-	$3,990,195	$1,336,647
Coating System - Touch-Up Painting[7]	$1,596,078	-	57	-	-	-	-	-	-	-	-	-	$1,596,078	$296,028
Coating System - Maintenance Repaint (Overcoat)[7]	$2,793,137	-	64	-	-	-	-	-	-	-	-	-	$2,793,137	$421,221
Coating System - Touch-Up Painting[7]	$1,596,078	-	74	-	-	-	-	-	-	-	-	-	$1,596,078	$179,102
Coating System - Metalizing Removal and Recoat	$1,863,000	-	50	-	-	-	-	-	-	-	-	-	$1,863,000	$424,963
Detailed Bridge Inspection	$87,000	3	-	-	-	-	-	-	-	-	-	-	$2,175,000	$836,022
Joints - Replacement	$143,088	-	25	50	-	-	-	-	-	-	-	-	$286,176	$100,979
Concrete Deck - Rehabilitation	$174,997	-	50	-	-	-	-	-	-	-	-	-	$174,997	$39,918
Piers - Repointing	$635,250	-	25	50	-	-	-	-	-	-	-	-	$1,270,500	$448,304
Residual Value	$0	-	75	-	-	-	-	-	-	-	-	-	$0	$0

Total	$19,487,681	$5,863,767
Say	$19,500,000	$5,750,000

Notes/Assumptions:

1) "Initial Capital Cost" is the cost in todays dollars to perform all work necessary to bring the proposed alternative structure into initial Service.
2) "Constant Year" is the cost in todays dollars assuming no annual discount of Preservation Work.
3) "Present Value" is the cost in todays dollars assuming an annual discount at the assumed "Discount Rate" from year 0 until the year the Preservation Work is performed.
4) "Cost per Occurrence" is the cost in todays dollars to complete the item of Preservation Work one time.
5) "Interval" is used for preservation work items that occur on a regular basis (Examples: Annually = 1, Bi-Annually = 2, Every Five Years = 5)
6) "Residual Value" calculates the value of the remaining design life of the structure based on the Planning Horizon
7) Painting operations pertain to middle three spans only.
8) At the end of the planning horizon, assume the entire structure will be replaced with a similar truss (alt 2). It is not reasonable to assume replacing only the middle three spans with a new structure, adjacent to 75 year old approach span trusses. It would be logical to replace the entire bridge since removal and access costs are a large portion of the capital cost for any kind of replacement; and the expectation after such expenditure would be to not touch the bridge again for a long period of time and without rigorous maintenance.

Computations

Project: **General Sullivan Bridge over Little Bay** | Project #: **52381.01**
Location: **Newington/Dover, NH** | Sheet:
Calculated by: **MAC** | Date: **1/15/2019**
Reviewed By: **GSG** | Date: **1/15/2019**
Title: **Alternative 6C**

Life Cycle Cost Analysis:

Planning Horizon	75	Years	Fiscal planning time span for the General Sullivan Bridge Project
Design Life	100	Years	Anticipated useful life of bridge before major repair/replacement
Discount Rate	3%		Typically between 3% and 5% per FHWA LCCA Primer

$$PV = \frac{FV}{(1+R)^N}$$ Present Value Equation

PV = Present Value
FV = Future Value (Assume same as Present Value)
R = Discount Rate
N = Number of Years from Year 0 (now) to time of Preservation Work

Alternative Cost Summary:	
Initial Capital Cost	$28,000,000
Total Cost - Constant Year	$31,250,000
Total Cost - Present Value	$29,250,000

Life Cycle Cost Analysis and Breakdown

Preservation Item During Service Life:	*Cost per Occurrence*	*Preservation Work Schedule (Years)*											*Sub-Total Cost: Constant Year*	*Sub-Total Cost: Present Value*
		Interval[5]	*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*	*7th*	*8th*	*9th*	*10th*		
Maintenance - Clean Deck, Joints, Piers and Drainage Systems	$6,550	1	-	-	-	-	-	-	-	-	-	-	$491,250	$194,547
Coating System - Touch-Up Painting[7]	$304,000	-	25	50	75	-	-	-	-	-	-	-	$912,000	$247,656
Routine Bridge Inspection	$17,000	2	-	-	-	-	-	-	-	-	-	-	$629,000	$247,822
Joints - Replacement	$73,260	-	25	50	75	-	-	-	-	-	-	-	$219,780	$59,682
Concrete Deck - Rehabilitation	$399,515	-	50	-	-	-	-	-	-	-	-	-	$399,515	$91,132
Pier Column Bearings - Replacement	$134,750	-	50	-	-	-	-	-	-	-	-	-	$134,750	$30,737
Concrete Barrier - Double Faced	$82,436	-	25	50	-	-	-	-	-	-	-	-	$164,872	$58,176
Protective Screening	$17,742	-	25	50	-	-	-	-	-	-	-	-	$35,483	$12,520
Piers - Repointing	$635,250	-	25	50	75	-	-	-	-	-	-	-	$1,905,750	$517,511
Residual Value	-$1,750,000	-	75	-	-	-	-	-	-	-	-	-	-$1,750,000	-$190,654

Total	$3,142,400	$1,269,130
Say	$3,250,000	$1,250,000

Notes/Assumptions:

1) "Initial Capital Cost" is the cost in todays dollars to perform all work necessary to bring the proposed alternative structure into initial Service.
2) "Constant Year" is the cost in todays dollars assuming no annual discount of Preservation Work.
3) "Present Value" is the cost in todays dollars assuming an annual discount at the assumed "Discount Rate" from year 0 until the year the Preservation Work is performed.
4) "Cost per Occurrence" is the cost in todays dollars to complete the item of Preservation Work one time.
5) "Interval" is used for preservation work items that occur on a regular basis (Examples: Annually = 1, Bi-Annually = 2, Every Five Years = 5)
6) "Residual Value" calculates the value of the remaining design life of the structure based on the Planning Horizon
7) Assume 2/3 the cost of Alternative 2 for touch-up painting. Paint is only in vicinity of Joints since girders are weathering steel, and alternative 6 has four joints as opposed to six joints as in alternative 2.

Item Cost Calculations:

Computations

Project **General Sullivan Bridge over Little Bay** | Project # **52381.01**
Location **Newington/Dover, NH** | Sheet
Calculated by **MAC** | Date **1/15/2019**
Reviewed By **GSG** | Date **1/15/2019**
Title **Alternative 7B**

Life Cycle Cost Analysis:

Planning Horizon	75	Years	Fiscal planning time span for the General Sullivan Bridge Project
Design Life	100	Years	Anticipated useful life of bridge before major repair/replacement
Discount Rate	3%		Typically between 3% and 5% per FHWA LCCA Primer

Alternative Cost Summary:	
Initial Capital Cost	$29,500,000
Total Cost - Constant Year	$32,250,000
Total Cost - Present Value	$30,750,000

$$PV = \frac{FV}{(1+R)^N}$$ Present Value Equation

PV = Present Value
FV = Future Value (Assume same as Present Value)
R = Discount Rate
N = Number of Years from Year 0 (now) to time of Preservation Work

Life Cycle Cost Analysis and Breakdown

Preservation Item During Service Life:	*Cost per Occurrence*	*Preservation Work Schedule (Years)*											*Sub-Total Cost: Constant Year*	*Sub-Total Cost: Present Value*
		Interval[5]	*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*	*7th*	*8th*	*9th*	*10th*		
Maintenance - Clean Deck, Joints, Piers and Drainage Systems	$6,550	1	-	-	-	-	-	-	-	-	-	-	$491,250	$194,547
Coating System - Touch-Up Painting[7]	$304,000	-	25	50	75	-	-	-	-	-	-	-	$912,000	$247,656
Routine Bridge Inspection	$17,000	2	-	-	-	-	-	-	-	-	-	-	$629,000	$247,822
Joints - Replacement	$68,376	-	25	50	75	-	-	-	-	-	-	-	$205,128	$55,703
Concrete Deck - Rehabilitation	$193,592	-	50	-	-	-	-	-	-	-	-	-	$193,592	$44,160
Pier Column Bearings - Replacement	$134,750	-	50	-	-	-	-	-	-	-	-	-	$134,750	$30,737
Piers - Repointing	$635,250	-	25	50	75	-	-	-	-	-	-	-	$1,905,750	$517,511
Residual Value	-$1,843,750	-	75	-	-	-	-	-	-	-	-	-	-$1,843,750	-$200,868

Total	$2,627,720	$1,137,269
Say	$2,750,000	$1,250,000

Notes/Assumptions:

1) "Initial Capital Cost" is the cost in todays dollars to perform all work necessary to bring the proposed alternative structure into initial Service.
2) "Constant Year" is the cost in todays dollars assuming no annual discount of Preservation Work.
3) "Present Value" is the cost in todays dollars assuming an annual discount at the assumed "Discount Rate" from year 0 until the year the Preservation Work is performed.
4) "Cost per Occurrence" is the cost in todays dollars to complete the item of Preservation Work one time.
5) "Interval" is used for preservation work items that occur on a regular basis (Examples: Annually = 1, Bi-Annually = 2, Every Five Years = 5)
6) "Residual Value" calculates the value of the remaining design life of the structure based on the Planning Horizon
7) Assume 2/3 the cost of Alternative 2 for touch-up painting. Paint is only in vicinity of Joints since girders are weathering steel, and alternative 7 has four joints as opposed to six joints as in alternative 2.

Item Cost Calculations:

Computations

Project **General Sullivan Bridge over Little Bay** | Project # **52381.01**
Location **Newington/Dover, NH** | Sheet
Calculated by **MAC** | Date **1/15/2019**
Reviewed By **GSG** | Date **1/15/2019**
Title **Alternative 9B**

Life Cycle Cost Analysis:

Planning Horizon	75	Years	Fiscal planning time span for the General Sullivan Bridge Project
Design Life	100	Years	Anticipated useful life of bridge before major repair/replacement
Discount Rate	3%		Typically between 3% and 5% per FHWA LCCA Primer

Alternative Cost Summary:	
Initial Capital Cost	$28,500,000
Total Cost - Constant Year	$31,250,000
Total Cost - Present Value	$29,750,000

$$PV = \frac{FV}{(1+R)^N}$$ Present Value Equation

PV = Present Value
FV = Future Value (Assume same as Present Value)
R = Discount Rate
N = Number of Years from Year 0 (now) to time of Preservation Work

Life Cycle Cost Analysis and Breakdown

Preservation Item During Service Life:	*Cost per Occurrence*	*Preservation Work Schedule (Years)*											*Sub-Total Cost: Constant Year*	*Sub-Total Cost: Present Value*
		Interval[5]	*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*	*7th*	*8th*	*9th*	*10th*		
Maintenance - Clean Deck, Joints, Piers and Drainage Systems	$6,550	1	-	-	-	-	-	-	-	-	-	-	$491,250	$194,547
Coating System - Touch-Up Painting[7]	$152,000	-	25	50	75	-	-	-	-	-	-	-	$456,000	$123,828
Coating System - Metalizing Removal and Recoat	$702,000	-	50	-	-	-	-	-	-	-	-	-	$702,000	$160,131
Routine Bridge Inspection	$17,000	2	-	-	-	-	-	-	-	-	-	-	$629,000	$247,822
Joints - Replacement	$68,376	-	25	50	75	-	-	-	-	-	-	-	$205,128	$55,703
Concrete Deck - Rehabilitation	$174,965	-	50	-	-	-	-	-	-	-	-	-	$174,965	$39,911
Piers - Repointing	$635,250	-	25	50	75	-	-	-	-	-	-	-	$1,905,750	$517,511
Residual Value	-$1,781,250	-	75	-	-	-	-	-	-	-	-	-	-$1,781,250	-$194,059

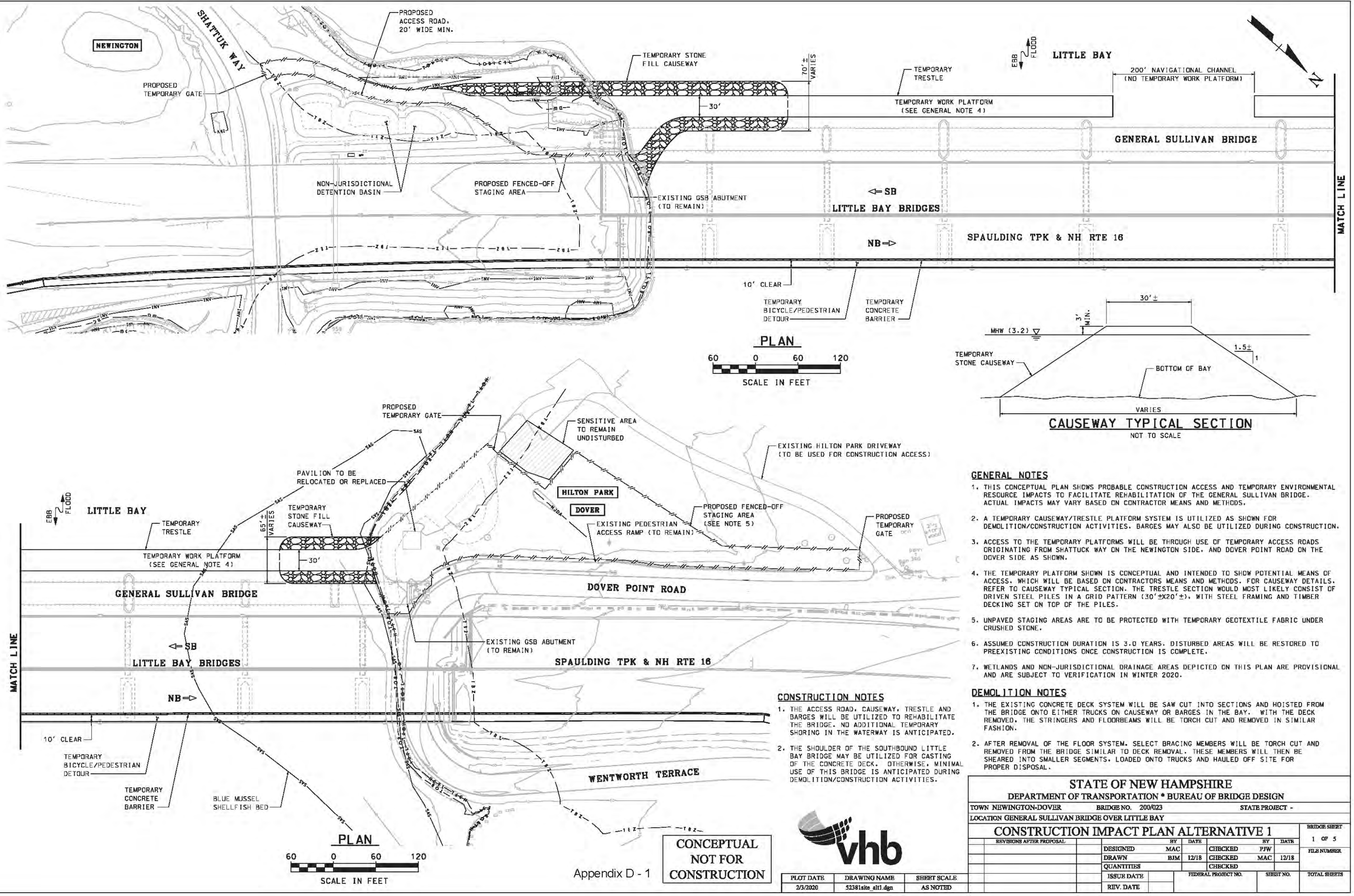
Total	$2,782,843	$1,145,395
Say	$2,750,000	$1,250,000

Notes/Assumptions:

1) "Initial Capital Cost" is the cost in todays dollars to perform all work necessary to bring the proposed alternative structure into initial Service.
2) "Constant Year" is the cost in todays dollars assuming no annual discount of Preservation Work.
3) "Present Value" is the cost in todays dollars assuming an annual discount at the assumed "Discount Rate" from year 0 until the year the Preservation Work is performed.
4) "Cost per Occurrence" is the cost in todays dollars to complete the item of Preservation Work one time.
5) "Interval" is used for preservation work items that occur on a regular basis (Examples: Annually = 1, Bi-Annually = 2, Every Five Years = 5)
6) "Residual Value" calculates the value of the remaining design life of the structure based on the Planning Horizon
7) Assume 1/3 the cost of Alternative 2 for touch-up painting. Paint is only in vicinity of Joints since girders are weathering steel, and alternative 9 has two joints as opposed to six joints as in alternative 2.

Item Cost Calculations:

Appendix D – Preliminary Construction Impact Plans



GENERAL NOTES

1. THIS CONCEPTUAL PLAN SHOWS PROBABLE CONSTRUCTION ACCESS AND TEMPORARY ENVIRONMENTAL RESOURCE IMPACTS TO FACILITATE REHABILITATION OF THE GENERAL SULLIVAN BRIDGE. ACTUAL IMPACTS MAY VARY BASED ON CONTRACTOR MEANS AND METHODS.
2. A TEMPORARY CAUSEWAY/TRESTLE PLATFORM SYSTEM IS UTILIZED AS SHOWN FOR DEMOLITION/CONSTRUCTION ACTIVITIES. BARGES MAY ALSO BE UTILIZED DURING CONSTRUCTION.
3. ACCESS TO THE TEMPORARY PLATFORMS WILL BE THROUGH USE OF TEMPORARY ACCESS ROADS ORIGINATING FROM SHATTUCK WAY ON THE NEWINGTON SIDE, AND DOVER POINT ROAD ON THE DOVER SIDE AS SHOWN.
4. THE TEMPORARY PLATFORM SHOWN IS CONCEPTUAL AND INTENDED TO SHOW POTENTIAL MEANS OF ACCESS, WHICH WILL BE BASED ON CONTRACTORS MEANS AND METHODS. FOR CAUSEWAY DETAILS, REFER TO CAUSEWAY TYPICAL SECTION. THE TRESTLE SECTION WOULD MOST LIKELY CONSIST OF DRIVEN STEEL PILES IN A GRID PATTERN (30'±X20'±), WITH STEEL FRAMING AND TIMBER DECKING SET ON TOP OF THE PILES.
5. UNPAVED STAGING AREAS ARE TO BE PROTECTED WITH TEMPORARY GEOTEXTILE FABRIC UNDER CRUSHED STONE.
6. ASSUMED CONSTRUCTION DURATION IS 3.0 YEARS. DISTURBED AREAS WILL BE RESTORED TO PREEXISTING CONDITIONS ONCE CONSTRUCTION IS COMPLETE.
7. WETLANDS AND NON-JURISDICTIONAL DRAINAGE AREAS DEPICTED ON THIS PLAN ARE PROVISIONAL AND ARE SUBJECT TO VERIFICATION IN WINTER 2020.

CONSTRUCTION NOTES

1. THE ACCESS ROAD, CAUSEWAY, TRESTLE AND BARGES WILL BE UTILIZED TO REHABILITATE THE BRIDGE. NO ADDITIONAL TEMPORARY SHORING IN THE WATERWAY IS ANTICIPATED.
2. THE SHOULDER OF THE SOUTHBOUND LITTLE BAY BRIDGE MAY BE UTILIZED FOR CASTING OF THE CONCRETE DECK. OTHERWISE, MINIMAL USE OF THIS BRIDGE IS ANTICIPATED DURING DEMOLITION/CONSTRUCTION ACTIVITIES.

DEMOLITION NOTES

1. THE EXISTING CONCRETE DECK SYSTEM WILL BE SAW CUT INTO SECTIONS AND HOISTED FROM THE BRIDGE ONTO EITHER TRUCKS ON CAUSEWAY OR BARGES IN THE BAY. WITH THE DECK REMOVED, THE STRINGERS AND FLOORBEAMS WILL BE TORCH CUT AND REMOVED IN SIMILAR FASHION.
2. AFTER REMOVAL OF THE FLOOR SYSTEM, SELECT BRACING MEMBERS WILL BE TORCH CUT AND REMOVED FROM THE BRIDGE SIMILAR TO DECK REMOVAL. THESE MEMBERS WILL THEN BE SHEARED INTO SMALLER SEGMENTS, LOADED ONTO TRUCKS AND HAULED OFF SITE FOR PROPER DISPOSAL.

CONCEPTUAL NOT FOR CONSTRUCTION

Appendix D - 1

vhb

PLOT DATE	DRAWING NAME	SHEET SCALE
2/3/2020	52381site_alt1.dgn	AS NOTED

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN NEWINGTON-DOVER BRIDGE NO. 200/023 STATE PROJECT -

LOCATION GENERAL SULLIVAN BRIDGE OVER LITTLE BAY

CONSTRUCTION IMPACT PLAN ALTERNATIVE 1

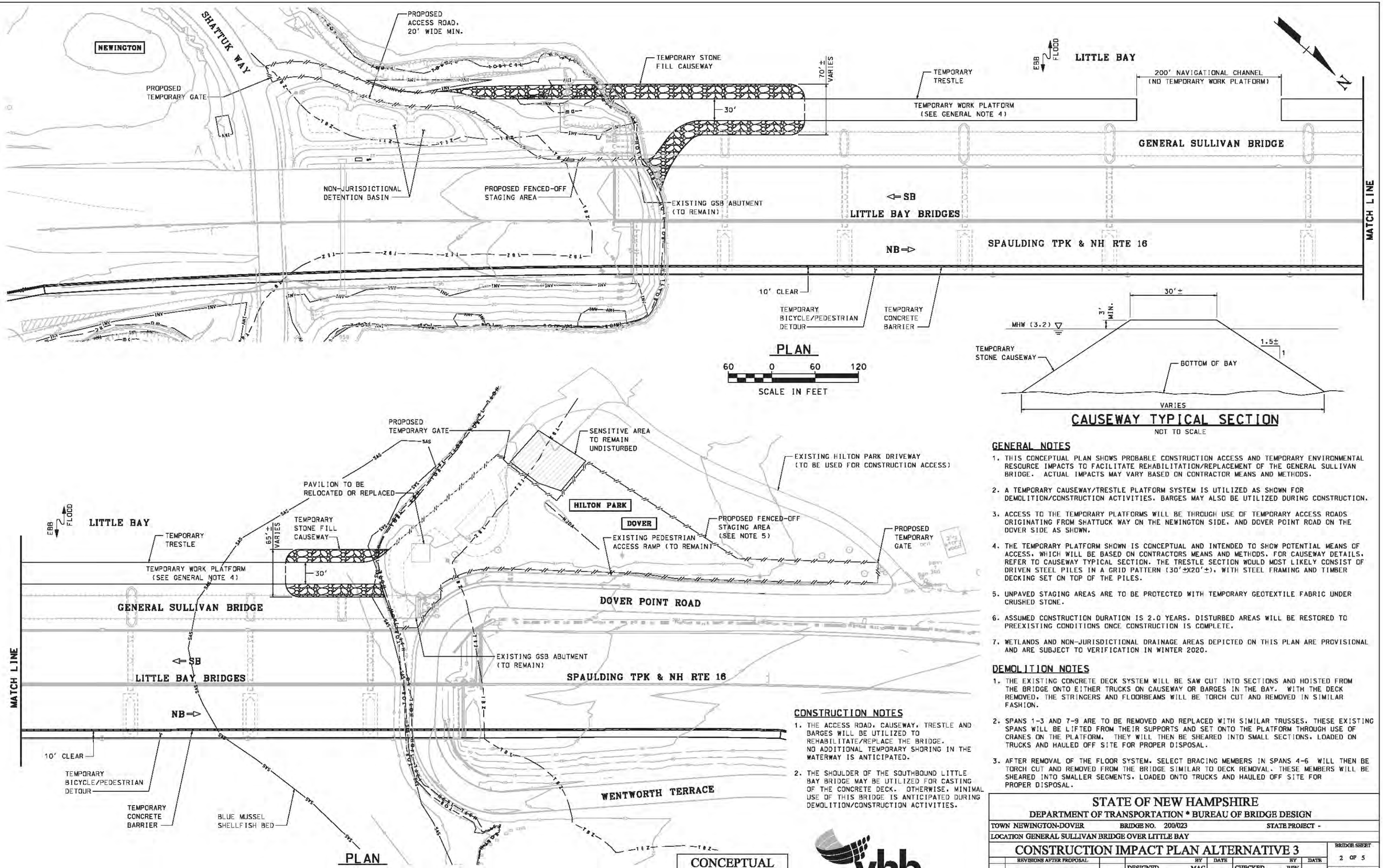
BRIDGE SHEET: 1 OF 5

REVISIONS AFTER PROPOSAL	BY	DATE

DESIGNED	MAC		CHECKED	PJW	
DRAWN	BJM	12/18	CHECKED	MAC	12/18
QUANTITIES			CHECKED		
ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	TOTAL SHEETS
REV. DATE					

FILE NUMBER

\\vhb\gbl\proj\Bedford\52381.01\cad\dgn\Site Alt\52381site_alt1.dgn



GENERAL NOTES

1. THIS CONCEPTUAL PLAN SHOWS PROBABLE CONSTRUCTION ACCESS AND TEMPORARY ENVIRONMENTAL RESOURCE IMPACTS TO FACILITATE REHABILITATION/REPLACEMENT OF THE GENERAL SULLIVAN BRIDGE. ACTUAL IMPACTS MAY VARY BASED ON CONTRACTOR MEANS AND METHODS.
2. A TEMPORARY CAUSEWAY/TRESTLE PLATFORM SYSTEM IS UTILIZED AS SHOWN FOR DEMOLITION/CONSTRUCTION ACTIVITIES. BARGES MAY ALSO BE UTILIZED DURING CONSTRUCTION.
3. ACCESS TO THE TEMPORARY PLATFORMS WILL BE THROUGH USE OF TEMPORARY ACCESS ROADS ORIGINATING FROM SHATTUCK WAY ON THE NEWINGTON SIDE, AND DOVER POINT ROAD ON THE DOVER SIDE AS SHOWN.
4. THE TEMPORARY PLATFORM SHOWN IS CONCEPTUAL AND INTENDED TO SHOW POTENTIAL MEANS OF ACCESS, WHICH WILL BE BASED ON CONTRACTORS MEANS AND METHODS. FOR CAUSEWAY DETAILS, REFER TO CAUSEWAY TYPICAL SECTION. THE TRESTLE SECTION WOULD MOST LIKELY CONSIST OF DRIVEN STEEL PILES IN A GRID PATTERN (30'±X20'±), WITH STEEL FRAMING AND TIMBER DECKING SET ON TOP OF THE PILES.
5. UNPAVED STAGING AREAS ARE TO BE PROTECTED WITH TEMPORARY GEOTEXTILE FABRIC UNDER CRUSHED STONE.
6. ASSUMED CONSTRUCTION DURATION IS 2.0 YEARS. DISTURBED AREAS WILL BE RESTORED TO PREEXISTING CONDITIONS ONCE CONSTRUCTION IS COMPLETE.
7. WETLANDS AND NON-JURISDICTIONAL DRAINAGE AREAS DEPICTED ON THIS PLAN ARE PROVISIONAL AND ARE SUBJECT TO VERIFICATION IN WINTER 2020.

CONSTRUCTION NOTES

1. THE ACCESS ROAD, CAUSEWAY, TRESTLE AND BARGES WILL BE UTILIZED TO REHABILITATE/REPLACE THE BRIDGE. NO ADDITIONAL TEMPORARY SHORING IN THE WATERWAY IS ANTICIPATED.
2. THE SHOULDER OF THE SOUTHBOUND LITTLE BAY BRIDGE MAY BE UTILIZED FOR CASTING OF THE CONCRETE DECK. OTHERWISE, MINIMAL USE OF THIS BRIDGE IS ANTICIPATED DURING DEMOLITION/CONSTRUCTION ACTIVITIES.

DEMOLITION NOTES

1. THE EXISTING CONCRETE DECK SYSTEM WILL BE SAW CUT INTO SECTIONS AND HOISTED FROM THE BRIDGE ONTO EITHER TRUCKS ON CAUSEWAY OR BARGES IN THE BAY. WITH THE DECK REMOVED, THE STRINGERS AND FLOORBEAMS WILL BE TORCH CUT AND REMOVED IN SIMILAR FASHION.
2. SPANS 1-3 AND 7-9 ARE TO BE REMOVED AND REPLACED WITH SIMILAR TRUSSES. THESE EXISTING SPANS WILL BE LIFTED FROM THEIR SUPPORTS AND SET ONTO THE PLATFORM THROUGH USE OF CRANES ON THE PLATFORM. THEY WILL THEN BE SHEARED INTO SMALL SECTIONS, LOADED ON TRUCKS AND HAULED OFF SITE FOR PROPER DISPOSAL.
3. AFTER REMOVAL OF THE FLOOR SYSTEM, SELECT BRACING MEMBERS IN SPANS 4-6 WILL THEN BE TORCH CUT AND REMOVED FROM THE BRIDGE SIMILAR TO DECK REMOVAL. THESE MEMBERS WILL BE SHEARED INTO SMALLER SEGMENTS, LOADED ONTO TRUCKS AND HAULED OFF SITE FOR PROPER DISPOSAL.

CONCEPTUAL NOT FOR CONSTRUCTION

Appendix D - 2

vhb

PLOT DATE	DRAWING NAME	SHEET SCALE
2/3/2020	52381site_alt3.dgn	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN NEWINGTON-DOVER BRIDGE NO. 200/023 STATE PROJECT -

LOCATION GENERAL SULLIVAN BRIDGE OVER LITTLE BAY

CONSTRUCTION IMPACT PLAN ALTERNATIVE 3

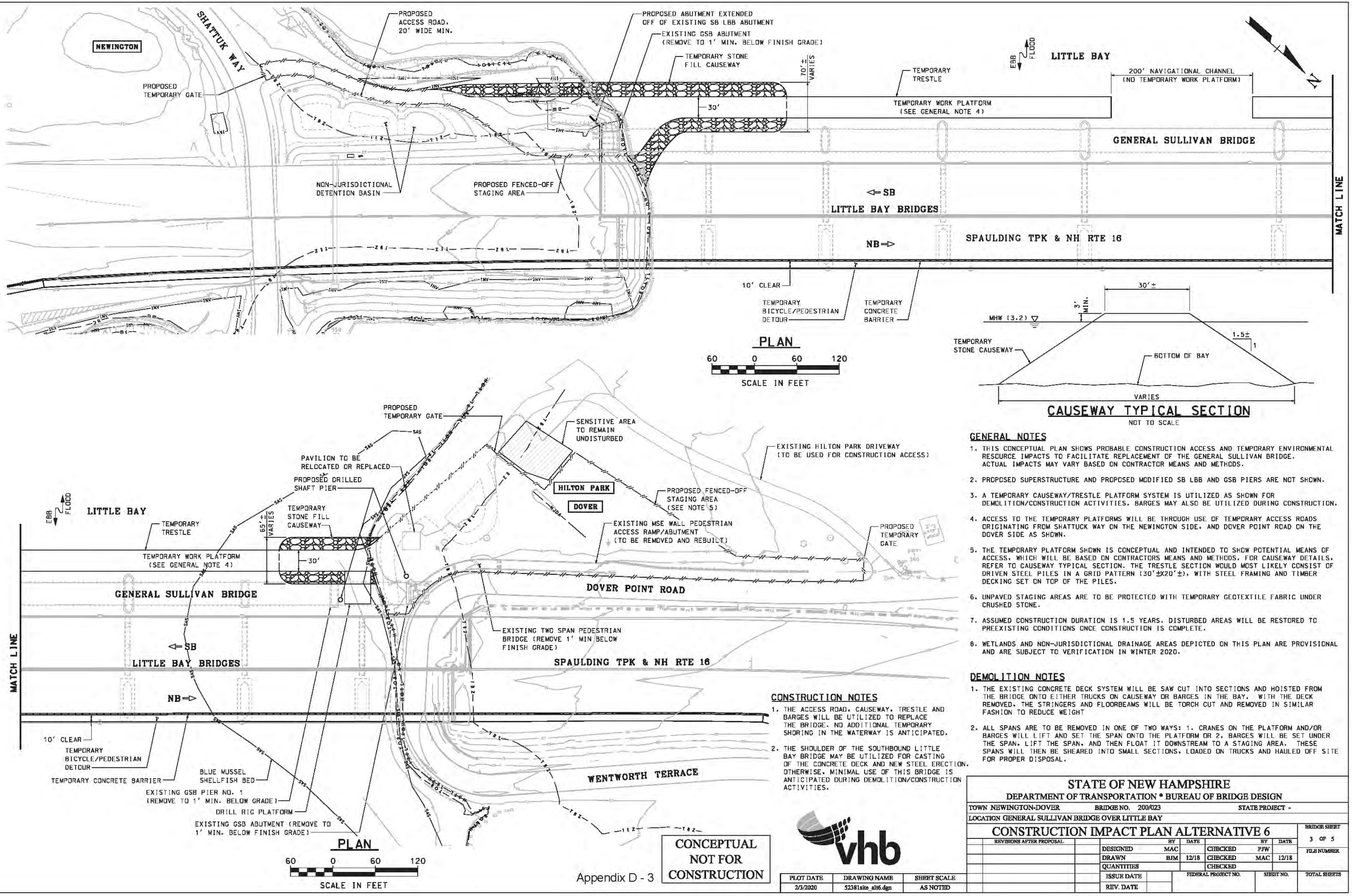
BRIDGE SHEET: 2 OF 5

REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	MAC		CHECKED	PJW	
DRAWN	BJM	12/18	CHECKED	MAC	12/18
QUANTITIES			CHECKED		
ISSUE DATE			FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE					

FILE NUMBER

\\vhb\gbl\proj\Bedford\52381.01\cadd\Site Alts\52381site_alt3.dgn



GENERAL NOTES

1. THIS CONCEPTUAL PLAN SHOWS PROBABLE CONSTRUCTION ACCESS AND TEMPORARY ENVIRONMENTAL RESOURCE IMPACTS TO FACILITATE REPLACEMENT OF THE GENERAL SULLIVAN BRIDGE. ACTUAL IMPACTS MAY VARY BASED ON CONTRACTOR MEANS AND METHODS.
2. PROPOSED SUPERSTRUCTURE AND PROPOSED MODIFIED SB LBB AND GSB PIERS ARE NOT SHOWN.
3. A TEMPORARY CAUSEWAY/TRESTLE PLATFORM SYSTEM IS UTILIZED AS SHOWN FOR DEMOLITION/CONSTRUCTION ACTIVITIES. BARGES MAY ALSO BE UTILIZED DURING CONSTRUCTION.
4. ACCESS TO THE TEMPORARY PLATFORMS WILL BE THROUGH USE OF TEMPORARY ACCESS ROADS ORIGINATING FROM SHATTUCK WAY ON THE NEWINGTON SIDE, AND DOVER POINT ROAD ON THE DOVER SIDE AS SHOWN.
5. THE TEMPORARY PLATFORM SHOWN IS CONCEPTUAL AND INTENDED TO SHOW POTENTIAL MEANS OF ACCESS, WHICH WILL BE BASED ON CONTRACTORS MEANS AND METHODS. FOR CAUSEWAY DETAILS, REFER TO CAUSEWAY TYPICAL SECTION. THE TRESTLE SECTION WOULD MOST LIKELY CONSIST OF DRIVEN STEEL PILES IN A GRID PATTERN (30'±X20'±), WITH STEEL FRAMING AND TIMBER DECKING SET ON TOP OF THE PILES.
6. UNPAVED STAGING AREAS ARE TO BE PROTECTED WITH TEMPORARY GEOTEXTILE FABRIC UNDER CRUSHED STONE.
7. ASSUMED CONSTRUCTION DURATION IS 1.5 YEARS. DISTURBED AREAS WILL BE RESTORED TO PREEXISTING CONDITIONS ONCE CONSTRUCTION IS COMPLETE.
8. WETLANDS AND NON-JURISDICTIONAL DRAINAGE AREAS DEPICTED ON THIS PLAN ARE PROVISIONAL AND ARE SUBJECT TO VERIFICATION IN WINTER 2020.

DEMOLITION NOTES

1. THE EXISTING CONCRETE DECK SYSTEM WILL BE SAW CUT INTO SECTIONS AND HOISTED FROM THE BRIDGE ONTO EITHER TRUCKS ON CAUSEWAY OR BARGES IN THE BAY. WITH THE DECK REMOVED, THE STRINGERS AND FLOORBEAMS WILL BE TORCH CUT AND REMOVED IN SIMILAR FASHION TO REDUCE WEIGHT
2. ALL SPANS ARE TO BE REMOVED IN ONE OF TWO WAYS: 1. CRANES ON THE PLATFORM AND/OR BARGES WILL LIFT AND SET THE SPAN ONTO THE PLATFORM OR 2. BARGES WILL BE SET UNDER THE SPAN. LIFT THE SPAN, AND THEN FLOAT IT DOWNSTREAM TO A STAGING AREA. THESE SPANS WILL THEN BE SHEARED INTO SMALL SECTIONS, LOADED ON TRUCKS AND HAULED OFF SITE FOR PROPER DISPOSAL.

CONSTRUCTION NOTES

1. THE ACCESS ROAD, CAUSEWAY, TRESTLE AND BARGES WILL BE UTILIZED TO REPLACE THE BRIDGE. NO ADDITIONAL TEMPORARY SHORING IN THE WATERWAY IS ANTICIPATED.
2. THE SHOULDER OF THE SOUTHBOUND LITTLE BAY BRIDGE MAY BE UTILIZED FOR CASTING OF THE CONCRETE DECK AND NEW STEEL ERECTION. OTHERWISE, MINIMAL USE OF THIS BRIDGE IS ANTICIPATED DURING DEMOLITION/CONSTRUCTION ACTIVITIES.

CONCEPTUAL NOT FOR CONSTRUCTION

vhb

PLOT DATE	DRAWING NAME	SHEET SCALE
2/3/2020	52381site_alt6.dgn	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN NEWINGTON-DOVER BRIDGE NO. 200/023 STATE PROJECT -

LOCATION GENERAL SULLIVAN BRIDGE OVER LITTLE BAY

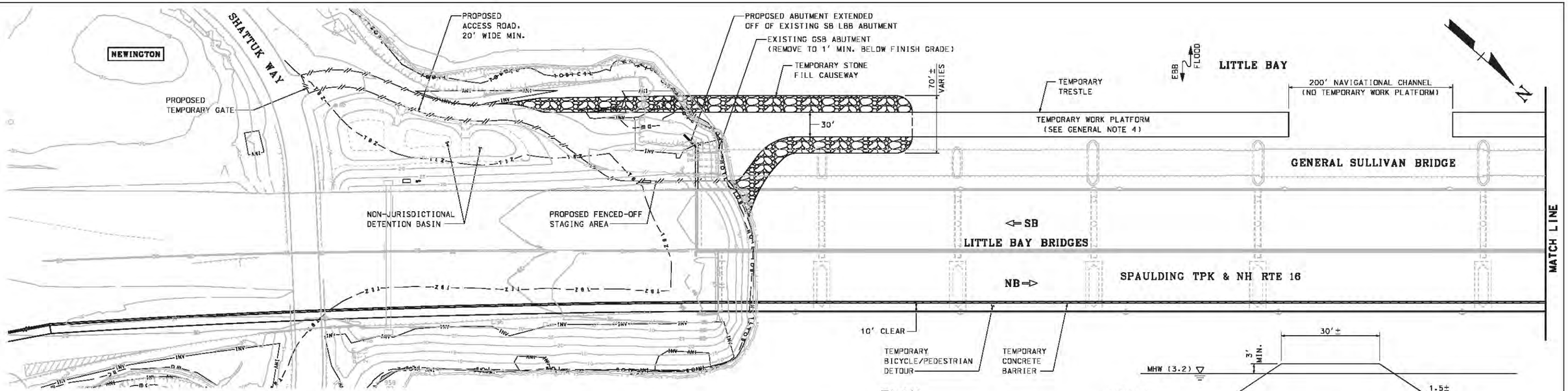
CONSTRUCTION IMPACT PLAN ALTERNATIVE 6

BRIDGE SHEET 3 OF 5

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	MAC		CHECKED	PJW	
	DRAWN	BJM	12/18	CHECKED	MAC	12/18
	QUANTITIES			CHECKED		
	ISSUE DATE		FEDERAL PROJECT NO.		SHEET NO.	
	REV. DATE					

FILE NUMBER

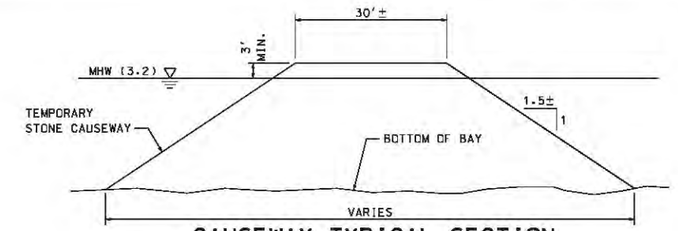
TOTAL SHEETS



PLAN

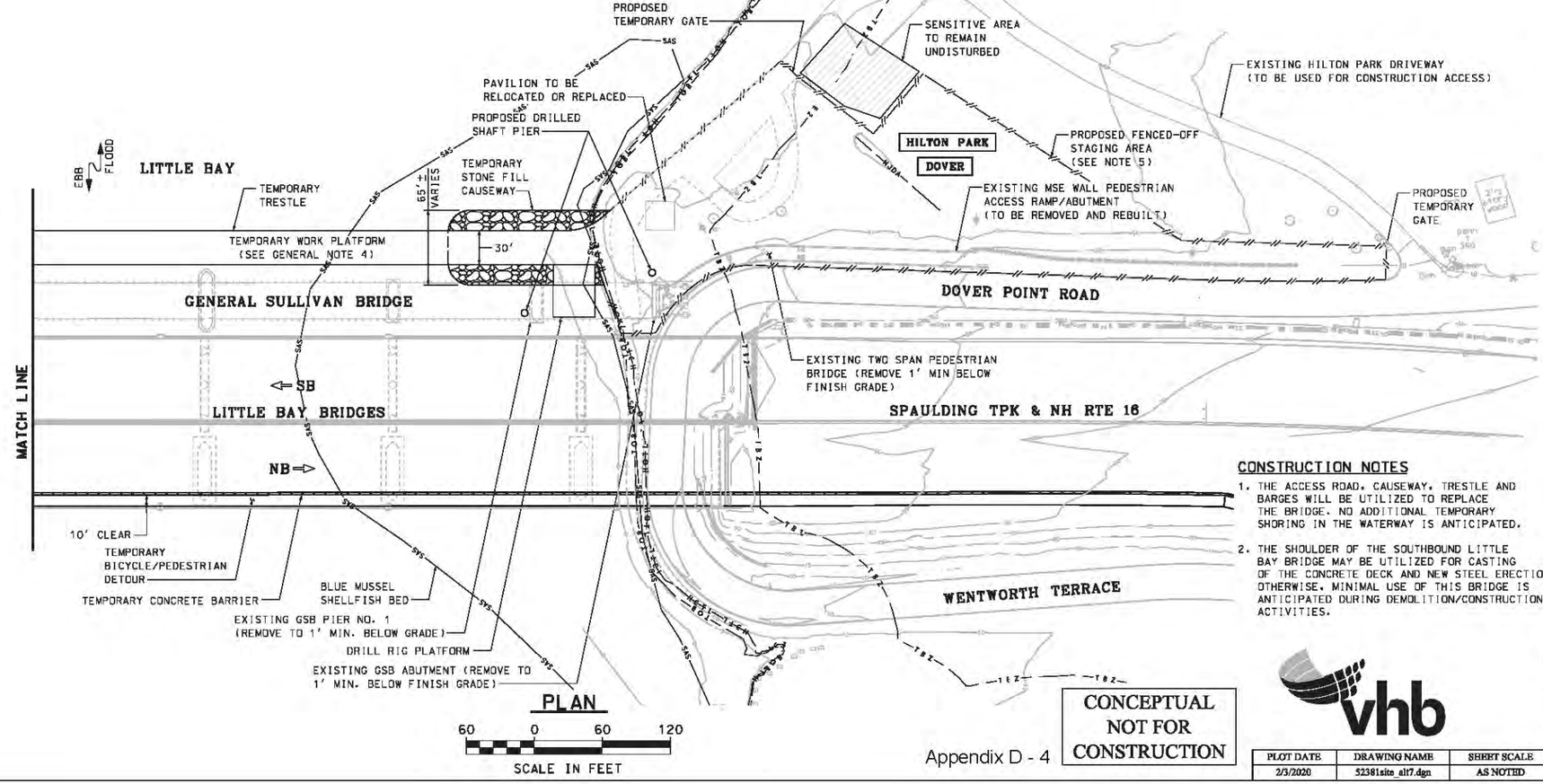
60 0 60 120

SCALE IN FEET



CAUSEWAY TYPICAL SECTION

NOT TO SCALE



PLAN

60 0 60 120

SCALE IN FEET

GENERAL NOTES

1. THIS CONCEPTUAL PLAN SHOWS PROBABLE CONSTRUCTION ACCESS AND TEMPORARY ENVIRONMENTAL RESOURCE IMPACTS TO FACILITATE REPLACEMENT OF THE GENERAL SULLIVAN BRIDGE. ACTUAL IMPACTS MAY VARY BASED ON CONTRACTOR MEANS AND METHODS.
2. PROPOSED SUPERSTRUCTURE AND PROPOSED MODIFIED SB LBB AND GSB PIERS ARE NOT SHOWN.
3. A TEMPORARY CAUSEWAY/TRESTLE PLATFORM SYSTEM IS UTILIZED AS SHOWN FOR DEMOLITION/CONSTRUCTION ACTIVITIES. BARGES MAY ALSO BE UTILIZED DURING CONSTRUCTION.
4. ACCESS TO THE TEMPORARY PLATFORMS WILL BE THROUGH USE OF TEMPORARY ACCESS ROADS ORIGINATING FROM SHATTUCK WAY ON THE NEWINGTON SIDE, AND DOVER POINT ROAD ON THE DOVER SIDE AS SHOWN.
5. THE TEMPORARY PLATFORM SHOWN IS CONCEPTUAL AND INTENDED TO SHOW POTENTIAL MEANS OF ACCESS, WHICH WILL BE BASED ON CONTRACTORS MEANS AND METHODS. FOR CAUSEWAY DETAILS, REFER TO CAUSEWAY TYPICAL SECTION. THE TRESTLE SECTION WOULD MOST LIKELY CONSIST OF DRIVEN STEEL PILES IN A GRID PATTERN (30'±X20'±), WITH STEEL FRAMING AND TIMBER DECKING SET ON TOP OF THE PILES.
6. UNPAVED STAGING AREAS ARE TO BE PROTECTED WITH TEMPORARY GEOTEXTILE FABRIC UNDER CRUSHED STONE.
7. ASSUMED CONSTRUCTION DURATION IS 1.5 YEARS. DISTURBED AREAS WILL BE RESTORED TO PREEXISTING CONDITIONS ONCE CONSTRUCTION IS COMPLETE.
8. WETLANDS AND NON-JURISDICTIONAL DRAINAGE AREAS DEPICTED ON THIS PLAN ARE PROVISIONAL AND ARE SUBJECT TO VERIFICATION IN WINTER 2020.

DEMOLITION NOTES

1. THE EXISTING CONCRETE DECK SYSTEM WILL BE SAW CUT INTO SECTIONS AND HOISTED FROM THE BRIDGE ONTO EITHER TRUCKS ON CAUSEWAY OR BARGES IN THE BAY. WITH THE DECK REMOVED, THE STRINGERS AND FLOORBEAMS WILL BE TORCH CUT AND REMOVED IN SIMILAR FASHION TO REDUCE WEIGHT
2. ALL SPANS ARE TO BE REMOVED IN ONE OF TWO WAYS: 1. CRANES ON THE PLATFORM AND/OR BARGES WILL LIFT AND SET THE SPAN ONTO THE PLATFORM OR 2. BARGES WILL BE SET UNDER THE SPAN. LIFT THE SPAN, AND THEN FLOAT IT DOWNSTREAM TO A STAGING AREA. THESE SPANS WILL THEN BE SHEARED INTO SMALL SECTIONS, LOADED ON TRUCKS AND HAULED OFF SITE FOR PROPER DISPOSAL.

CONSTRUCTION NOTES

1. THE ACCESS ROAD, CAUSEWAY, TRESTLE AND BARGES WILL BE UTILIZED TO REPLACE THE BRIDGE. NO ADDITIONAL TEMPORARY SHORING IN THE WATERWAY IS ANTICIPATED.
2. THE SHOULDER OF THE SOUTHBOUND LITTLE BAY BRIDGE MAY BE UTILIZED FOR CASTING OF THE CONCRETE DECK AND NEW STEEL ERECTION. OTHERWISE, MINIMAL USE OF THIS BRIDGE IS ANTICIPATED DURING DEMOLITION/CONSTRUCTION ACTIVITIES.

CONCEPTUAL NOT FOR CONSTRUCTION

vhb

PLOT DATE	DRAWING NAME	SHEET SCALE
2/3/2020	52381site_alt7.dgn	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN NEWINGTON-DOVER BRIDGE NO. 200/023 STATE PROJECT -

LOCATION GENERAL SULLIVAN BRIDGE OVER LITTLE BAY

CONSTRUCTION IMPACT PLAN ALTERNATIVE 7

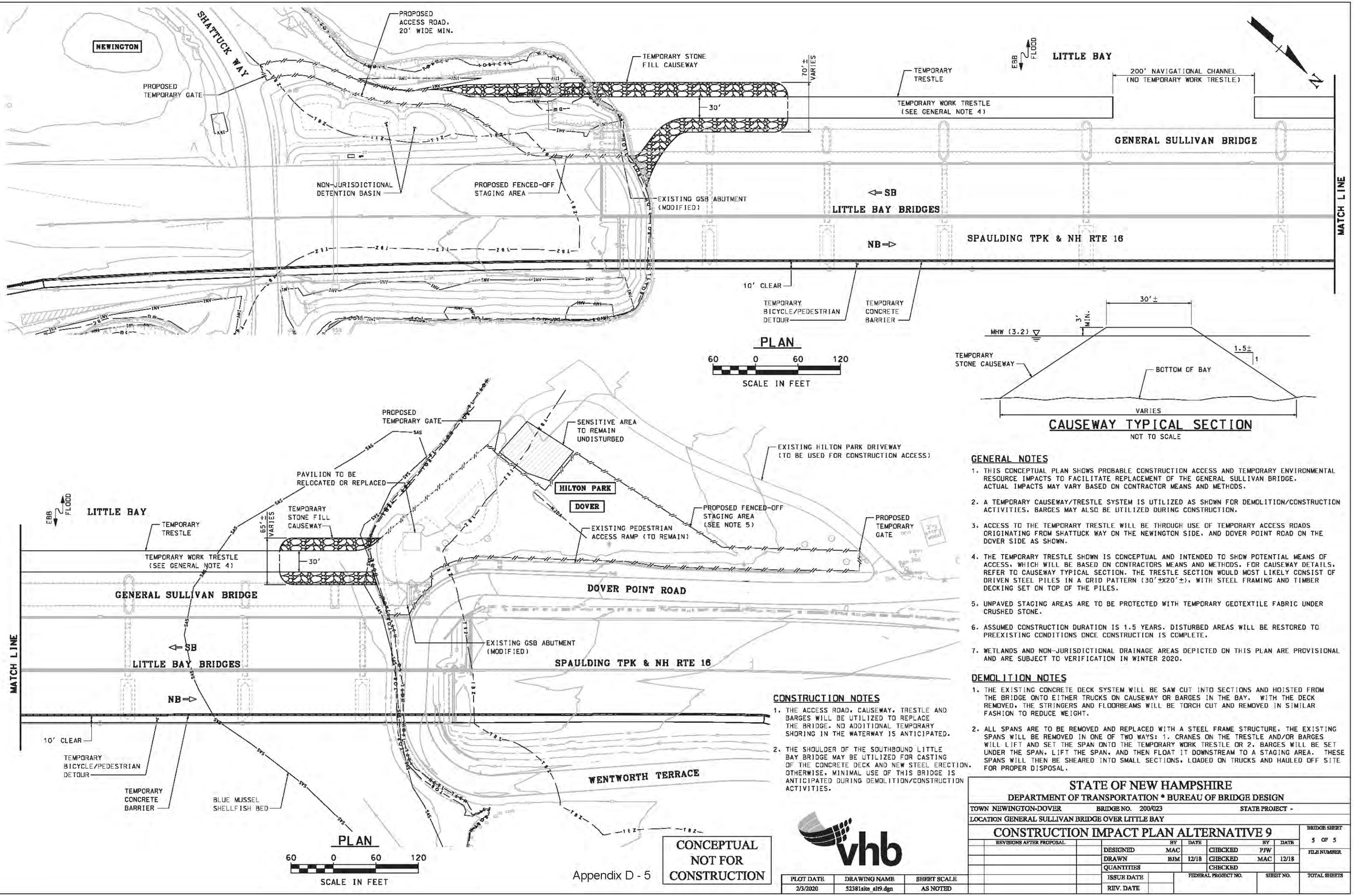
BRIDGE SHEET 4 OF 5

REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	MAC		CHECKED	PJW	
DRAWN	BJM	12/18	CHECKED	MAC	12/18
QUANTITIES			CHECKED		
ISSUE DATE			FEDERAL PROJECT NO.		SHEET NO.
REV. DATE					

FILE NUMBER

TOTAL SHEETS



GENERAL NOTES

1. THIS CONCEPTUAL PLAN SHOWS PROBABLE CONSTRUCTION ACCESS AND TEMPORARY ENVIRONMENTAL RESOURCE IMPACTS TO FACILITATE REPLACEMENT OF THE GENERAL SULLIVAN BRIDGE. ACTUAL IMPACTS MAY VARY BASED ON CONTRACTOR MEANS AND METHODS.
2. A TEMPORARY CAUSEWAY/TRESTLE SYSTEM IS UTILIZED AS SHOWN FOR DEMOLITION/CONSTRUCTION ACTIVITIES. BARGES MAY ALSO BE UTILIZED DURING CONSTRUCTION.
3. ACCESS TO THE TEMPORARY TRESTLE WILL BE THROUGH USE OF TEMPORARY ACCESS ROADS ORIGINATING FROM SHATTUCK WAY ON THE NEWINGTON SIDE, AND DOVER POINT ROAD ON THE DOVER SIDE AS SHOWN.
4. THE TEMPORARY TRESTLE SHOWN IS CONCEPTUAL AND INTENDED TO SHOW POTENTIAL MEANS OF ACCESS, WHICH WILL BE BASED ON CONTRACTORS MEANS AND METHODS. FOR CAUSEWAY DETAILS, REFER TO CAUSEWAY TYPICAL SECTION. THE TRESTLE SECTION WOULD MOST LIKELY CONSIST OF DRIVEN STEEL PILES IN A GRID PATTERN (30'±X20'±), WITH STEEL FRAMING AND TIMBER DECKING SET ON TOP OF THE PILES.
5. UNPAVED STAGING AREAS ARE TO BE PROTECTED WITH TEMPORARY GEOTEXTILE FABRIC UNDER CRUSHED STONE.
6. ASSUMED CONSTRUCTION DURATION IS 1.5 YEARS. DISTURBED AREAS WILL BE RESTORED TO PREEXISTING CONDITIONS ONCE CONSTRUCTION IS COMPLETE.
7. WETLANDS AND NON-JURISDICTIONAL DRAINAGE AREAS DEPICTED ON THIS PLAN ARE PROVISIONAL AND ARE SUBJECT TO VERIFICATION IN WINTER 2020.

CONSTRUCTION NOTES

1. THE ACCESS ROAD, CAUSEWAY, TRESTLE AND BARGES WILL BE UTILIZED TO REPLACE THE BRIDGE. NO ADDITIONAL TEMPORARY SHORING IN THE WATERWAY IS ANTICIPATED.
2. THE SHOULDER OF THE SOUTHBOUND LITTLE BAY BRIDGE MAY BE UTILIZED FOR CASTING OF THE CONCRETE DECK AND NEW STEEL ERECTION. OTHERWISE, MINIMAL USE OF THIS BRIDGE IS ANTICIPATED DURING DEMOLITION/CONSTRUCTION ACTIVITIES.

DEMOLITION NOTES

1. THE EXISTING CONCRETE DECK SYSTEM WILL BE SAW CUT INTO SECTIONS AND HOISTED FROM THE BRIDGE ONTO EITHER TRUCKS ON CAUSEWAY OR BARGES IN THE BAY. WITH THE DECK REMOVED, THE STRINGERS AND FLOORBEAMS WILL BE TORCH CUT AND REMOVED IN SIMILAR FASHION TO REDUCE WEIGHT.
2. ALL SPANS ARE TO BE REMOVED AND REPLACED WITH A STEEL FRAME STRUCTURE. THE EXISTING SPANS WILL BE REMOVED IN ONE OF TWO WAYS: 1. CRANES ON THE TRESTLE AND/OR BARGES WILL LIFT AND SET THE SPAN ONTO THE TEMPORARY WORK TRESTLE OR 2. BARGES WILL BE SET UNDER THE SPAN, LIFT THE SPAN, AND THEN FLOAT IT DOWNSTREAM TO A STAGING AREA. THESE SPANS WILL THEN BE SHEARED INTO SMALL SECTIONS, LOADED ON TRUCKS AND HAULED OFF SITE FOR PROPER DISPOSAL.

CONCEPTUAL NOT FOR CONSTRUCTION

vhb

PLOT DATE	DRAWING NAME	SHEET SCALE
2/3/2020	52381site_al9.dgn	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN NEWINGTON-DOVER BRIDGE NO. 200/023 STATE PROJECT -

LOCATION GENERAL SULLIVAN BRIDGE OVER LITTLE BAY

CONSTRUCTION IMPACT PLAN ALTERNATIVE 9

BRIDGE SHEET: 5 OF 5

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
			DESIGNED	MAC	
			DRAWN	BJM	12/18
			QUANTITIES		
			CHECKED	PJW	
			CHECKED	MAC	12/18
			CHECKED		
			ISSUE DATE		
			REV. DATE		

FEDERAL PROJECT NO. | SHEET NO. | TOTAL SHEETS | FILE NUMBER

Appendix E – Greater Atlantic Regional Fisheries Office (GARFO) Coordination

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Victoria F. Sheehan
Commissioner

William Cass, P.E.
Assistant Commissioner

January 23, 2019

Mike Johnson
Marine Habitat Resource Specialist
Greater Atlantic Regional Fisheries Office
NOAA Fisheries
55 Great Republic Drive
Gloucester, MA 01930

RE: Essential Fish Habitat Assessment Worksheet
Spaulding Turnpike / Little Bay Bridge: NHS-027-1(037), 11238S
Newington and Dover, New Hampshire

Dear Mr. Johnson:

The New Hampshire Department of Transportation (NHDOT) is providing this Essential Fish Habitat (EFH) Assessment information in support of proposed improvements to the General Sullivan Bridge over the Little Bay in Dover and Newington, New Hampshire. The proposed project [NHS-027-1(037)] is evaluating the rehabilitation or replacement of the General Sullivan Bridge (GSB), which was most recently used as a pedestrian bridge connecting Dover with Newington over the Little Bay. Based on the work that is anticipated to be completed to rehabilitate or replace the bridge, the project will likely involve in-water work within the Little Bay, which is designated as essential fish habitat (EFH) for several fish species. The following provides supplemental information about the proposed project and the in-water work that is anticipated to be conducted.

The GSB was built in 1934 and connected Newington and Dover, New Hampshire, over the Little Bay. Although originally designed to support two lanes of highway traffic over the mouth of the Little Bay, the bridge was closed to vehicular traffic in 1984, when the adjacent Little Bay Bridge, located east of the GSB, was completed. Now the bridge is even closed to pedestrian and bicycle traffic due to a recent inspection of the bridge completed in September 2018, which found significant additional deterioration of a critical floor beam under the bridge deck.

The condition of the GSB has been declining over the last few decades. To address this issue, options for the rehabilitation or replacement of the GSB were previously reviewed in a 2007 Final Environmental Impact Statement (FEIS) and a 2008 Record of Decision (ROD), which were produced by NHDOT and the Federal Highway Administration (FHWA) under the National Environmental Policy Act (NEPA). In the ROD, NHDOT and FHWA committed to maintain pedestrian/bicycle connectivity between Dover and Newington, and to accomplish that by rehabilitating the GSB. During development of the FEIS, you previously concurred with the findings of the DEIS and EFH Assessment that there should be minimal adverse effects to benthic flora and fauna and that there would be no permanent impacts to EFH (Mike Johnson email to William O'Donnell, dated November 21, 2006).

Since the 2008 ROD, further inspections and studies of the GSB condition were completed to prepare for the rehabilitation project. The information gathered by these inspections and studies revealed that the GSB was more deteriorated than originally thought, therefore bridge rehabilitation would have very high costs, high risks, and a limited life span. Therefore, NHDOT and FHWA determined to further evaluate rehabilitation and consider other options, leading to the preparation of a Supplemental Environmental Impact Statement (SEIS).

Of the various alternatives being considered in the SEIS, the preferred alternative that will be proposed to the public by NHDOT and FHWA is Alternative 9 – Superstructure Replacement (Girder Option), which involves complete

JOHN O. MORTON BUILDING • 7 HAZEN DRIVE • P.O. BOX 483 • CONCORD, NEW HAMPSHIRE 03302-0483
TELEPHONE: 603-271-3734 • FAX: 603-271-3914 • TDD: RELAY NH 1-800-735-2964 • INTERNET: WWW.NHDOT.COM

Of the various alternatives being considered in the SEIS, the preferred alternative that will be proposed to the public by NHDOT and FHWA is Alternative 9 – Superstructure Replacement (Girder Option), which involves complete removal and replacement of the GSB superstructure. Under alternative 9, the GSB superstructure would be replaced with a steel girder system with a structural steel frame extending from the bottom of the girders to the top of the existing GSB piers. Alternative 9 would reuse the existing piers without requiring significant modifications. Plans of the preferred alternative are provided, attached.

Construction of the preferred alternative is expected to take approximately 18 months. Construction would begin with a one- to two-week period of installing temporary causeways and trestles west of the existing GSB for a staging and equipment access work pad during the bridge replacement work. The bridge would be removed and replaced using the causeways, trestles, and water craft. Upon completion of the bridge replacement, the causeways and trestles would be removed and the area restored to pre-construction conditions, which is anticipated to take approximately one to two weeks. The causeways and trestles are considered a temporary impact within the Little Bay and are the only in-water work that is proposed. We've attached a plan that depicts the construction phase impacts, but note that these plans are for planning purposes only and may be modified during construction if required to allow for safe and efficient contractor access.

Upon completing the EFH worksheet, the NHDOT and FHWA determined that the preferred alternative will not have a substantial adverse effect on EFH. Attached is the EFH assessment worksheet and supplemental information to support the determination of impact. FHWA and NHDOT respectfully request your concurrence with our finding that there would be no substantial adverse effects to EFH or trust resources as a result of the replacement of the GSB over Little Bay, and that the submitted documentation satisfies the requirements for an abbreviated EFH consultation. Please contact me at (603) 271-4044 if you have any questions. We look forward to coordinating with you on this project.

Sincerely,

Marc G. Laurin
Senior Environmental Manager
Room 109 – Tel (603) 271-4044
E-mail – marc.laurin@dot.nh.gov

Attachments:
EFH Assessment Worksheet
References List
Table 1 – Habitat Conditions and Suitability Assessment for EFH Species Within Great Bay
Table 2 – Habitat Conditions and Suitability Assessment for Additional EFH Species Present on EFH Mapper
Figure 1 – USGS Location Map
Figure 2 – Essential Fish Habitat Study Area
Figure 3 – Alternative 9 Conceptual Design Rendering
General Sullivan Bridge Existing Condition Plan
Alternative 9 – Draft Steel Frame Alternatives Elevation
Alternative 9 – Draft Typical Elevation and Section
Alternative 9 – Draft Construction Impact Plan

cc: Zach Jylkka, NOAA
Keith Cota, NHDOT
Jamie Sikora, FHWA
P. Walker, VHB
G. Goodrich, VHB

EFH ASSESSMENT WORKSHEET FOR FEDERAL AGENCIES (modified 3/2016)

PROJECT NAME: Newington-Dover General Sullivan Bridge (referred to as "Project" throughout the worksheet)

DATE: 01/23/2019

PROJECT NO.: NHDOT: 11238S, FHWA: NHS-027-1(37)

LOCATION (Water body, county, physical address):

Great Bay estuarine system, crossing the Little Bay and connecting Dover and Newington, NH. The General Sullivan Bridge (GSB) is located west of the existing Little Bay Bridge connecting Dover and Newington, NH.

PREPARER: Elise Edwards & Lindsay Matras, VHB

Step 1: Use NOAA's EFH Mapper to generate the list of designated EFH for federally-managed species and life stages for the geographic area of interest. Use this list as part of the initial screening process to determine if EFH for those species occurs in the vicinity of the proposed action. The list can be included as an attachment to the worksheet. Make a preliminary determination on the need to conduct an EFH consultation.

1. INITIAL CONSIDERATIONS

EFH Designations	Yes	No
Is the action located in or adjacent to EFH designated for eggs? List the species: Atlantic cod (Gadus morhua), Haddock (Melanogrammus aeglefinus), Pollock (Pollachius virens), White Hake (Urophycis tenuis), Winter Flounder (Pleuronectes americanus), Yellowtail flounder (Pleuronectese ferruginea), Windowpane Flounder (Scopthalmus aquosus), Atlantic Halibut (Hippoglossus hippoglossus), Atlantic Mackerel (Scomber scrombrus), and Atlantic wolffish (Anarhichas lupus). Note: This information was obtained from the NOAA EFH Mapper as well as the NMFS Northeast Regional Office's table named "Summary of Essential Fish Habitat and General Habitat Parameters for Federally Managed Species."	✓	
Is the action located in or adjacent to EFH designated for larvae? List the species: Atlantic cod (Gadus morhua), Haddock (Melanogrammus aeglefinus), Pollock (Pollachius virens), Winter Flounder (Pleuronectes americanus), Yellowtail flounder (Pleuronectese ferruginea), Windowpane Flounder (Scopthalmus aquosus),Atlantic Halibut (Hippoglossus hippoglossus), Atlantic sea herring (Clupea harengus), Atlantic Mackerel (Scomber scrombrus), and Atlantic wolffish (Anarhichas lupus). Note: This information was obtained from the NOAA EFH Mapper as well as the NMFS Northeast Regional Office's table named "Summary of Essential Fish Habitat and General Habitat Parameters for Federally Managed Species."	✓	
Is the action located in or adjacent to EFH designated for juveniles? List the species: Atlantic salmon (Salmo salar), Pollock (Pollachius virens), Red Hake (Urophycis chuss),White Hake (Urophycis tenuis),Winter Flounder (Pleuronectes americanus), Windowpane Flounder (Scopthalmus aquosus),Atlantic Halibut (Hippoglossus hippoglossus), Atlantic sea scallop (Placopecten magellanicus), Atlantic sea herring (Clupea harengus), bluefish (Pomatomus saltatrix), Atlantic Mackerel (Scomber scrombrus), and Atlantic wolffish (Anarhichas lupus). Note: This information was obtained from the NOAA EFH Mapper as well as the NMFS Northeast Regional Office's table named "Summary of Essential Fish Habitat and General Habitat Parameters for Federally Managed Species."	✓	

Is the action located in or adjacent to EFH designated for adults or spawning adults? List the species: Red Hake (Urophycis chuss),White Hake (Urophycis tenuis),Winter Flounder (Pleuronectes americanus), Windowpane Flounder (Scopthalmus aquosus),Atlantic Halibut (Hippoglossus hippoglossus), Atlantic sea scallop (Placopecten magellanicus), bluefish (Pomatomus saltatrix), and Atlantic wolffish (Anarhichas lupus). Note: This information was obtained from the NOAA EFH Mapper as well as the NMFS Northeast Regional Office's table named "Summary of Essential Fish Habitat and General Habitat Parameters for Federally Managed Species."	✓	

If you answered 'no' to all questions above, then an EFH consultation is not required - go to Section 5.

If you answered 'yes' to any of the above questions, proceed to Section 2 and complete the remainder of the worksheet.

Step 2: In order to assess impacts, it is critical to know the habitat characteristics of the site before the activity is undertaken. Use existing information, to the extent possible, in answering these questions. Identify the sources of the information provided and provide as much description as available. These should not be yes or no answers. Please note that there may be circumstances in which new information must be collected to appropriately characterize the site and assess impacts. Project plans that show the location and extent of sensitive habitats, as well as water depths, the HTL, MHW and MLW should be provided.

2. SITE CHARACTERISTICS

Site Characteristics	Description
Is the site intertidal, subtidal, or water column?	The project area is located within all three of these zones in the Little Bay of Dover/Newington, New Hampshire.
What are the sediment characteristics?	Subtidal areas, where temporary work is proposed to be conducted within the Little Bay, mainly consists of rocky bottom types ranging from small gravel to large boulders, interspersed with widely scattered and small patches of soft sediments (Grizzle and Brodeur, 2003).
Is there submerged aquatic vegetation (SAV) at or adjacent to project site? If so describe the SAV species and spatial extent.	There is no eelgrass in the vicinity of the project based on field work conducted in the project area by UNH (Grizzle and Brodeur, 2003). However, kelp beds and macroalgal beds are located in the subtidal zone near the Newington and Dover coastlines within the project area (See Figure 2). The closest mapped eelgrass locations according to the NH Coastal Viewer the nearest mapped eel grass bed to the project area is located over 500 feet away. Some of the mapped SAV will be impacted by the temporary placement of the causeways and trestles, however populations are expected to rebound once the causeways and trestles are removed.
Are there wetlands present on or adjacent to the site? If so, describe the spatial extent and vegetation types.	According to the National Wetlands Inventory, jurisdictional estuarine and marine deepwater wetlands are present within the main channel of Little Bay under the General Sullivan Bridge (GSB). There is also a small palustrine wetland on the coastline of Little Bay near the abutments of the GSB in Newington that will be impacted during construction by a temporary access road.

Is there shellfish present at or adjacent to the project site? If so, please describe the spatial extent and species present.	Shellfish are present within and adjacent to the project area. According to the NH Coastal Viewer, a +/- 2.8 acre blue mussel shellfish bed is located in Little Bay along the Dover Point coastline on the northern side of the project. This bed was identified by the NHDES Shellfish Program in 2013 (Morrissey and Nash, 2013). Temporary impacts to shellfish may occur from sediment disturbance during the installation and removal of the causeways and trestles at the beginning and end of construction. The next closest shellfish bed is a very small American oyster aquaculture site located about 0.5 mile west of the project area, as well as shellfish aquaculture sites located about one mile west of the project area. An oyster restoration site is located about 1.5 miles west of the project.
Are there mudflats present at or adjacent to the project site? If so please describe the spatial extent.	Mudflats were mapped within the project area by UNH (Grizzle and Brodeur, 2003) - refer to Figure 2. Based on this mapping, only a small amount of mudflat may be temporarily impacted, if any, by the placement of causeways and trestles during construction since they are located along the outside edge of the project area. Areas that are temporarily disturbed will be restored to existing conditions upon project completion as much as practicable.
Is there rocky or cobble bottom habitat present at or adjacent to the project site? If so, please describe the spatial extent.	According to the study completed by UNH (Grizzle and Brodeur, 2003), rocky bottom habitats exist within and adjacent to the project area. Figure 2 includes the locations of rocky bottom habitat present at/adjacent to the project area. Rocky/cobble bottom habitat within the project area is concentrated near the shoreline of the Little Bay along the Newington and Dover coastlines. No permanent impacts to rocky or cobble bottom habitat are anticipated as a result of the proposed project, however there will be temporary impact to these habitat types by the placement of the causeways and trestles during construction.
Is Habitat Area of Particular Concern (HAPC) designated at or near the site? If so for which species, what type habitat type, size, characteristics?	A Habitat Areas of Particular Concern (HAPC) was designated in January 2018 for juvenile cod. This HAPC extends down almost the entire coastline of Maine, New Hampshire, Massachusetts, and Rhode Island. The HAPC includes rocky or cobble bottoms between 0 to 20 meters in depth along these coastlines, and provides protection to juvenile cod as well as other species that may occupy these areas. The juvenile cod HAPC will be temporarily impacted by the proposed placement of the causeways and trestles. Upon removal of the causeways and trestles the rocky/cobble floor of the Little Bay will be restored to existing conditions to the maximum extent practicable to avoid long-term impacts to the juvenile cod HAPC.
What is the typical salinity, depth and water temperature regime/range?	Salinity data from the NHDES Environmental Monitoring Database of water samples taken within the vicinity of the GSB from 1996 to 2008 indicate that the salinity of the Little Bay in this area varies from 10 to 34 ppt with an average of 25 ppt. Water temperatures within the same location vary seasonally, averaging about 5.6ºC in the winter months (November to April) and about 15ºC in the summer months (May to October). Overall the temperature in this location ranges from 0.3ºC to 24ºC. (Data obtained from the NHDES Environmental Monitoring Database on December 5, 2018.)
What is the normal frequency of site disturbance, both natural and man-made?	Regarding man-made disturbance, Little Bay is an active navigational channel from the Piscataqua River to Great Bay and experiences boat traffic at varying levels throughout the year. Natural disturbance within the project area of the Little Bay is caused by strong force of tidal wave action from waters leaving/entering Little and Great Bay to/from the Piscataqua Estuary underneath the General Sullivan and Little Bay Bridges. This narrow point in the waterbody complex has resulted in diverse habitat types within the vicinity of the bridges.
What is the area of proposed impact (work footprint & far afield)?	The project area footprint is currently defined as the GSB and surrounding Little Bay waterbody within 2,000 feet of the bridge, as well as land areas approximately 800 feet north and south of the Newington and Dover bridge abutments. The in-water work proposed to occur as part of the project involves the installation and removal of causeways and trestles at the start and end of the project. These will serve as platforms from which the bridge replacement work can be conducted. These structures will remain in place throughout the duration of the proposed work, which is expected to be approximately 18 months. The proposed bridge replacement will re-use the existing piers, which will be repointed; only the superstructure of the bridge will be replaced. Refer to the attached project plans for more information. The exact location of the temporary causeways and trestles are pending based on the contractor's discretion.

<u>Step 3</u>: This section is used to describe the anticipated impacts from the proposed action on the physical/chemical/biological environment at the project site and areas adjacent to the site that may be affected.

3. DESCRIPTION OF IMPACTS

Impacts	Y	N	Description
Nature and duration of activity(s). Clearly describe the activities proposed and the duration of any disturbances.			Construction along the GSB is expected to take approximately 18 months. Impacts affecting EFH include the temporary installment of two causeways and trestles which will remain in place throughout construction. Therefore, these temporary impacts will only occur at the beginning and end of the proposed project. Other temporary affects on EFH as the result of construction include a possible increase in turbidity from the placement and removal of the causeways and trestles. Additionally, installation and removal of the causeways and trestles, as well as the removal of the existing bridge structure and construction of the new bridge will result in acoustic impacts within the Little Bay.
Will the benthic community be disturbed? If no, why not? If yes, describe in detail how the benthos will be impacted.	✓		The project will temporarily disturb the benthic community through the installation of two causeways and trestles, which will be installed at the beginning of construction and removed at the end. The causeways will be approximately 260 feet long on the Newington side of the bridge and 130 feet long on the Dover side of the bridge. The causeways will provide a top width of 30-feet for construction on the approach spans of the bridge. Based on a 1.5:1 side slope, the causeways are expected to be approximately 70 feet wide at their bottom, for a total of approximately 0.75 acre of disturbed area. Additionally, placement of trestles beyond the causeways constructed on the Dover and Newington side of the bridge will be used during construction. The trestles will be approximately 450 to 460 feet long from the Newington side and 470 to 480 feet on the Dover side. The trestles will be supported by pile bents. This infrastructure will be removed at the end of the project work and the benthic communities are presumed to rebound in the impacted area. See the attached Construction Impact Plan for more information.
Will SAV be impacted? If no, why not? If yes, describe in detail how the SAV will be impacted. Consider both direct and indirect impacts. Provide details of any SAV survey conducted at the site.	✓		The study conducted by UNH (Grizzle and Brodeau, 2003) of marine intertidal and subtidal habitats and bottom types identified areas of SAV within the project area. The study conducted included a survey for kelp beds and macroalgal beds (refer to Figure 2). Kelp beds and macroalgal beds will be temporarily impacted by the placement of causeways and trestles in the project area. Additionally, the NH Coastal Viewer was used to identify the nearest eel grass bed to the project area, which is over 500 feet away. No direct or indirect impacts are anticipated to occur to eelgrass. The causeways will be constructed about 130 feet to 270 feet into the Little Bay parallel to the GSB, from the Dover and Newington sides, respectively. Construction of the causeways will require temporarily placing fill material into the Little Bay, resulting in about 0.75 acre of impact. Of this total, about 30 percent is mapped as kelp/microalgal beds. The temporary trestles proposed to be constructed beyond the causeways will impact the bed of the Little Bay where the pile bents (or similar method) will be placed to support the trestles, resulting in additional temporary impact to known locations of kelp/microalgal beds. Upon removal of the temporary structures, existing SAV in these areas are anticipated to rebound upon project completion.
Will salt marsh habitat be impacted? If no, why not? If yes, describe in detail how wetlands will be impacted. What is the aerial extent of the impacts? Are the effects temporary or permanent?		✓	No salt marsh habitat will be impacted by the project. The study conducted by UNH in 2003 included mapping salt marsh habitat within or in close proximity to the project area. The study did not reveal any salt marsh habitats within the project area (refer to Figure 2). (Grizzle and Brodeau, 2003).

Will mudflat habitat be impacted? If no, why not? If yes, describe in detail how mudflats will be impacted. What is the aerial extent of the impacts? Are the effects temporary or permanent?	✓		Mudflats are present adjacent to the project site, as shown in Figure 2, however none are anticipated to be within the project construction limits. However, since they are located along the outside edge of the anticipated construction limits a small amount of mudflats may be temporarily impacted, if any, by the placement of the causeways and trestles during construction. The causeways and trestles are anticipated to be in place for approximately 18 months.
Will shellfish habitat be impacted? If so, provide in detail how the shellfish habitat will be impacted. What is the aerial extent of the impact? Provide details of any shellfish survey conducted at the site.	✓		Areas of shellfish habitat were identified along the coastline of Newington and Dover within the project area by NHDES (Morrissey and Nash, 2013). The study identified blue mussel habitat around Dover Point under the bridge. The project is within the Shellfish Water Classification Prohibited/Safety Zone of estuarine waters with respect to shellfish harvesting according to the NH Coastal Viewer. The closest shellfish aquaculture site is a very small American oyster aquaculture site located approximately 0.5 mile west of the project area, as well as shellfish aquaculture sites located approximately one mile west of the project area. While the project would have temporary impacts on the Dover Point blue mussel bed as a result of the placement and removal of the causeway and trestle (approximately 0.2 acres), there would be no impacts to the shellfish aquaculture sites located near the project. During this in-water work, standard marine construction BMPs will be implemented wherever feasible to mitigate the potential for suspension of sediments and consequent siltation.
Will hard bottom (rocky, cobble, gravel) habitat be impacted at the site? If so, provide in detail how the hard bottom will be impacted. What is the aerial extent of the impact?	✓		A study of marine intertidal and subtidal bottom types was conducted by UNH (Grizzle and Brodeau, 2003) (refer to Figure 2). According to the study, rocky/cobble bottom habitat within the project area are concentrated near the shoreline of the Little Bay along the Newington and Dover coastlines. There will be no permanent impacts to rocky or cobble bottom habitat, however there will be temporary impact to these habitat types by the placement of the causeways and trestles during construction.
Will sediments be altered and/or sedimentation rates change? If no, why not? If yes, describe how.	✓		The in-water work associated with the project involves the placement of temporary causeways and trestles. As a result of the causeway and trestle installation, the sediment along the estuary floor of Little Bay will be altered and sedimentation rates will change while the causeways and trestles are in place. Once the causeways and trestles are in place, sedimentation rates are not expected to change until their removal. During the installation and removal of these structures, mitigation measures will be used, which may include the use of turbidity curtains, to ensure there are no major impacts related to sedimentation.
Will turbidity increase? If no, why not? If yes, describe the causes, the extent of the effects, and the duration.	✓		Turbidity will increase temporarily during placement and removal of the causeways/trestles in preparation for the bridge demolition and construction efforts, and at the conclusion of construction. The causeways and trestles are anticipated to take approximately one to two weeks to install and remove. Mitigation measures, such as turbidity curtains, may be placed around the area of in-water impact if determined necessary to prevent sedimentation and turbidity effects.

Will water depth change? What are the current and proposed depths?		✓	Since the GSB will be replaced on existing piers there will be no change to currents or depths. The hydrodynamic model completed for the original EIS (Celikkol et. al, 2006) investigated potential changes to tidal flow due to bridge pier modification from the Little Bay Bridge construction (located next to the GSB). This model predicted that the modifications will result in little change to the tidal flow within Little Bay. Since the GSB replacement will use existing piers, the project will not permanently change water depth nor the current of Little Bay. Low tide depths in the deepest portion of the project area range from approximately 30 to 34 ft (9.1 to 10.4 meters). Normal tidal range in this portion of the estuary is about 8 ft (2.4 meters). The temporary placement of the causeways/trestle may result in minor, localized changes to the water depth and current of Little Bay, but these changes will be insignificant and temporary.
Will contaminants be released into sediments or water column? If yes, describe the nature of the contaminants and the extent of the effects.	✓		Although sediment samples taken from 1973-1994 revealed that lead and chromium concentrations from Trickys Cove and chromium concentrations in Pomeroy Cove are relatively high (Jones, 2000), no work is proposed within Trickys Cove and therefore contaminants from this area will not be disturbed. The project proposes to temporarily disturb bottom sediments from the installation and removal of the causeways and trestles. The causeway/trestles will be temporarily installed and will involve placement of fill material for the causeways and setting of pile bents for the trestles. Sediment disturbance within the Little Bay will be minimized to the greatest extent practicable during the installation and removal of the temporary causeways/trestles.
Will tidal flow, currents, or wave patterns be altered? If no, why not? If yes, describe in detail how.	✓		The placements of the causeways and trestles will temporarily alter currents at a localized scale and will cause minor changes in tidal velocities. Based on field measurements at multiple locations and depths over several tidal cycles, maximum speeds of about 6 knots (9 feet per second) occurred on the ebb tide with fastest flows in the deeper waters along the south (Newington) side. Speeds up to about 4 knots (6 feet per second) were recorded during flooding tides in the shallow subtidal areas along the north (Dover Point) side. (Mathieson, et al. 1983) Current flows in the area were complex and had a wide range of directional components and speeds during a tidal cycle. Tidal flows, currents and wave patterns are not expected to be permanently altered, there will be no new permanent structure associated with the project and all changes to the tidal flow, currents, and wave patterns will be temporary and minor.
Will water quality be altered? If no, why not? If yes, describe in detail how. If the effects are temporary, describe the duration of the impact.		✓	With the use of standard BMPs for marine construction, no significant water quality degradation of any EFH is expected. Any impacts are likely to be limited to a temporary increase in turbidity and suspended solids. Because of substantial tidal exchange and normal river flows, water quality at the project site is expected to return quickly to its pre-disturbance condition. Minimal, temporary water quality impacts may occur during the in-water construction phases of the project since the temporary causeways and trestles may disturb bottom sediments. This in-water work to install and remove the causeways/trestle is anticipated to take approximately one to two weeks at the start and end of the bridge replacement work.
Will ambient noise levels change? If no, why not? If yes, describe in detail how. If the effects are temporary, describe the duration and degree of impact.		✓	Ambient noise levels will change temporarily during construction. Ambient noise levels will be related to causeway installation and pile driving (if needed) to install the temporary trestles over a one to two week period. Based on previous experience in this location (i.e., the expansion of the Little Bay Bridge), it is unlikely that pile driving will be necessary since there is limited sediment depth in this area. Rather, the temporary trestle will likely be anchored using pile "stingers" or similar anchor types.
Does the action have the potential to impact prey species of federally managed fish with EFH designations?	✓		The action has the potential to have indirect and temporary impact to prey species of federally managed fish species. No measurable population impacts are anticipated; prey species are expected to return to existing conditions once construction is complete and the habitat has been restored.

Step 4: This section is used to evaluate the consequences of the proposed action on the functions and values of EFH as well as the vulnerability of the EFH species and their life stages. Identify which species (from the list generated in Step 1) will be adversely impacted from the action. Assessment of EFH impacts should be based upon the site characteristics identified in Step 2 and the nature of the impacts described within Step 3. NOAA's EFH Mapper should be used during this assessment to determine the ecological parameters/ preferences associated with each species listed and the potential impact to those parameters.

4. EFH ASSESSMENT			
Functions and Values	**Y**	**N**	**Describe habitat type, species and life stages to be adversely impacted**
Will functions and values of EFH be impacted for:			
Spawning **If yes, describe in detail how, and for which species. Describe how adverse effects will be avoided and minimized.**	✓		Spawning habitat may be affected for windowpane flounder and winter flounder within the project area (refer to Table 1). Spawning habitat for both species includes bottom habitats of mud or fine grained sand with depths less than 6 meters. This type of habitat exists within the project area. Adverse effects will be avoided by time of year restrictions for all in-water activities or activities that may affect the spawning habitats of these flounder species, including acoustic effects and any work that will increase turbidity or sedimentation.
Nursery **If yes, describe in detail how and for which species. Describe how adverse effects will be avoided and minimized.**	✓		Four species nursery habitats will be impacted by project activities, specifically in regard to the placement of the temporary causeways and trestles. The project area may include white hake, winter flounder, and windowpane flounder surface water nursery habitat, which may be impacted by any in water work. Winter flounder nursery habitats are bottom habitat with sand/mud/gravel substrates, which may be impacted by impacted by the installation and removal of the causeways and trestles. Lastly, nursery habitat for Atlantic mackerel may be impacted by the construction activities since the nursery habitat is located in pelagic or estuary waters. Impacts to these nursery habitats will be avoided/minimized through time of year restrictions for all in water work.
Forage **If yes, describe in detail how and for which species. Describe how adverse effects will be avoided and minimized.**	✓		All species listed in Table 1 and Table 2, attached, potentially have foraging habitat within the project area since these species are moving through the Little Bay or seasonally inhabiting the project area. Foraging habitat impacts will most likely result from the placement and removal of the temporary causeways and trestles over a one to two week period. The intertidal and subtidal habitats within the project area will be disturbed directly in the causeways/trestles locations. Additionally, overall disturbance during the installation and removal of the temporary structures may impact foraging activities within the immediate vicinity of these activities. (Table 1 and Table 2 were created using the EFH Mapper as well as a table from the NOAA - NMFS "Summary of Essential Fish Habitat (EFH) and General Habitat Parameters for Federally Managed Species.")
Shelter **If yes, describe in detail how and for which species. Describe how adverse effects will be avoided and minimized.**	✓		Shelter functions and values may be impacted in the project area for species that use cobble/gravel substrate or the SAV to find shelter and avoid predation. These shelter habitats may be temporarily impacted by the placement of the causeways/trestles. More specifically, shelter habitats for juvenile red hake may be temporarily impacted because this species uses bottom habitats such as mud substrates with depressions and macroalgae as shelter habitats. The project will minimize effects to shelter habitats by limiting the scope of in-water work to the areas identified on the project plans.

Will impacts be temporary or permanent? Please indicate in description box and describe the duration of the impacts.			All in-water disturbance and impacts related to the proposed project will be temporary. These temporary impacts are related to the placement of the construction access causeways and trestles, and the resulting sedimentation, acoustic effects, and habitat disturbance that the installation and removal of these structures, over one to two week periods, will cause. The causeways and trestles will be present for the duration of the project construction, which is expected to be approximately 18 months.
Will compensatory mitigation be used? If no, why not? Describe plans for mitigation and how this will offset impacts to EFH. Include a conceptual compensatory mitigation plan, if applicable.		✓	No compensatory mitigation will be used as part of this project. All impacts to EFH will be temporary and standard best management practices (BMPs) for marine construction will be used for this project, wherever feasible. BMPs will be implemented to mitigate the potential for suspension of sediments and consequent siltation during in-water construction. If needed, turbidity curtains may be used to reduce turbidity and prevent sedimentation. A well defined drainage and erosion control plan for all shoreside construction will be implemented which will include BMPs to control and capture silt-laden stormwater runoff. The contractor will be directed to divert runoff to temporary erosion check dams or to capture runoff using silt fences, hay bales, silt socks, mulch filter berms, or temporary detention basins. Areas of soil disturbance will be seeded and mulched as quickly as possible after initial grading. With these measures, erosion during construction is expected to be minimal. Standard BMPs will be used for in-water and shoreside construction to address potential fuel or oil spills from the construction equipment. An emergency response plan for all spills will be in place prior to construction. Finally, the contractor will be required to inspect all construction BMPs on a daily basis to ensure that they are properly installed and maintained.

Step 5: This section provides the federal agency's determination on the degree of impact to EFH from the proposed action. The EFH determination also dictates the type of EFH consultation that will be required with NOAA Fisheries.

Please note: if information provided in the worksheet is insufficient to allow NOAA Fisheries to complete the EFH consultation additional information will be requested.

5. DETERMINATION OF IMPACT		
Federal Agency's EFH Determination		
Overall degree of adverse effects on EFH (not including compensatory mitigation) will be: **(check the appropriate statement)**		**There is no adverse effect on EFH or no EFH is designated at the project site.** **EFH Consultation is not required.**
	✓	**The adverse effect on EFH is not substantial. This means that the adverse effects are either no more than minimal, temporary, or that they can be alleviated with minor project modifications or conservation recommendations.** **This is a request for an abbreviated EFH consultation.**
		The adverse effect on EFH is substantial. **This is a request for an expanded EFH consultation.**

Step 6: Consultation with NOAA Fisheries may also be required if the proposed action results in adverse impacts to other NOAA-trust resources, such as anadromous fish, shellfish, crustaceans, or their habitats as part of the Fish and Wildlife Coordination Act Some examples of other NOAA-trust resources are listed below. Inquiries regarding potential impacts to marine mammals or threatened/endangered species should be directed to NOAA Fisheries' Protected Resources Division.

6. OTHER NOAA-TRUST RESOURCES IMPACT ASSESSMENT	
Species known to occur at site (list others that may apply)	**Describe habitat impact type (i.e., physical, chemical, or biological disruption of spawning and/or egg development habitat, juvenile nursery and/or adult feeding or migration habitat). Please note, impacts to federally listed species of fish, sea turtles, and marine mammals must be coordinated with the GARFO Protected Resources Division.**
alewife	Alewife are an anadromous species that spawn in slow moving shallow sections of rivers, streams, lakes, and ponds. The spawning habitat does not occur within the project area, however alewife may move through the project area on their way to spawn. According to the New Hampshire Wildlife Action Plan, the current distribution of alewife includes the Great Bay area. No impacts to this species migration is anticipated from construction activities. (NHF&G, 2015).
American eel	The American eel is a catadromous species that inhabits freshwaters or estuaries and then spawns at sea. There are no spawning habitats for this species in the project area. Shelter habitats for the American eel may be temporarily impacted by the temporary construction measures related to the project.
American shad	American shad are anadromous fish that migrate up large freshwater rivers and tributaries to spawn. Spawning can occur in tidal and non-tidal freshwater of rivers and tributaries. The Wildlife Action Plan (2015) indicates that American shad is no longer known to occur within the watersheds that drain into the Great Bay, however they are occasionally seen traveling up coastal river fish ladders. Therefore, the proposed project is not anticipated to impact Atlantic shad. (NHF&G, 2015).
Atlantic menhaden	Atlantic menhaden occupy estuarine habitats as juveniles, and migrate within coastal waters, spawning during the fall or early winter along the coast of North Carolina. Juveniles prefer habitat that is composed of unconsolidated mud, but also uses rocky coves with cobble/rock/sand bottoms within their northern range. As the life stage of Atlantic menhaden increases, sub-adults and adults use habitats composed of mud/sand/organic material. The temporary placement of the causeways and trestles within the project area may cause temporary disturbance to this species, but it is unlikely that this species will be present within the rocky bottom of the project area. (ASMFC, 2015).
blue crab	Blue crab occupy offshore high salinity waters during early larval stages, however they use estuary and intertidal marshes, seagrass beds and soft-sediment shorelines as they grow into adults. There may be temporary impacts to shelter, and foraging habitat for blue crab as the result of the temporary construction measures. (NOAA, Chesapeake Bay Office, 2018).
blue mussel	The NH Coastal Viewer identifies a +/- 2.8-acre blue mussel shellfish bed in Little Bay along the Dover Point coastline underneath the GSB on the northern side of the project. This bed was identified by the NHDES Shellfish Program in 2013 (Morrissey and Nash, 2013). Temporary impacts to this shellfish bed may occur during the installation and removal of the causeways and trestles at the beginning and end of construction. The causeways/trestles will be in place throughout the duration of construction, which is anticipated to take approximately 18 months.
blueback herring	Blueback herring spawn in fast moving, shallow water of rivers and streams. Spawning occurs in the spring, and then juvenile blueback herring normally remain in freshwater throughout the summer and fall and then migrate to the sea. There is the potential for the project to temporarily impact juvenile shelter and foraging habitat that may be within the project area as a result of the trestles and causeways construction. It is unlikely that the salinity of the estuary will support spawning habitat within the project area. (NHF&G, 2015).

Eastern oyster	There are no eastern oyster (also known as the American oyster) locations within the project area. According to the NH Coastal Viewer, the closest known location of American oyster is a very small shellfish aquaculture site located approximately 0.5 miles west of the project area. The nearest oyster restoration site is located over 1.5 miles from the project area. No natural oyster sites are within the vicinity of the project area.
horseshoe crab	Spawning habitat for horseshoe crabs includes sandy beaches of bays and coves, which are not present within the project area. Nurseries for this species include areas next to sandy beaches in intertidal sand flats. The potential for nursery habitat exists in the project area and may be temporarily impacted by the temporary construction measures. Specific adult horsehoe crab habitat requirements are unknown. Adult habitat varies and adults can be found in waters 30 to 200 meters in depth. It is unlikely that adult horseshoe crabs will be within the project area. (NHF&G, 2015).
quahog	Hard clam/northern quahog are sessile and burrow into sediment in intertidal and sub-tidal areas. The project area may temporarily impact this species due to the temporary placement of the causeways and trestles. (NOAA, 2018).
soft-shell clams	Soft-shelled clams are found in mud/sand/rock substrates of intertidal waterbodies. According to the NH Coastal Viewer, the closest known location is 5,000 feet west of the project area. (NH WAP, 2015).
striped bass	Striped bass inhabit coastal waters and migrate to freshwater rivers to spawn. This species spend approximately May through October in the vicinity of Great Bay, spawning in the freshwater tributaries in April and May. This species is likely to pass through the project area during spawning season, however the project's in water work is unlikely to affect this species and its movements. (NHF&G, 2018).
other species:	Critical habitat designations were finalized in 2017 for Atlantic sturgeon in various locations along the northeast coast of the United States, including the Piscataqua River (as well as Little Bay and Great Bay). The critical habitat is defined by four physical and biological features, including 1) hard bottom substrate in low salinity water for egg to early juvenile stage (0.0 - 0.5 ppt), 2) soft substrate (mud) and salinity ranging from 0.5 to 30 ppt for juveniles, 3) waters uninhibited by barriers for the movement of juveniles and spawning adults within waterbodies, and 4) waterbodies connected to spawning sites and mouth of the river that support all life stages including temperatures from 13ºC to 30ºC and 6 mg/L for dissolved oxygen. Separate consultation regarding this critical habitat is currently being completed between the lead federal agency (FHWA) and NOAA.

References

Atlantic States Marine Fisheries Commission (ASMFC). 2015. *Alewife*. Arlington, VA. Accessed December 3, 2018 <https://www.asmfc.org/files/Habitat/Species%20factsheets/Alewife.pdf>.

Atlantic States Marine Fisheries Commission (ASMFC). 2017. *Amendment 3 to the Interstate Fishery Management Plan for Atlantic Menhaden.* Atlantic Menhaden Plan Development Team. NA15NMF470069.

Atlantic States Marine Fisheries Commission (ASMFC). 2015. *Atlantic Menhaden*. Arlington, VA. Accessed December 3, 2018 <http://www.asmfc.org/files/Habitat/Species%20factsheets/AtlanticMenhaden.pdf>.

Atlantic States Marine Fisheries Commission (ASMFC). 1998. *Interstate Fishery Management Plan for Horseshoe Crab*. Horseshoe Crab Plan Development Team. Fishery Management Report No. 32.

Celikkol, B, T. Shevenell, Z Aydinoglu, and J. Scott. 2006. "Hydrodynamic Computer Model Study of the Great Bay Estuarine System, New Hampshire, In Support of the Little Bay Bridge Project." Computer Modeling Group, Ocean Engineering, University of New Hampshire, Durham, NH.

Grizzle, R. and M. Brodeur. 2003. *Spaulding Turnpike Environmental Impact Study: Technical Report for Phase 1 – Data Collection and Coordination (Assessment of Existing Conditions in Little Bay*. Progress Report on Jackson Estuarine Laboratory Work Tasks 1-4. Jackson Estuarine Laboratory, University of New Hampshire, Durham, NH.

Jones, S.H. 2000. *A Technical Characterization of Estuarine and Coastal New Hampshire*. New Hampshire Estuaries Project. PREP Publications. Durham, NH. Paper 294.

Mathieson, A.C., C.D. Neefus, and E. Penniman. 1983. *Benthic Ecology in an Estuarine Tidal Rapid*. Botanic Marina XXVI:213-230.

Nash, C. 2005. *NH Department of Environmental Services Shellfish Program Activities, January 2005 – December 2005*. PREP Reports & Publications. 158.

National Marine Fisheries Service (NMFS). *Summary of Essential Fish Habitat and General Habitat Parameters for Federally Managed Species*. Northeast Regional Office, Habitat Conservation Division. National Oceanic and Atmospheric Administration Greater Atlantic Fisheries Guide to Essential Fish Habitat Descriptions.

Morrissey, E., and C. Nash. 2013. *Identifying Blue Mussel (*Mytilus edulis*) Resource in Coastal New Hampshire.* NH Department of Environmental Services' Shellfish Program. Accessed January 14, 2019 <https://www.des.nh.gov/organization/divisions/water/wmb/shellfish/red-tide/aquaculture.htm>.

National Oceanic and Atmospheric Administration (NOAA). 2018. *Blue Crab*. Chesapeake Bay Office. Accessed December 3, 2018 <https://chesapeakebay.noaa.gov/fish-facts/blue-crab>.

National Oceanic and Atmospheric Administration (NOAA). 2018. *Hard Clam/Northern Quahog*. Accessed December 4, 2018 <https://www.fisheries.noaa.gov/species/hard-clam-northern-quahog>.

National Oceanic and Atmospheric Administration (NOAA). 1999. *Ocean Quahog,* Arctica islandica*, Life History and Habitat Characteristics.* US Department of Commerce. National Marine Fisheries Service, Northeast Region. Woods Hole, Massachusetts. NMFS-NE-148.

New Hampshire Fish and Game (NHF&G). 2015. *Appendix A: Fish*. NH Wildlife Action Plan. Concord, NH.

New Hampshire Fish and Game (NHF&G). 2015. *Appendix A: Marine Wildlife*. NH Wildlife Action Plan. Concord, NH.

New Hampshire Fish and Game (NHF&G). *Striped Bass*. Concord, New Hampshire. Accessed December 3, 2018 <https://www.wildlife.state.nh.us/fishing/profiles/striped-bass.html>.

NH GRANIT. 2018. *New Hampshire Coastal Viewer*. University of New Hampshire, Durham, NH.

Table 1. Habitat Conditions and Suitability Assessment for EFH Species Within Great Bay, New Hampshire
Green shading: Suitable EFH habitat in project area. Orange Shading: Marginal habitat in project area, not optimal.

Species	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Atlantic salmon (*Salmo salar*)			Temperature: < 25° C Salinity: Freshwater to oceanic Depth: 10 – 61 cm Habitat: Shallow gravel/cobble riffles interspersed with deeper riffles and pools in rivers and estuaries. Water velocities between 30-92 cm/sec. **Not Suitable:** The project area does not include shallow gravel/cobble riffles and water velocity speeds within the GSB project area are too swift (greater than 92 cm/sec) compared to water velocities tolerated by juvenile salmon.		
Atlantic cod (*Gadus morhua*)	Temperature: < 12° C Salinity: 32-33 ppt Depth: <110 m Seasonal Occurrence: Begins in fall, peaks in winter and spring Habitat: Surface waters **Not Suitable:** The project area includes salinity levels between 18 and 25 ppt and are estuarine habitats, salinity levels are too low within the Project area to be suitable for cod eggs.	Temperature: < 10° C Salinity: 32-33 ppt Depth: 30-70 m Seasonal Occurrence: Spring Habitat: Pelagic waters **Not Suitable:** The project area includes salinity levels between 18 and 25 ppt and are estuarine habitats, salinity levels are too low within the Project area to be suitable for cod larvae.			
Haddock (*Melanogrammus aeglefinus*)	Temperature: < 10° C Salinity: 34-36 ppt Depth: 50-90 m Seasonal Occurrence: March to May, peak in April Habitat: Surface waters **Not Suitable:** The project area includes salinity levels between 18 and 25 ppt and are estuarine habitats, salinity levels are too low within the Project area to be suitable for haddock eggs.	Temperature: < 14° C Salinity: 34-36 ppt Depth: 30-90 m Seasonal Occurrence: January to July, peak in April and May Habitat: Surface waters **Not Suitable:** The project area includes salinity levels between 18 and 25 ppt and are estuarine habitats, salinity levels are too low within the Project area to be suitable for haddock larvae.			

Table 1. Habitat Conditions and Suitability Assessment for EFH Species Within Great Bay, New Hampshire
Green shading: Suitable EFH habitat in project area. Orange Shading: Marginal habitat in project area, not optimal.

Species	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Pollock (*Pollachius virens*)	Temperature: < 17° C Salinity: 32-32.8 ppt Depth: 30-270 m Seasonal Occurrence: October to June, peaks in November to February Habitat: Pelagic Waters **Not Suitable:** The project area has salinity that is too low, and depths that area to shallow/ not pelagic waters to support Pollock eggs.. The normal tide depth in the project area portion of the estuary is 8 feet.	Temperature: < 17° C Depth: 10-250 m Seasonal Occurrence: September to July, peaks from December to February Habitat: Pelagic waters, migrate inshore as they grow. **Not Suitable:** The project area has salinity that is too low, and depths that area to shallow/ not pelagic waters to support Pollock eggs. The normal tide depth in the project area portion of the estuary is 8 feet.	Temperature: < 18° C Salinity: 29-32 ppt Depth: 0-250 m Habitat: Bottom habitats with aquatic vegetation or a substrate of sand, mud, or rocks.		
Red Hake (*Urophycis chuss*)			Temperature: < 16° C Salinity: 31-33 ppt Depth: < 100 m Habitat: Bottom habitats with substrate of shell fragments, including areas with an abundance of live scallops.	Temperature: < 12° C Salinity: 33-34 ppt Depth: 10-130 m Habitat: Bottom habitats in depressions with a substrate of sand and mud.	
White Hake (*Urophycis tenuis*)	Salinity: Seawater zone Seasonal Occurrence: August to September Habitat: Surface Waters		Temperature: < 19° C Salinity: Seawater zone Depth: 5-225 m Seasonal Occurrence: May to September, pelagic Habitat: Pelagic stage – pelagic waters; Dermersal stage – Bottom habitat with seagrass beds or substrate of mud or fine-grained sand.	Temperature: < 14° C Salinity: Seawater zone Depth: 5-325 m Habitat: Bottom habitat with substrate of mud or fine-grained sand.	
Winter Flounder (*Pleuronectes americanus*)	Temperature: <10° C Salinity: 10-30 ppt Depth: <5 m Seasonal Occurrence: February to June Habitat: Bottom habitats with a substrate of sand, muddy sand, mud, and gravel.	Temperature: <15° C Salinity: 4-30 ppt Depth: <6 m Seasonal Occurrence: March to July Habitat: Pelagic and bottom waters.	Temperature: <25° C Salinity: 10-30 ppt Depth: 1-50 m Seasonal Occurrence: March to July Habitat: Bottom habitats with a substrate of mud or fine-grained sand.	Temperature: < 25° C Salinity: 15 – 33 ppt Depth: 1 – 100 m Habitat: Bottom habitats including estuaries with sand, mud, and gravel substrate	Temperature: < 15° C Salinity: 5.5 – 36 ppt Depth: < 6 m Seasonal Occurrence: February to June Habitat: Bottom habitats including estuaries with sand, mud, and gravel substrate.

Table 1. Habitat Conditions and Suitability Assessment for EFH Species Within Great Bay, New Hampshire
Green shading: Suitable EFH habitat in project area. Orange Shading: Marginal habitat in project area, not optimal.

Species	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Yellowtail Flounder (*Pleuronectes ferruginea*)	Temperature: <15° C Salinity: 32.4-33.5 ppt Depth: 30-90 m Seasonal Occurrence: Mid-March to July Habitat: Surface waters **Marginal:** Low salinity level and water depths within the project area do not provide ideal conditions for yellowtail flounder eggs.	Temperature: <17° C Salinity: 32.4-33.5 ppt Depth: 10-90 m Seasonal Occurrence: May to July Habitat: Surface waters, largely an oceanic nursery. **Not Suitable:** Low salinity level within the project area do not provide ideal conditions for yellowtail flounder larvae, however marginal conditions for depth and temperature do exist within the project area.			
Windowpane Flounder (*Scopthalmus aquosus*)	Temperature: <20° C Depth: < 70 m Seasonal Occurrence: February to November Habitat: Surface waters	Temperature: <20° C Depth: < 70 m Seasonal Occurrence: February to November Habitat: Pelagic waters	Temperature: <25° C Salinity: 5.5-36 ppt Depth: 1-100 m Habitat: Bottom habitats with substrate of mud or fine-grained sand.	Temperature: <26.8° C Salinity: 5.5-36 ppt Depth: 1-75 m Habitat: Bottom habitats with substrate of mud or fine-grained sand.	Temperature: <21° C Salinity: 5.5-36 ppt Depth: 1-75 m Seasonal Occurrence: February to December Habitat: Bottom habitats with substrate of mud or fine-grained sand.
Atlantic Halibut (*Hippoglossus hippoglossus*)	Temperature: 4 - 7° C Salinity: < 35 ppt Depth: < 700 m Seasonal Occurrence: Between late fall and early spring, peak November and December Habitat: Pelagic waters to the sea floor **Not Suitable:** The project area is estuarine and riverine habitat, and not pelagic waters.	Salinity: 30 – 35 ppt Habitat: Surface waters **Not Suitable:** The project area is estuarine habitat and riverine with salinity less than 30 ppt.	Temperature: > 2° C Depth: 20 – 60 m Habitat: Bottom habitats with a substrate of sand, gravel, and clay. **Not Suitable:** The project area is estuarine and riverine habitat with depths less than 20m.	Temperature: < 13.6° C Salinity: 30.4 – 35.3 ppt Depth: 100 – 700 m Habitat: Substrate with bottom habitats of sand, gravel, or clay. **Not Suitable:** The project area is estuarine and riverine habitat with depths less than 100m.	Temperature: < 7° C Salinity: < 35 ppt Depth: < 700 m Seasonal Occurrence: Between late fall and early spring, peaks in November and December. Habitat: Bottom habitats with a substrate of soft mud, clay, sand, or gravel. Rough or rocky bottom locations along slopes of the outer banks. **Not Suitable:** The project area is estuarine/riverine habitat without suitable depths, salinity and temperatures needed by adult Atlantic Halibut.
Atlantic mackerel (*Scomber scombrus)*	Temperature: 5-23° C Salinity: 18- >30 ppt Depth: 0 – 15 m Habitat: Pelagic waters and estuaries.	Temperature: 6-22° C Salinity: >30 ppt Depth: 10 – 130 m Habitat: Pelagic waters.	Temperature: 4-22° C Salinity: >25 ppt Depth: 0 – 320 m Habitat: Pelagic waters.		

Table 1. Habitat Conditions and Suitability Assessment for EFH Species Within Great Bay, New Hampshire
Green shading: Suitable EFH habitat in project area. Orange Shading: Marginal habitat in project area, not optimal.

Species	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Atlantic Sea Scallop (*Placopecten magellanicus*)			Temperature: < 15° C Depth: 18 – 110 m Habitat: Bottom habitats with silt, cobble, and shell substrate. **Not Suitable:** The project area does contain bottom habitats suitable for Atlantic sea scallops, however depths within the project area are not suitable for this species.	Temperature: < 21° C Salinity: > 16.5 ppt Depth: 18 – 110 m Habitat: Bottom habitats with a substrate of cobble, shells, coarse/gravelly sand, and sand. **Not Suitable:** The project area does contain bottom habitats suitable for Atlantic sea scallops, however depths within the project area are not suitable for this species.	
Atlantic Sea Herring (*Clupea harengus*)		Temperature: < 16° C Salinity: 32 ppt Depth: 50 – 90 m Seasonal Occurrence: Between August and April, peaks from September to November. Habitat: Pelagic waters. **Not Suitable:** The project area represents estuarine and riverine habitat, not pelagic waters, has less than 11 meters at the project areas deepest point, and salinity below 25ppt. However, because this is a migratory species it may be observed in the project area.	Temperature: < 10° C Salinity: 26-32 ppt Depth: 15 – 135 m Habitat: Pelagic and bottom habitats **Not Suitable:** The project area represents estuarine and riverine habitat, not pelagic waters, has less than 11 meters at the project areas deepest point, and salinity below 25ppt. However, because this is a migratory species it may be observed in the project area.		
Bluefish (*Pomatomus saltatrix*)			Temperature: >19-24° C Salinity: 23-36 ppt Seasonal Occurrence: June to October Habitat: Pelagic waters. Use estuaries as nursery areas. Can intrude into areas with salinities as low as 3 ppt.	Temperature: >14-16° C Salinity: > 25 ppt Seasonal Occurrence: June to October Habitat: Pelagic waters. Highly migratory.	

Source: National Marine Fisheries Service, Northeast Regional Office, Habitat Conservation Division. *Summary of Essential Fish Habitat and General Habitat Parameters for Federally Managed Species*. National Oceanic and Atmospheric Administration Greater Atlantic Fisheries Guide to Essential Fish Habitat Descriptions.
Notes: (1) Species that were listed in the EFH mapper that are not included in this table (Table 1) are bluefin tuna (*Thunnus thynnus*), Atlantic wolffish (*Anarhichas lupus*), smooth skate (*Malacoraja senta*), thorny skate (*Amblyraja radiata*), winter skate (*Leucoraja ocellata*) and little skate (*Leucoraja erinacea*). These species are included in Table 2. (2) Species that are included in this table that were not listed in the EFH mapper include Haddock (*Melanogrammus aeglefinus*), Yellowtail Flounder (*Pleuronectes ferruginea*), Atlantic Halibut (*Hippoglossus hippoglossus*), and Atlantic mackerel (*Scomber scombrus*).

Table 2. Habitat Conditions and Suitability Assessment for Additional EFH Species Present on the EFH Mapper
Green shading: Suitable EFH habitat in project area. Orange Shading: Marginal habitat in project area, not optimal.

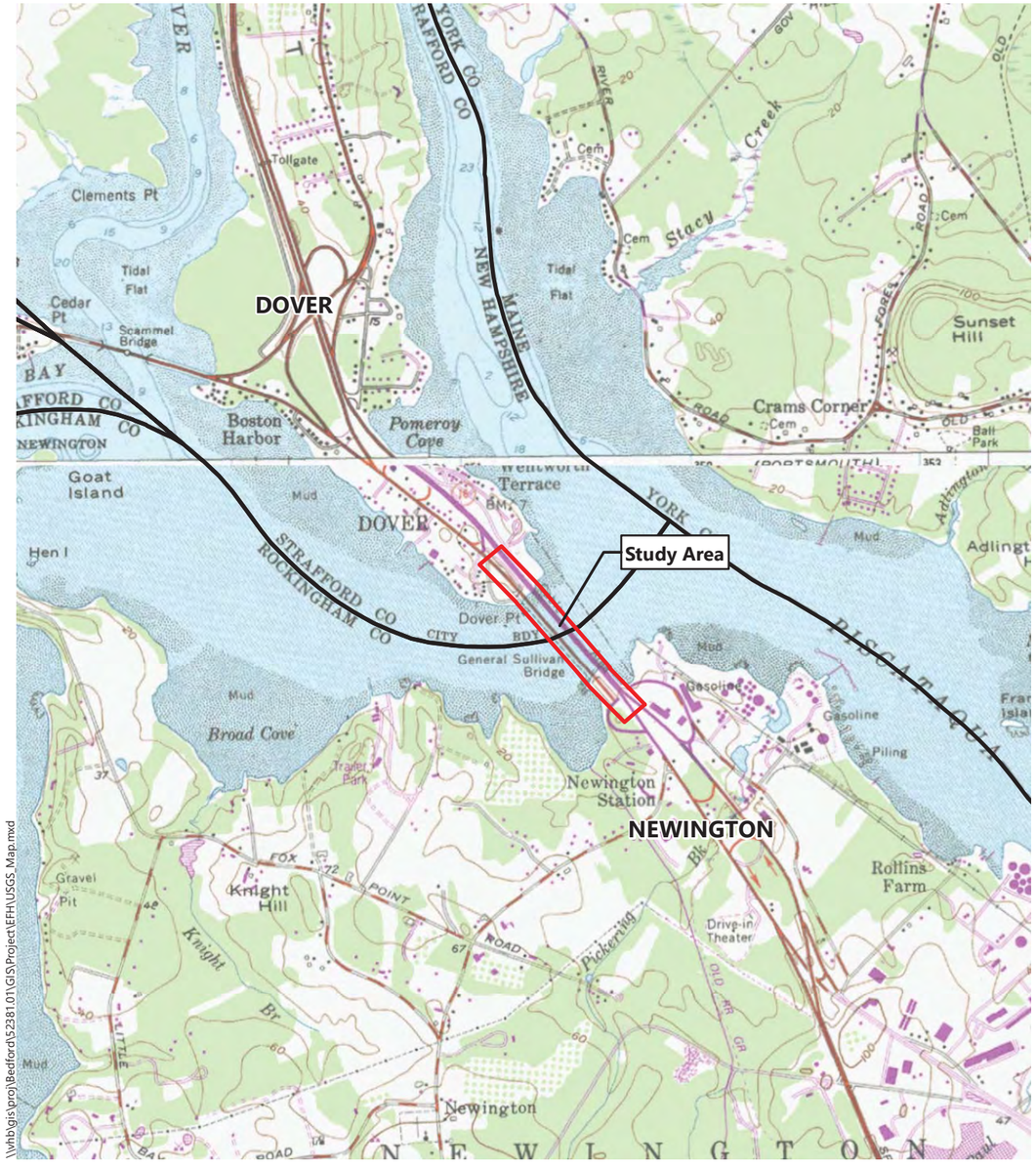
Species	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Little Skate (*Leucoraja erinacea*)			Temperature: 4-15° C Salinity: 26-36 ppt Depth: 0 – 137 m With the highest abundance occurring between 73-91 meters Habitat: Bottom habitats with sandy or gravelly substrate or mud. **Not Suitable:** The project area does contain bottom habitats suitable for juveniles, however salinity values within the project area are not suitable for this species.	Temperature: 2-15° C Salinity: 20-34 ppt Depth: 0 – 137 m With the highest abundance occurring between 73-91 meters Habitat: Bottom habitats with sandy or gravelly substrate or mud.	
Smooth Skate (*Malacoraja senta*)			Temperature: 2-12° C Salinity: 32-35 ppt Depth: 31 – 500 m Habitat: Deep water habitats with soft mud bottoms and offshore bank areas with sand, broken shells, gravel and pebble substrates. **Not Suitable:** The project area does contain bottom habitats suitable for juveniles, however the depths within the project area are not suitable for this species.		

Table 2. Habitat Conditions and Suitability Assessment for Additional EFH Species Present on the EFH Mapper
Green shading: Suitable EFH habitat in project area. Orange Shading: Marginal habitat in project area, not optimal.

Species	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Thorny Skate (*Amblyraja radiata*)			Temperature: -1.3-17° C Depth: 18-2000 m Habitat: Bottom habitats with a substrate of sand, gravel, broken shell, pebbles, or soft mud. **Not Suitable:** The project area does contain bottom habitats suitable for juveniles, however depths within the project area are not suitable for this species.		
Winter Skate (*Leucoraja ocellata*)			Temperature: 5-21° C Salinity: 32-34 ppt Depth: 11-70 m Habitat: Bottom habitats with a substrate of sand, mud, or rocks.		
Atlantic Wolffish (*Anarhichas lupus*)	Depth: <100 m Habitat: Sub-tidal benthic habitats. Egg masses are hidden under rocks and boulders.	Habitat: Pelagic and sub-tidal benthic habitats. After hatching, larvae become more and more buoyant over time.	Depth: 70-184 m Habitat: Sub-tidal benthic habitats; no substrate preferences.	Depth: <173 m Habitat: Sub-tidal benthic habitats. Use areas with sandy or gravel substrates (not mud).	Depth: <100 m Habitat: Rocky habitats at various depths.

Sources:
Packer DB, Zetlin CA, Vitaliano JJ. 2003. Essential Fish Habitat Source Document: Little Skate, *Malacoraja senta*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS NE 175.
Packer DB, Zetlin CA, Vitaliano JJ. 2003. Essential Fish Habitat Source Document: Smooth Skate, *Malacoraja senta*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS NE 177.
Packer DB, Zetlin CA, Vitaliano JJ. 2003. Essential Fish Habitat Source Document: Thorny Skate, *Malacoraja senta*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS NE 178.
Packer DB, Zetlin CA, Vitaliano JJ. 2003. Essential Fish Habitat Source Document: Winter Skate, *Leucoraja ocellata*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS NE 179.
New England Fishery Management Council. 2017. *Final Omnibus Essential Fish Habitat Amendment 2*. Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts. National Marine Fisheries Service. Gloucester, MA.
Note: (1) Bluefin tuna (*Thunnus thynnus*) was listed on the EFH mapper, however due to the water depth and geographic habitat around the project area, the habitat of the Little Bay does not support any of these life stages for bluefin tuna. Therefore, bluefin tuna is unlikely to be present within the project area.

FIGURE 1



\\vhb\gis\proj\Bedford\52381.01\GIS\Project\EFH\USGS_Map.mxd

0 1000 2000 4000 Feet

Newington-Dover 11238S | Newingtong and Dover, NH

Legend

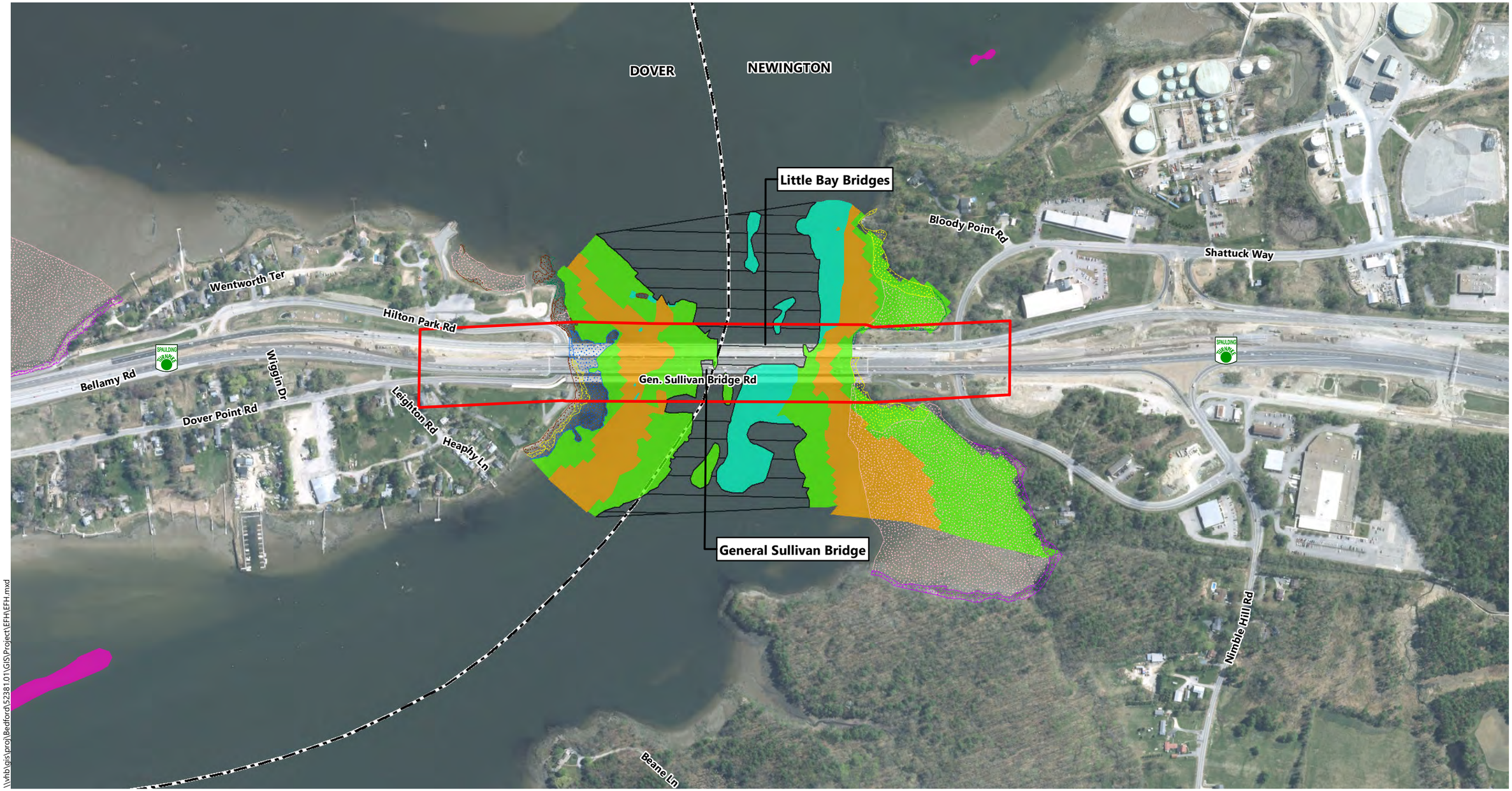
Study Area

Town Boundary

General Sullivan Bridge

USGS Map

Source: VHB, NHGRANIT



0 250 500 1000 Feet

Legend

- Study Area
- Town Boundaries
- State Boundary

Intertidal Habitats

- Hard Bottom with Rockweed
- Mudflat
- Rock/Algal Abundant Mussel
- Rock/Algal Sparse Mussel
- Saltmarsh
- Scattered Rock/Algal Soft Sediment
- Eelgrass

Subtidal Habitats

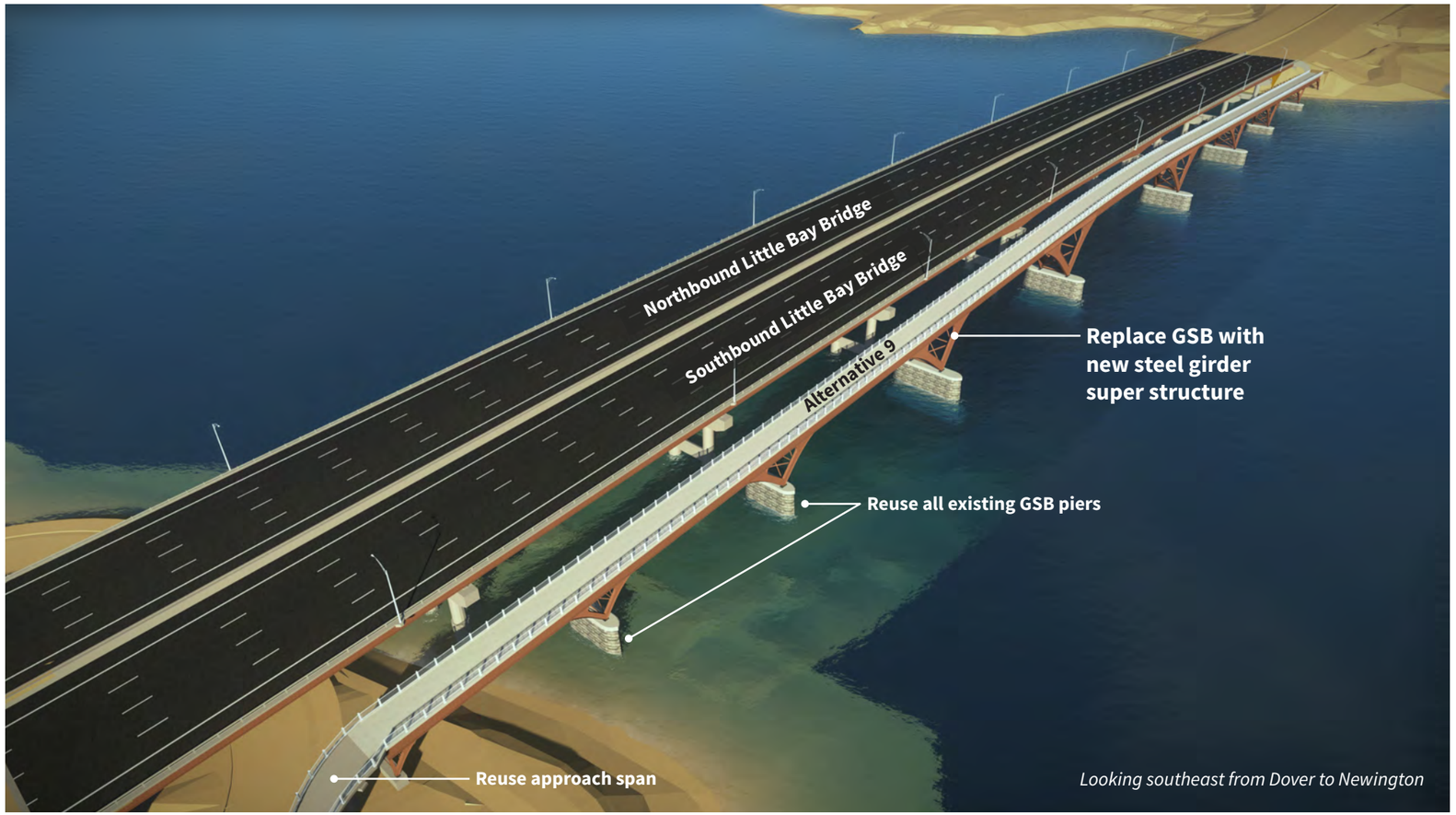
- Kelp Bed
- Macroalgal (Non-Kelp) Bed
- Mussel Reef
- Other

Newington-Dover 11238S | New Hampshire DOT Department of Transportation | Newingtong and Dover, NH

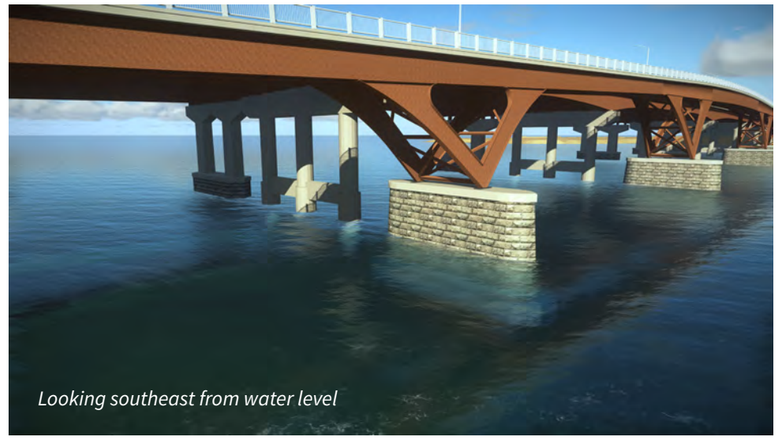
General Sullivan Bridge

Essential Fish Habitat Study Area

Source: NHGRANIT, VHB, Grizzle and Brodeur, 2003



Looking southeast from Dover to Newington



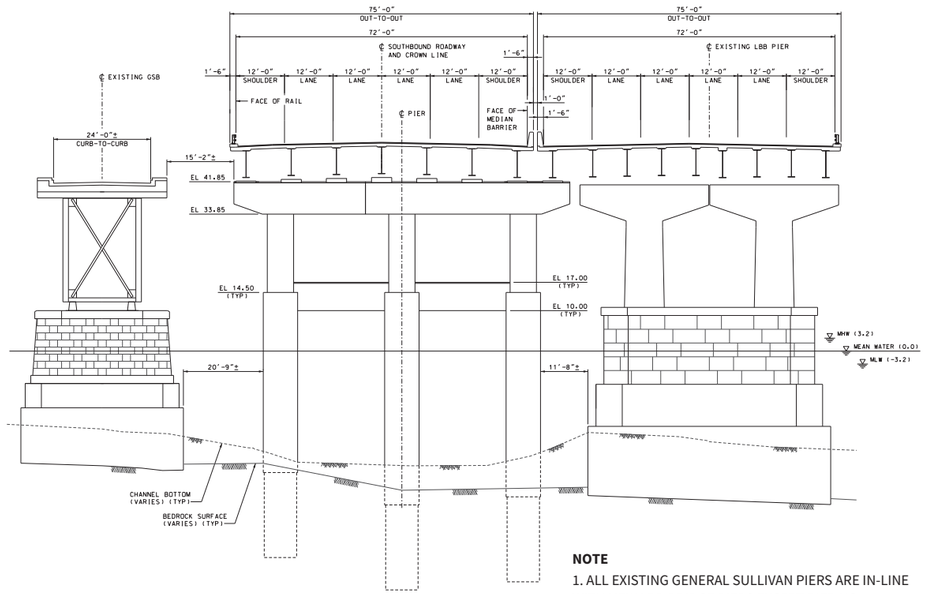
Looking southeast from water level

Looking south from deck

Newington-Dover 11238S | Newington and Dover, NH

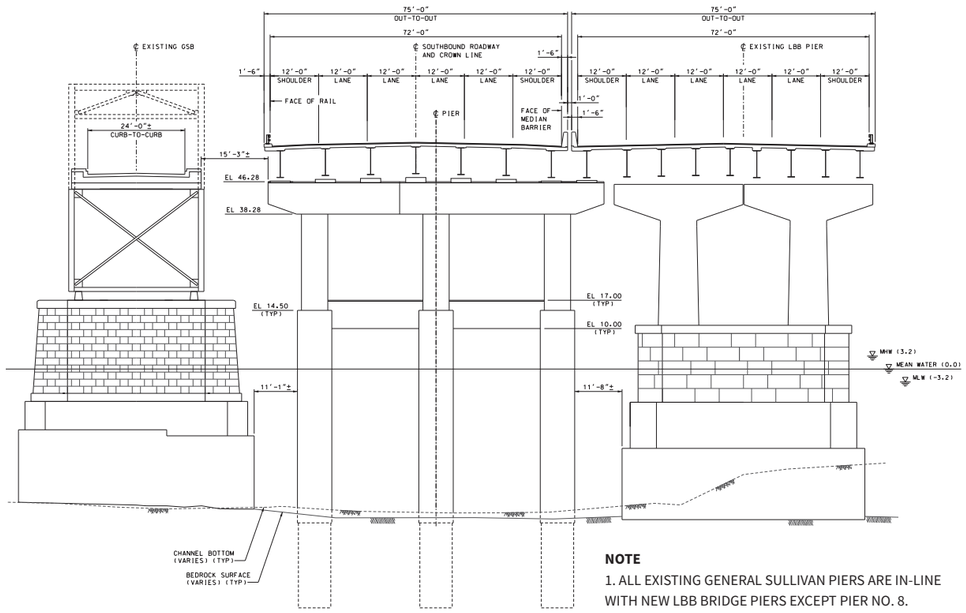
General Sullivan Bridge

Alternative 9:
Superstructure Replacement—
Girder Alternative
(Preferred Alternative)
Conceptual Design Renderings



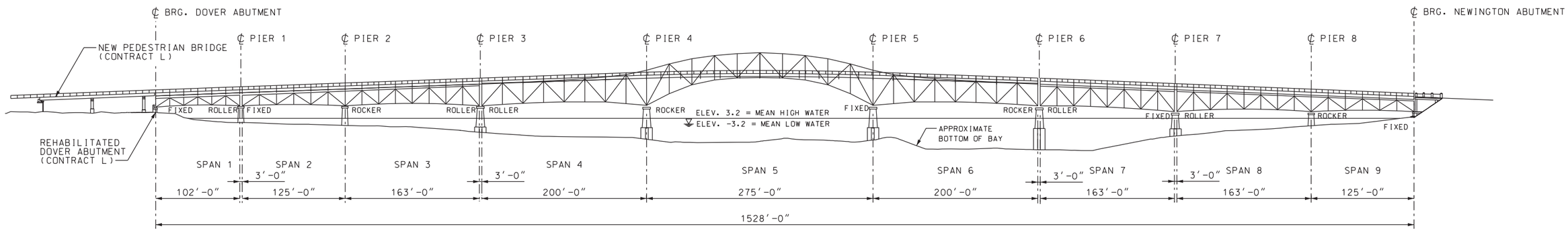
NOTE
1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH NEW LBB BRIDGE PIERS EXCEPT PIER NO. 8.

EXISTING CONDITION
TYPICAL BRIDGE SECTION (PIERS 1, 2, 7, & 8)—EXISTING
NTS

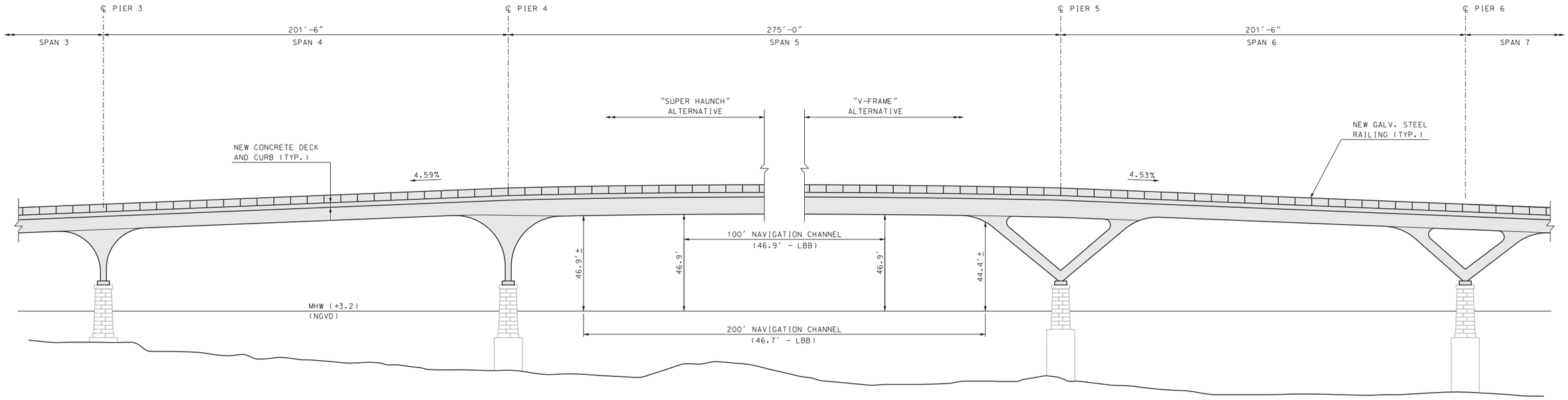


NOTE
1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH NEW LBB BRIDGE PIERS EXCEPT PIER NO. 8.

EXISTING CONDITION
TYPICAL BRIDGE SECTION (PIERS 3, 4, 5, & 6)—EXISTING
NTS



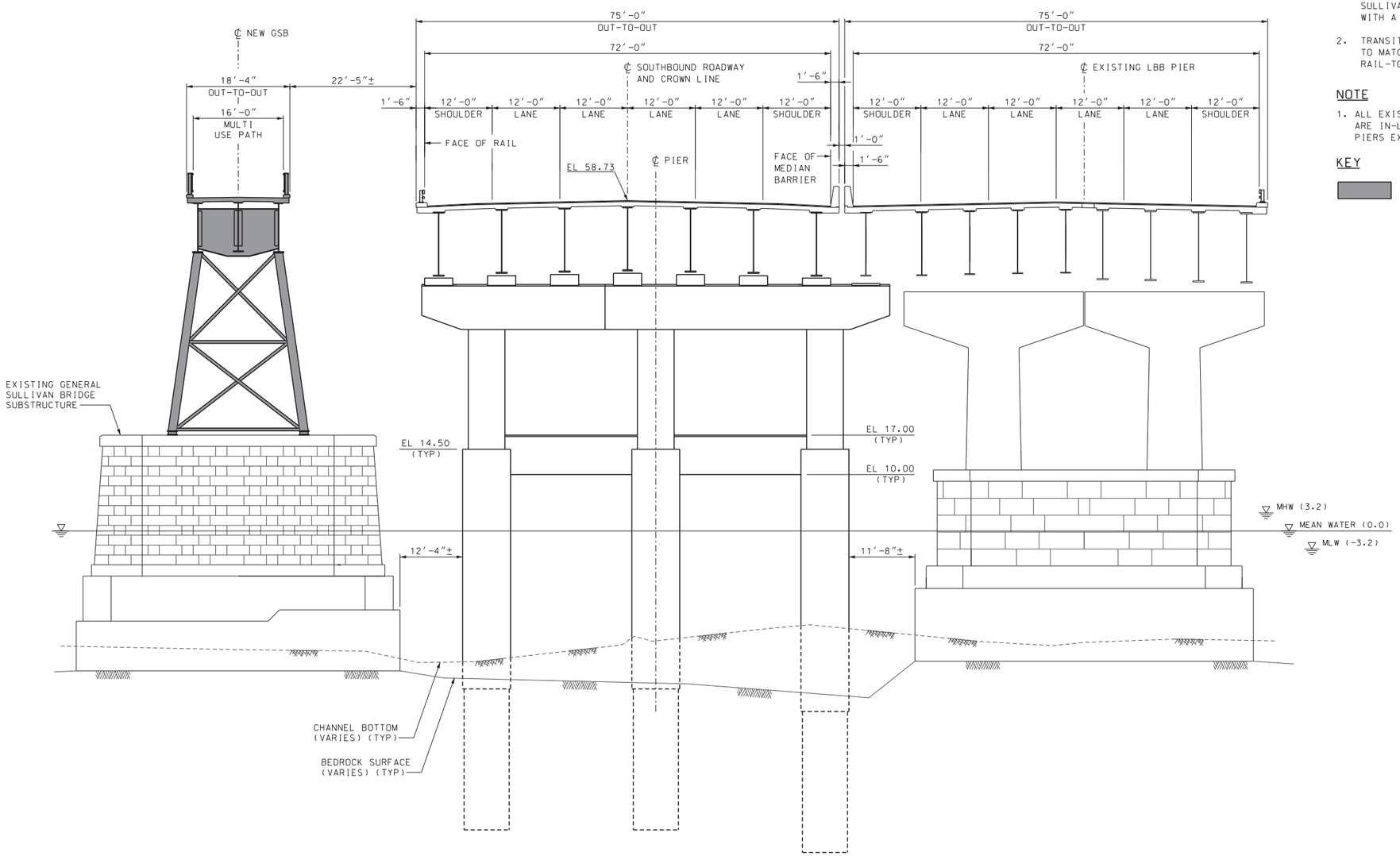
EXISTING GENERAL SULLIVAN BRIDGE ELEVATION
NTS



ALTERNATIVE 9 – SPANS 4, 5, & 6

Draft - January 2019

ALTERNATIVE 9B – SUPERSTRUCTURE REPLACEMENT – GIRDER/FRAME OPTION



ELEVATION
SCALE: $\frac{3}{32}$″ = 1′-0″

TYPICAL BRIDGE SECTION (PIERS 4 & 5) – ALTERNATIVE #9B
SCALE: $\frac{3}{32}$″ = 1′-0″

ALTERNATIVE #9B NOTES:

1. THIS ALTERNATIVE COMPLETELY REPLACES THE EXISTING GENERAL SULLIVAN BRIDGE SUPERSTRUCTURE WITH A GIRDER/FRAME SYSTEM.
2. TRANSITION THE NORTH END OF SPAN 1 TO MATCH THE NORTH APPROACH BRIDGE RAIL-TO-RAIL WIDTH OF 21′-0″.

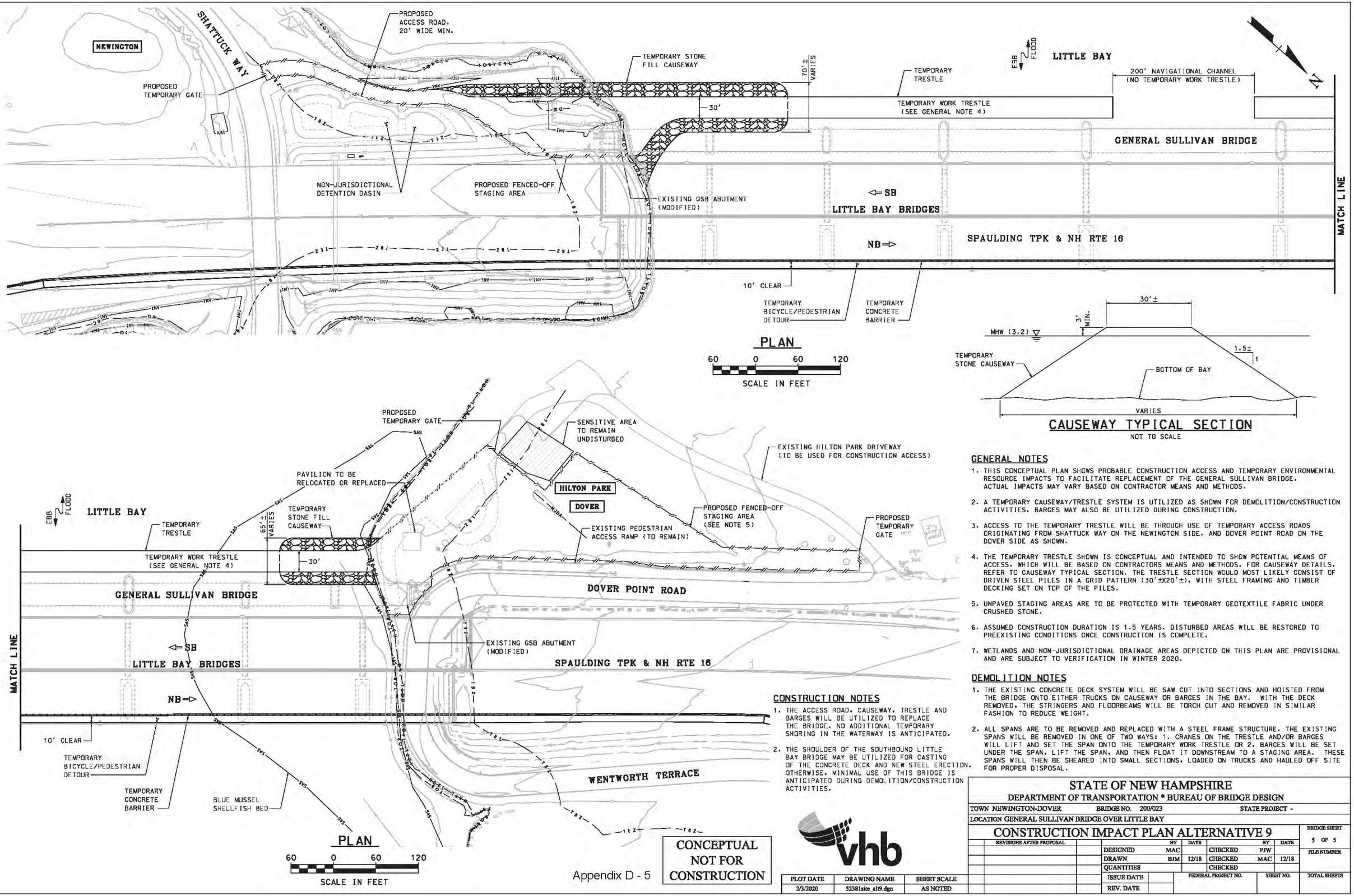
NOTE

1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH NEW LBB BRIDGE PIERS EXCEPT PIER NO. 8.

KEY

= NEW STRUCTURE

Draft - January 2019



GENERAL NOTES

1. THIS CONCEPTUAL PLAN SHOWS PROBABLE CONSTRUCTION ACCESS AND TEMPORARY ENVIRONMENTAL RESOURCE IMPACTS TO FACILITATE REPLACEMENT OF THE GENERAL SULLIVAN BRIDGE. ACTUAL IMPACTS MAY VARY BASED ON CONTRACTOR MEANS AND METHODS.
2. A TEMPORARY CAUSEWAY/TRESTLE SYSTEM IS UTILIZED AS SHOWN FOR DEMOLITION/CONSTRUCTION ACTIVITIES. BARGES MAY ALSO BE UTILIZED DURING CONSTRUCTION.
3. ACCESS TO THE TEMPORARY TRESTLE WILL BE THROUGH USE OF TEMPORARY ACCESS ROADS ORIGINATING FROM SHATTUCK WAY ON THE NEWINGTON SIDE, AND DOVER POINT ROAD ON THE DOVER SIDE AS SHOWN.
4. THE TEMPORARY TRESTLE SHOWN IS CONCEPTUAL AND INTENDED TO SHOW POTENTIAL MEANS OF ACCESS, WHICH WILL BE BASED ON CONTRACTORS MEANS AND METHODS. FOR CAUSEWAY DETAILS, REFER TO CAUSEWAY TYPICAL SECTION. THE TRESTLE SECTION WOULD MOST LIKELY CONSIST OF DRIVEN STEEL PILES IN A GRID PATTERN (30'±X20'±), WITH STEEL FRAMING AND TIMBER DECKING SET ON TOP OF THE PILES.
5. UNPAVED STAGING AREAS ARE TO BE PROTECTED WITH TEMPORARY GEOTEXTILE FABRIC UNDER CRUSHED STONE.
6. ASSUMED CONSTRUCTION DURATION IS 1.5 YEARS. DISTURBED AREAS WILL BE RESTORED TO PREEXISTING CONDITIONS ONCE CONSTRUCTION IS COMPLETE.
7. WETLANDS AND NON-JURISDICTIONAL DRAINAGE AREAS DEPICTED ON THIS PLAN ARE PROVISIONAL AND ARE SUBJECT TO VERIFICATION IN WINTER 2020.

CONSTRUCTION NOTES

1. THE ACCESS ROAD, CAUSEWAY, TRESTLE AND BARGES WILL BE UTILIZED TO REPLACE THE BRIDGE. NO ADDITIONAL TEMPORARY SHORING IN THE WATERWAY IS ANTICIPATED.
2. THE SHOULDER OF THE SOUTHBOUND LITTLE BAY BRIDGE MAY BE UTILIZED FOR CASTING OF THE CONCRETE DECK AND NEW STEEL ERECTION. OTHERWISE, MINIMAL USE OF THIS BRIDGE IS ANTICIPATED DURING DEMOLITION/CONSTRUCTION ACTIVITIES.

DEMOLITION NOTES

1. THE EXISTING CONCRETE DECK SYSTEM WILL BE SAW CUT INTO SECTIONS AND HOISTED FROM THE BRIDGE ONTO EITHER TRUCKS ON CAUSEWAY OR BARGES IN THE BAY. WITH THE DECK REMOVED, THE STRINGERS AND FLOORBEAMS WILL BE TORCH CUT AND REMOVED IN SIMILAR FASHION TO REDUCE WEIGHT.
2. ALL SPANS ARE TO BE REMOVED AND REPLACED WITH A STEEL FRAME STRUCTURE. THE EXISTING SPANS WILL BE REMOVED IN ONE OF TWO WAYS: 1. CRANES ON THE TRESTLE AND/OR BARGES WILL LIFT AND SET THE SPAN ONTO THE TEMPORARY WORK TRESTLE OR 2. BARGES WILL BE SET UNDER THE SPAN, LIFT THE SPAN, AND THEN FLOAT IT DOWNSTREAM TO A STAGING AREA. THESE SPANS WILL THEN BE SHEARED INTO SMALL SECTIONS, LOADED ON TRUCKS AND HAULED OFF SITE FOR PROPER DISPOSAL.

CONCEPTUAL NOT FOR CONSTRUCTION

vhb

PLOT DATE	DRAWING NAME	SHEET SCALE
2/3/2020	52381site_al9.dgn	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN NEWINGTON-DOVER BRIDGE NO. 200/023 STATE PROJECT -

LOCATION GENERAL SULLIVAN BRIDGE OVER LITTLE BAY

CONSTRUCTION IMPACT PLAN ALTERNATIVE 9

BRIDGE SHEET: 5 OF 5

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
			DESIGNED	MAC	
			DRAWN	BJM	12/18
			QUANTITIES		
			CHECKED	PJW	
			CHECKED	MAC	12/18
			CHECKED		
			ISSUE DATE		
			REV. DATE		

FEDERAL PROJECT NO. | SHEET NO. | TOTAL SHEETS | FILE NUMBER

Matras, Lindsay

From: Mike R Johnson - NOAA Federal <mike.r.johnson@noaa.gov>
Sent: Friday, May 17, 2019 12:53 PM
To: Laurin, Marc <Marc.Laurin@dot.nh.gov>
Cc: Jamie Sikora <jamie.sikora@dot.gov>; Cota, Keith <Keith.Cota@dot.nh.gov>; Walker, Peter <PWalker@VHB.com>; Goodrich, Gregory <GGoodrich@VHB.com>
Subject: [External] Re: Newington-Dover, 11238S - EFH Assessment

Marc,

Yes, I thought I had already responded to you on this one but I guess I did not. I do not have any EFH conservation recommendations to provide for this project. The impacts are temporary and minor in nature.

Also, just wanted to give me thanks for the VHB team for producing a high quality EFH assessment for this project.

Mike

On Fri, May 17, 2019 at 11:19 AM Laurin, Marc <Marc.Laurin@dot.nh.gov> wrote:

Mike,

Have you had a chance to review the EFH Assessment for the project?

Thanks,
Marc

From: Mike R Johnson - NOAA Federal [mailto:mike.r.johnson@noaa.gov]
Sent: Thursday, March 21, 2019 10:51 AM
To: Laurin, Marc
Cc: Jamie Sikora; Zach Jylkka; Cota, Keith; Peter Walker; Goodrich, Gregory
Subject: Re: Newington-Dover, 11238S - EFH Assessment

OK. Thanks, Marc.

On Thu, Mar 21, 2019 at 10:50 AM Laurin, Marc <Marc.Laurin@dot.nh.gov> wrote:

Mike,

I noticed that I did not reply to you on the time frame for your review.

The Department is anticipating completion of a draft of the Supplemental EIS by May 2019.

A response by mid-April would be appreciated.

Thanks,

Marc

From: Mike R Johnson - NOAA Federal [mailto:mike.r.johnson@noaa.gov]
Sent: Monday, January 28, 2019 9:49 AM
To: Laurin, Marc
Cc: Jamie Sikora; Zach Jylkka; Cota, Keith; Peter Walker; Goodrich, Gregory
Subject: Re: Newington-Dover, 11238S - EFH Assessment

Marc,

We just returned today after the partial government shutdown, and I'll be sorting through a massive number of emails and consultation requests during this week. I'm trying to process these as they were submitted, so it may be some time before I can review and respond to your request.

In the meantime, could you please provide a time frame for when you need our comments. I don't believe your email or the EFH assessment included a deadline for comments.

Thanks,

Mike

On Fri, Jan 25, 2019 at 9:11 AM Laurin, Marc <Marc.Laurin@dot.nh.gov> wrote:

> **Mike,**
>
> Attached for your review is the EFH Assessment Worksheet that assesses the potential effects to EFH in the vicinity of the project, the rehabilitation or replacement the General Sullivan bridge over Little Bay in Newington and Dover, **NH.**
>
> Please review for concurrence on the determination that the adverse effect of the proposed action is not substantial and, if applicable, provide appropriate conservation recommendations.
>
> I have also mailed out a hard copy for your files.
>
> Thanks,
>
> Marc

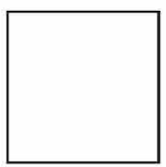
--

Michael R. Johnson

U.S. Department of Commerce
NOAA Fisheries
Greater Atlantic Regional Fisheries Office
Habitat Conservation Division
55 Great Republic Drive
Gloucester, MA 01930
978-281-9130

mike.r.johnson@noaa.gov

http://www.greateratlantic.fisheries.noaa.gov/



Web www.nmfs.noaa.gov
Facebook www.facebook.com/usnoaafisheries.gov
Twitter www.twitter.com/noaafisheries.gov
YouTube www.youtube.com/usnoaafisheries.gov

New Hampshire DOT
Department of Transportation

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Victoria F. Sheehan
Commissioner

William Cass, P.E.
Assistant Commissioner

June 6, 2019

Zachary Jylkka
Fisheries Biologist, Protected Resources Division
Greater Atlantic Regional Fisheries Office
NOAA Fisheries
55 Great Republic Drive
Gloucester, MA 01930

RE: Atlantic Sturgeon & Shortnose sturgeon
Spaulding Turnpike / Little Bay Bridge: NHS-027-1(037), 11238S
Newington and Dover, New Hampshire

Dear Mr. Jylkka:

The New Hampshire Department of Transportation (NHDOT) is planning to rehabilitate or replace the General Sullivan Bridge (GSB) located over the Little Bay. The GSB is located within designated critical habitat for Atlantic sturgeon (*Acipenser oxyrhynchus oxyrhynchus*) and within the estimated range for shortnose sturgeon (*Acipenser brevirostrum*) according to the ESA Section 7 Mapper.[1] Based on the work that is anticipated to be completed to rehabilitate or replace the bridge, we have determined that the project "*may affect but is not likely to adversely affect*" Atlantic/shortnose sturgeon critical habitat. The National Oceanic and Atmospheric Administration (NOAA), the National Marine Fisheries Service (NMFS) Greater Atlantic Regional Fisheries Office (GARFO), and the Federal Highway Administration (FHWA) developed the FHWA GARFO 2018 NLAA Program, which is a Programmatic Endangered Species Act (ESA) Section 7 Consultation process designed to ensure the actions covered under the programmatic agreement are not likely to adversely affect ESA-listed species and designated critical habitats. In accordance with the FHWA GARFO 2018 NLAA Program, we completed and have attached an Appendix A Verification Form for the proposed project. In addition to this coordination regarding ESA-listed species, we have also submitted a NOAA Fisheries Essential Fish Habitat (EFH) Assessment Worksheet for the proposed project to Mike Johnson.

Project Overview
The GSB was built in 1934 and connected Newington and Dover, New Hampshire, over the Little Bay. Although originally designed to support two lanes of highway traffic over the mouth of the Little Bay, the bridge was closed to vehicular traffic in 1984, when the adjacent Little Bay Bridge, located east of the GSB, was completed. Now the bridge is closed even to pedestrian and bicycle traffic due to a recent inspection completed in September 2018, which found additional deterioration of a critical floor beam under the bridge deck.

The condition of the GSB has been declining over the last few decades. To address this issue, options for the rehabilitation or replacement of the GSB were previously reviewed in a 2007 Final Environmental Impact Statement (FEIS) and a 2008 Record of Decision (ROD), which were produced by NHDOT and the Federal Highway Administration (FHWA) under the National Environmental Policy Act (NEPA). In the ROD, NHDOT and FHWA committed to maintain pedestrian/bicycle connectivity between Dover and Newington, and to accomplish that by rehabilitating the GSB.

[1] NOAA Fisheries. 2018. *Section 7 Mapper*. Greater Atlantic Region. Accessed January 11, 2019 <https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e03b250ac11f9914a27>.

Since the 2008 ROD, further inspections and studies of the GSB condition were completed to prepare for the rehabilitation project. The information gathered by these inspections and studies revealed that the GSB was more deteriorated than originally thought. Bridge rehabilitation would have very high costs, high risks, and a limited life span. Therefore, NHDOT and FHWA are proceeding to further evaluate rehabilitation and consider other alternatives; these alternatives and their environmental and cultural resource impacts will be presented in a Supplemental Environmental Impact Statement (SEIS) currently in preparation.

Of the various alternatives being considered in the SEIS, the current Preferred Alternative is Alternative 9 – Superstructure Replacement (Girder Option), which involves complete removal and replacement of the GSB superstructure. Under Alternative 9, the GSB superstructure would be replaced with a steel girder system with a structural steel frame extending from the bottom of the girders to the top of the existing GSB piers. Alternative 9 would reuse the existing piers without requiring significant modifications. This approach eliminates permanent impacts to intertidal and subtidal habitat. Plans of the preferred alternative are attached.

Construction of the preferred alternative is expected to take approximately 18 months. Construction would begin with a one- to two-week period of installing a temporary causeways and trestles west of the existing GSB for staging and equipment access during the bridge replacement work. The bridge would be removed and replaced using these causeways, the trestles, and water craft. Upon completion of the bridge replacement, the causeways and trestles would be removed and the area restored to pre-construction conditions, which is anticipated to take approximately one to two weeks. The causeways and trestles are considered a temporary impact within the Little Bay and are the only in-water work that is proposed. We've attached a plan that depicts the construction phase impacts, but note that these plans are for planning purposes only and may be modified during construction if required to allow for safe and efficient contractor access.

Appendix A Verification Form
Based on the proposed project work, this project "*may affect but is not likely to adversely affect*" critical habitat for Atlantic/shortnose sturgeon. Therefore, in accordance with the Programmatic ESA Section 7 Consultation provided under the FHWA GARFO 2018 NLAA Program, an Appendix A Verification Form was completed for the proposed project (see attached). Upon completion of the Verification Form, the NHDOT and FHWA determined that the project complies with the Programmatic ESA Section 7 Consultation since the project involves bridge rehabilitation/replacement and meets the applicable project design criteria (PDC) included in the FHWA GARFO 2018 NLAA Program Appendix A Verification Form. Further explanation for the responses to the PDCs listed in the Appendix A Verification Form are provided in the Continuation Sheets, attached.

Based on the attached Appendix A Verification Form and Continuation Sheets, we determined that the bridge replacement or rehabilitation project is eligible under the Programmatic ESA Section 7 Consultation and the FHWA GARFO 2018 NLAA Program. FHWA and NHDOT respectfully request your concurrence with our finding that the project falls under the determination of "*may affect but not likely to adversely affect*" Atlantic/shortnose sturgeon or their critical habitat. Applicable minimization and mitigation measures would be followed during project construction to ensure impacts to these species would be minimized to the greatest extent practicable. Additionally, the project would comply with the NMFS/FHWA Best Management Practices Manual for Transportation Activities in the Greater Atlantic Region (April 2018). Please contact me at (603) 271-4044 if you have any questions. We look forward to coordinating with you on this project.

Sincerely,

Marc Laurin
Senior Environmental Manager
Room 109 – Tel (603) 271-4044
E-mail – marc.laurin@dot.nh.gov

Attachments:
Appendix A – Verification Form
Continuation Sheets
Memorandum – Hydroacoustic Impact Assessment from Pile Driving
Figure 1 – USGS Location Map
Figure 2 – Conceptual Design Rendering
Figure 3 – Habitat Types
Existing Condition Plan
Alternative 9 Elevation and Typical Sections
Alternative 9 Construction Impact Plan

cc: Mike Johnson, NOAA
Keith Cota, NHDOT
Jamie Sikora, FHWA
P. Walker, VHB
G. Goodrich, VHB

Appendix A. Verification Form

Federal Highway Administration (FHWA) or the applicable state Department of Transportation (state DOT) will submit a signed version of this completed form, together with any project plans, maps, supporting analyses, etc., to NOAA's National Marine Fisheries Service (NMFS), Greater Atlantic Regional Fisheries Office, Protected Resources Division (GARFO PRD) at nmfs.gar.esa.section7@noaa.gov with "FHWA GARFO 2018 NLAA Program" in the subject line, upon obtaining sufficient information.

Project Activity Type (check all that apply to entire action):
- [x] 1. Bridge repair, demolition, and replacement
- [ ] 2. Culvert repair and replacement
- [x] 3. Docks, piers, and waterway access projects
- [ ] 4. Slope stabilization

Transportation Project Information

Name of Project:	Newington-Dover 11238, General Sullivan Bridge		
Project Sponsor:	NH Departmetn of Transportation		
Contact Person:	Marc Laurin	Email/Phone:	marc.laurin@dot.nh.gov / 603-271-4044
Latitude (e.g., 42.625884):		43.117921	
Longitude (e.g., -70.646114):		-70.826102	
Anticipated Project Start Date:	09/01/2020	Anticipated Project End Date:	04/01/2022
Total Area of Habitat Alteration (acres):		~0.75 acre	
Project/Action Description and Purpose (*include town/city/state and water body where project is occurring*:	The General Sullivan Bridge spans Little Bay in Dover and Newington, NH. The Preferred Alternative would remove and replace the General Sullivan Bridge superstructure while reusing the substructure (existing piers). Under this alternative, the superstructure would be replaced with a steel girder system with a structural frame extending from the bottom of the girders to the top of the existing piers. Refer to the attached cover letter for more information.		

ESA-Listed Species and/or Critical Habitat Present (Check all that apply)

[x]	Atlantic sturgeon (all DPSs) If not all DPSs, list which here: Gulf of Maine	[ ]	Kemp's ridley sea turtle
[x]	Atlantic sturgeon critical habitat (GOM, NYB, Chesapeake Bay DPSs)	[ ]	Loggerhead sea turtle (Northwest Atlantic DPS)
[x]	Shortnose sturgeon	[ ]	Leatherback sea turtle
[ ]	Atlantic salmon (GOM DPS)	[ ]	North Atlantic right whale
[ ]	Atlantic salmon critical habitat (GOM DPS)	[ ]	North Atlantic right whale critical habitat
[ ]	Green sea turtle (North Atlantic DPS)	[ ]	Fin whale

The following stressors are applicable to the action (check all that apply- use Table 1 for guidance)

- ■ Underwater Noise
- ■ Impingement/Entrainment and Entanglement
- ■ Water Quality/Turbidity
- ■ Habitat Alteration
- ■ Vessel Traffic

FHWA's Determination of Effects to ESA-Listed Species and/or Critical Habitat

By submitting this Verification Form, FHWA, or state DOT as FHWA's designated non-federal representative, indicates that they determined that the proposed activity described above is not likely to adversely affect (NLAA) ESA-listed species or designated critical habitat under NMFS' jurisdiction in accordance with the Program, and all effects (direct, indirect, interrelated, and interdependent) are either insignificant (so small they cannot meaningfully be measured, detected, or evaluated) and/or discountable (extremely unlikely to occur).

◉ The activity complies with all of the Project Design Criteria (PDC) in the Program, as confirmed in the PDC checklist.

○ The activity does not comply with all of the PDC in the Program, but the additional justification demonstrates how the project conforms to the Program. This does not apply to PDC that are not applicable to the project.

FHWA/state DOT preparer:

Marc Laurin
Name

Signature

6/18/19
Date

By providing your determination and signature, you are certifying that to the best of your knowledge the information provided in this form is accurate and based upon the best available scientific information. This form must be filled out and signed by FHWA or state DOT staff, as an officially designated non-federal representative.

Project Design Criteria (PDC) Checklist

FHWA/state DOT shall incorporate all general PDC and all applicable PDC in the appropriate stressor category. For any PDC that are not incorporated, additional justification is required for a project to be eligible for the Program. FHWA/state DOT shall check the corresponding box for each PDC that is, or will be, incorporated into the project.

General

■ 1. Ensure all operators, employees, and contractors are aware of all FHWA environmental commitments, including these PDC, when working in areas where ESA-listed species may be present or in critical habitat.

■ 2. No work will individually or cumulatively have an adverse effect on ESA-listed species or critical habitat.

N/A ☐ 3. No work will occur in the tidally influenced portion of rivers/streams where Atlantic salmon presence is possible from April 10 through November 7.

N/A ☐ 4. No work will occur in areas identified as Atlantic or shortnose sturgeon spawning grounds as follows:

i. Gulf of Maine: April 1 through August 31
ii. Southern New England/New York Bight: March 15 through August 31
iii. Chesapeake Bay: March 15 through July 1 & September 15 through November 1

N/A ☐ 5. No work will occur in areas identified as sturgeon overwintering grounds where dense aggregations are known to occur, as follows:

i. Gulf of Maine: October 15 through April 30
ii. Southern New England/New York Bight: November 1 through March 15
iii. Chesapeake Bay: November 1 through March 15

■ 6. Within designated Atlantic sturgeon critical habitat, no work will affect hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0-0.5 parts per thousand (ppt) range) for settlement of fertilized eggs, refuge, growth, and development of early life stages) (PBF 1).

■ 7. Work will result in no or only temporary/short-term changes in water temperature, water flow, salinity, or dissolved oxygen levels.

■ 8. If it is possible for ESA-listed species to pass through the action area, a zone of passage with appropriate habitat for ESA-listed species (e.g., depth, water velocity, etc.) must be maintained (i.e., physical or biological stressors such as turbidity and sound pressure must not create barrier to passage).
If the "maximum extent of stressor" exceeds the "width of water body," PDC 9 is NOT met, and justification is required to proceed with the Verification Form.
Width (m) of waterbody in action area: 450 meters
Stressor category (stressor that extends furthest distance into waterbody- e.g., turbidity plume, sound pressure wave): sound pressure wave
Maximum extent (m) of stressor into the waterbody: 300.000

■ 9. The project will not directly affect any submerged aquatic vegetation (SAV) or oyster reefs.

■ 10. No blasting or use of explosives will occur.

■ 11. No in-water work on dams or tide gates.

Underwater Noise

■ 12. If pile driving is occurring during a time of year when ESA-listed species may be present, and the anticipated noise is above the behavioral noise threshold, a 20-minute "soft start" is required to allow animals an opportunity to leave the project vicinity before sound pressure increases.

■ 13. If the project involves driving steel piles, non-steel piles greater than 24-inches in diameter, or any other noise-producing mechanism, the expected underwater noise (pressure) must be below the physiological/injury noise threshold for ESA-listed species in the action area.
Submit your calculation showing that the noise is below the injury thresholds.

Pile material (e.g., steel pipe, timber, concrete)	Pile diameter/ width (inches)	Number of piles	Installation method (e.g., impact hammer, vibratory start and then impact hammer to depth)
14" steel pipe	14"	< 50	Driven (impact hammer)

■ 14. Any new pile-supported structure must involve the installation of no more than 50 piles (below MHW).

Impingement/Entrainment/Entanglement

N/A ☐ 15. Only mechanical, cutterhead, and low volume hopper dredges may be used.

N/A ☐ 16. No new dredging in Atlantic sturgeon or Atlantic salmon critical habitat (maintenance dredging still must meet all other PDC). New dredging outside Atlantic sturgeon or salmon critical habitat is limited to one-time dredge events (e.g., burying a utility line) and minor (≤2 acres) expansions of areas already subject to maintenance dredging.

N/A ☐ 17. Temporary intakes related to construction must be equipped with 2 mm wedge wire mesh screening and must not have greater than 0.5 feet per second intake velocities, to prevent impingement or entrainment of any ESA-listed species.

N/A ☐ 18. Work behind cofferdams, turbidity curtains, and other methods to block access of animals to dredge footprint is required when ESA-listed species may be present.

N/A ☐ 19. No new permanent surface water withdrawal, water intakes, or water diversions.

■ 20. Turbidity control measures, including cofferdams, must be designed to not entangle or entrap ESA-listed species.

■ 21. Any in-water lines, ropes, or chains must be made of materials and installed in a manner to minimize or avoid the risk of entanglement by using thick, heavy, and taut lines that do not loop or entangle. Lines can be enclosed in a rigid sleeve.

Water Quality/Turbidity

N/A ☐ 22. In-water offshore disposal may only occur at designated disposal sites that have already been the subject of ESA section 7 consultation with NMFS and where a valid consultation is in place.

N/A ☐ 23. Any temporary discharges must meet state water quality standards (i.e., no discharges of substances in concentrations that may cause acute or chronic adverse reactions, as defined by EPA water quality standards criteria).

N/A ☐ 24. Only repair of existing discharge pipes or replacement in-kind allowed; no new construction.

■ 25. Work behind cofferdams, turbidity curtains, or other methods to control turbidity are required when ESA-listed species may be present.

Habitat Alteration

■ 26. Minimize all new waterward encroachment and permanent fill.

N/A ☐ 27. In Atlantic salmon critical habitat, replaced culverts must be constructed at a minimum of 1.2 bankfull width (BFW).

N/A ☐ 28. In Atlantic salmon critical habitat, no culvert end extensions, invert line culvert rehabilitation, or slipline culvert rehabilitation may occur.

Vessel Traffic

■ 29. Maintain project vessel speed limits below 10 knots and dredge vessel speeds of 4 knots maximum, while dredging.

■ 30. Maintain a 150-foot buffer between project vessels and ESA-listed whales and sea turtles (1,500 feet for right whales) and while dredging, at least a 300-foot buffer between dredge vessels and ESA-listed whales and sea turtles (1,500 feet for right whales).

■ 31. The number of project vessels must be limited to the greatest extent possible, as appropriate to size and scale of project.

■ 32. A project must not result in the permanent net increase of commercial vessels.

Justification for NLAA Determination if not Incorporating All PDC

If the project is not in compliance with all of the applicable PDC, but FHWA/state DOT determined that the project is consistent with the Program and all effects are insignificant and/or discountable, provide justification below and identify which PDC are not incorporated. Project modifications must not result in different effects not already considered.

GARFO PRD Determination (To be filled out by GARFO PRD)

After receiving the Verification Form, GARFO PRD will contact FHWA/state DOT with any concerns and indicate whether GARFO PRD concurs with FHWA/state DOT's determination.

☐ GARFO PRD concurs with FHWA's determination that the proposed project complies with the Program.

☐ GARFO PRD concurs with FHWA's determination that the proposed project complies with the Program, with the justification described.

☐ GARFO PRD does not concur with FHWA's determination that the project complies with the Program and FHWA/state DOT should initiate a separate individual consultation.

GARFO PRD reviewer:

William Barnhill
Name

William Barnhill
Signature

06/18/2019
Date

Continuation Sheets

Appendix A Verification Form – FHWA GARFO 2018 NLAA Program

Spaulding Turnpike / Little Bay Bridge: NHS-027-1(037), 11238S

June 2019

Project Design Criteria Checklist

General

1. *Ensure all operators, employees, and contractors are aware of all FHWA environmental commitments, including these PDC, when working in areas where ESA-listed species may be present or in critical habitat.*

   All personnel working on the project will be made aware of all FHWA environmental commitments, as well as the commitments included in the PDC. This requirement will be included in any construction contract issued for the project.

2. *No work will individually or cumulatively have an adverse effect on ESA-listed species or critical habitat.*

   Two ESA-listed species or critical habitat occur within the project area, the Atlantic sturgeon and shortnose sturgeon. While the proposed project involves in-water work that will impact these species' habitat, this work will only cause limited, temporary disturbance to the bed of the Little Bay, since the in-water work related to installing and removing the causeways/trestles will take place over a few weeks at the start and end of construction. The minimization and mitigation measures proposed to be used throughout the duration of construction will also reduce any potential adverse effects that the project may have on ESA-listed species. Therefore, the project is anticipated to have little to no adverse effect on ESA-listed species.

3. *No work will occur in the tidally influenced portion of rivers/streams where Atlantic salmon presence is possible from April 10 through November 7.*

   The proposed project is located in Little Bay. In New Hampshire, the designated EFH for Atlantic salmon is located in the Merrimack River.

4. *No work will occur in areas identified as Atlantic or shortnose sturgeon spawning grounds as follows:*
   i. Gulf of Maine: April 1 through August 31

   Based on the GARFO Master ESA Species Table, the Piscataqua River does not contain spawning grounds for Atlantic or shortnose sturgeon. Spawning within the Piscataqua River Watershed is limited to the Salmon Falls and Cocheco rivers, which are located outside of the project area. Therefore, if project work takes place during the April 1 to August 31 timeframe, this work is not anticipated to negatively impact Atlantic or shortnose sturgeon spawning grounds.

5. *No work will occur in areas identified as sturgeon overwintering grounds where dense aggregations are known to occur, as follows:*
   i. Gulf of Maine: October 15 through April 30

   Based on the GARFO Master ESA Species Table, the Piscataqua River Watershed is not located in sturgeon overwintering grounds. Therefore, if project work takes place during the October 15 to April 30 timeframe, this work is not anticipated to impact Atlantic or shortnose sturgeon overwintering grounds.

6. *Within designated Atlantic sturgeon critical habitat, no work will affect hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0-0.5 parts per thousand (ppt) range) for settlement of fertilized eggs, refuge, growth, and development of early life stages (PBF 1).*

   No work is anticipated to affect hard bottom substrate in low salinity waters as part of the project work. Salinity data from the NH Department of Environmental Service's Environmental Monitoring Database of water samples taken within the vicinity of the GSB from 1996 to 2008 indicate that the salinity of the Little Bay in this area varies from 10 to 34 ppt with an average of 25 ppt, therefore the salinity of the Little Bay is greater than the low salinity waters for settlement of fertilized eggs, refuge, growth, and development of early life stages, and is unlikely to support these early life stages.

   Only temporary impacts to hard bottom substrate are anticipated as a result of the project work. A study of the bottom habitat within the project area was completed in 2003 which documented rocky bottom habitats within and adjacent to the project area. Rocky/cobble-bottom habitat within the project area is concentrated near the shoreline of the Little Bay along the Newington and Dover coastlines. Temporary impact to these habitat types will result from the placement of the causeways and trestles during construction; the causeways and trestles are expected to be in place for approximately 18 months.

7. *Work will result in no or only temporary/short-term changes in water temperature, water flow, salinity, or dissolved oxygen levels.*

   Changes in water temperature, salinity, or dissolved oxygen levels would not occur as a result of the proposed project. Minor, temporary impacts to water flow may occur from the temporary causeways and trestles in Little Bay. A hydrodynamic model completed for the original December 2007 Environmental Impact Statement for this project (Celikkol et. al, 2006) investigated potential changes to tidal flow due to bridge pier modification from the construction of the Little Bay Bridge (located next to the General Sullivan Bridge). This model predicted that the modifications will result in little change to the tidal flow within Little Bay. Since the proposed replacement of the General Sullivan Bridge will take place on existing piers, the project will not permanently change water depth nor the current of Little Bay. Low tide depths in the deepest portion of the project area range from approximately 30 to 34 feet (9.1 to 10.4 meters). Normal tidal range in this portion of the estuary is about 8 feet (2.4 meters).

The temporary causeways/trestles are anticipated to temporarily alter currents at a localized scale and will cause minor, near-field changes in tidal velocities. Current flows in the area are complex and have a wide range of direction components and speeds during a tidal cycle. Tidal flows, currents, and wave patterns would not be permanently altered since no permanent structure will be constructed in the water.

8. *If it is possible for ESA-listed species to pass through the action area, a zone of passage with appropriate habitat for ESA-listed species (e.g., depth, water velocity, etc.) must be maintained (i.e., physical or biological stressors such as turbidity and sound pressure must not create a barrier to passage).*

Since the project area is located at the mouth of Little Bay adjacent to the Piscataqua River, it is possible that Atlantic/shortnose sturgeon may pass through the project area during construction. During project construction temporary causeways and trestles will be installed from the Newington and Dover ends of the project. The causeways will be approximately 260 feet long on the Newington side of the bridge and 130 feet long on the Dover side of the bridge. The trestles will be approximately 450 to 460 feet long from the Newington side and approximately 470 to 480 feet long on the Dover side. The width of the Little Bay in the project area is about 1,500 feet. Even with the causeways and temporary platforms in place, there will be room for boats and fish to navigate through the project area.

No changes to water depth would result from the placement of the causeways and trestles, except temporary but minor changes in water velocity/flow may occur from the installation of these platforms as explained above in Response #7. Similarly, sound pressure from installation of the temporary causeway and trestle is not anticipated to create a barrier to passage. See Responses #12-14 below.

Only minor, short duration turbidity in the Little Bay may occur during the placement and removal of the causeways/trestles at the start and end of construction. The placement of these platforms is anticipated to take approximately one to two weeks to install and another one to two weeks to remove. Turbidity generated by the proposed project would be localized to the vicinity of the project area and would be quickly dissipated by the current. Since any turbidity generated would be limited to the immediate project area and be of very short duration, turbidity would not create a barrier to passage.

9. *The project will not directly affect any submerged aquatic vegetation (SAV) or oyster reefs.*

The project will not substantially nor permanently impact SAV. There is no eelgrass in the project area based on field work conducted in the project area by UNH (Grizzle and Brodeur, 2003). The closest mapped eelgrass locations according to the New Hampshire Coastal Viewer based on 2017 data is approximately 3,200 feet west of the project area within the Little Bay and 2,200 feet east within the Piscataqua River. However, kelp and microalgal beds are located in the subtidal zone near the Newington and Dover coastlines within the project area (See Figure 3). Some of the

mapped SAV documented within the project area will be temporarily impacted by the proposed project from the placement of the temporary trestles, however this impact would be limited to the placement of temporary pilings and therefore minor; kelp and macroalgal populations are expected to persist during the construction phase and any minor population impact would rebound once the trestles are removed.

Oyster reefs will not be affected by the project, although shellfish are present within and adjacent to the project area. According to the NH Coastal Viewer, a ±2.8-acre blue mussel shellfish bed is located in Little Bay along the Dover Point coastline on the northern side of the project. This bed was identified by the NHDES Shellfish Program in 2013 (Morrissey and Nash, 2013). The next closest bed is a shellfish aquaculture site of razor clams/soft shell clams located approximately 1.5 miles west of the project area. An oyster restoration site is located about 1.5 miles west of the project. These aquaculture sites will not be directly impacted by the proposed project.

10. *No blasting or use of explosives will occur.*

The project does not require the use of blasting or explosives.

11. *No in-water work on dams or tide gates.*

The project does not involve dams or tide gates.

Underwater Noise

12. *If pile driving is occurring during a time of year when ESA-listed species may be present, and the anticipated noise is above the behavioral noise threshold, a 20-minute "soft start" is required to allow animals an opportunity to leave the project vicinity before sound pressure increases.*

The project would use a 20-minute "soft start" technique to allow animals an opportunity to leave the project vicinity and move out of range of any potential injury-causing noise before sound pressure increases.

13. *If the project involves driving steel piles, non-steel piles greater than 24-inches in diameter, or any other noise-producing mechanism, the expected underwater noise (pressure) must be below the physiological/injury noise threshold for ESA-listed species in the action area. (Submit your calculation showing that the noise is below the injury thresholds.)*

The project will involve driving steel piles to support two temporary trestles, but no more than 50 such piles are anticipated. The method used to drive the piles will be based on the contractors' preference but will likely be via impact hammer. The behavioral threshold for sturgeon/salmon according to the NMFS FARFO *Interim Criteria* is 150 dBRMS, and physiological threshold is 206

dBRMS. The NOAA GARFO has developed a Simplified Attenuation Formula (SAF)[1] which was applied to the proposed project.

Based on the NOAA GARFO methodology, fish at least 190 feet (58 meters) from pile driving would avoid the potential for injury, and at least 256 feet (78 meters) would not experience behavioral disturbance. See the attached *Hydroacoustic Impact Assessment from Pile Driving* memo for more information.) Sturgeon would need to be within 190 feet of active pile driving for a prolonged period of time to be exposed to potentially injurious sound levels. This is unlikely to occur since sturgeon are expected to modify their behavior and move away from the area upon exposure to underwater sound levels of 150 dBRMS. Sturgeon would be exposed to sound levels that would cause behavioral modification (at 256 feet) before being exposed to injurious levels of noise, we expect sturgeon would avoid the sound source before cumulative exposure results in injury. Further, the work area at the mouth of Little Bay is between 1,300 feet to 1,400 feet wide, depending on tidal conditions. Given that piles are typically driven individually, this would leave most of the width of the area below levels that would have either behavioral or physiological impacts. Given the small distance a sturgeon would need to move to avoid disturbances, these effects would not be able to be measured or detected and are therefore insignificant. Refer to the *Hydroacoustic Impact Assessment from Pile Driving* memo, attached, for more information.

14. *Any new pile-supported structure must involve the installation of no more than 50 piles (below MHW).*

    As described above, no more than 50 temporary piles would be used to support two temporary work trestles for a period of approximately 18 months.

<u>Impingement/Entrainment/Entanglement</u>

15. *Only mechanical, cutterhead, and low volume hopper dredges may be used.*

    Not applicable – the project does not include dredging.

16. *No new dredging in Atlantic sturgeon or Atlantic salmon critical habitat (maintenance dredging still must meet all other PDC). New dredging outside Atlantic sturgeon or salmon critical habitat is limited to one-time dredge events (e.g., burying a utility line) and minor (≤2 acres) expansions of areas already subject to maintenance dredging.*

    Not applicable – the project does not include dredging.

17. *Temporary intakes related to construction must be equipped with 2 mm wedge wire mesh screening and must not have greater than 0.5 feet per second intake velocities, to prevent impingement or entrainment of any ESA-listed species.*

    Not applicable – the project does not require the use of temporary intakes.

[1] NOAA Greater Atlantic Region. *Effects Analysis: Acoustic Impacts*. Accessed from https://www.greateratlantic.fisheries.noaa.gov/protected/section7/guidance/consultation/index.html. Accessed April 19, 2019.

18. *Work behind cofferdams, turbidity curtains, and other methods to block access of animals to dredge footprint is required when ESA-listed species may be present.*

    Not applicable – the project does not include dredging.

19. *No new permanent surface water withdrawal, water intakes, or water diversions.*

    Not applicable - the project will not involve installing any new permanent surface water withdrawal, water intakes, or water diversions.

20. *Turbidity control measures, including cofferdams, must be designed to not entangle or entrap ESA-listed species.*

    Any turbidity control measures used during project construction will be those that are designed to not entangle or entrap ESA-listed species.

21. *Any in-water lines, ropes, or chains must be made of materials and installed in a manner to minimize or avoid the risk of entanglement by using thick, heavy, taut lines that do not loop or entangle. Lines can be enclosed in a rigid sleeve.*

    If any in-water lines, ropes, or chains are used during project construction, this equipment will be made of heavy materials and will be installed to avoid the risk of entanglement.

<u>Water Quality/Turbidity</u>

22. *In-water offshore disposal may only occur at designated disposal sites that have already been the subject of ESA section 7 consultation with NMFS and where a valid consultation is in place.*

    Not applicable – no offshore disposal is required as part of the project.

23. *Any temporary discharges must meet state water quality standards (i.e., no discharges of substances in concentrations that may cause acute or chronic adverse reactions, as defined by EPA water quality standards criteria).*

    Not applicable – no temporary discharges will be required as part of the project work.

24. *Only repair of existing discharge pipes or replacement in-kind allowed; no new construction.*

    Not applicable – no discharge pipes will be installed or repaired as part of the project.

25. *Work behind cofferdams, turbidity curtains, or other methods to control turbidity are required when ESA-listed species may be present.*

    Since no sediment disturbance is anticipated to release sediments into the water column from the proposed construction work, no in-water turbidity control methods are proposed to be used during construction. All permanent impacts associated with the project construction would occur above the highest observable tide line (HOTL), which would result in little to no release of sediment into Little Bay with the use of silt fence or similar erosion control methods that would be in place

above the HOTL. Temporary impacts within Little Bay would occur during the placement of clean stone material for the temporary installation of the causeways, as well as for the placement of steel piles or "stingers" that would be used to support the work trestles beyond the causeways. Additionally, the project is located within a tidal area with a strong current, any minimal turbidity generated during the work is expected to rapidly dissipate and be at or below typical tidal estuary background levels.

Habitat Alteration

26. *Minimize all new waterward encroachment and permanent fill.*

    The project will not add waterward encroachment towards or permanent fill within Little Bay. The project requires the use of temporary fill for the placement of causeways. Once the project is complete these causeways will be removed and the area will be restored to its original condition to the maximum extent practicable. The lengths of the temporary causeways has been minimized to the extent practical.

27. *In Atlantic salmon critical habitat, replaced culverts must be constructed at a minimum of 1.2 bankfull width (BFW).*

    Not applicable – the project is not located within Atlantic salmon critical habitat and does not involve the construction of any culverts.

28. *In Atlantic salmon critical habitat, no culvert end extensions, invert line culvert rehabilitation, or slipline culvert rehabilitation may occur.*

    Not applicable – the project is not located within Atlantic salmon critical habitat and does not involve the construction of any culverts.

Vessel Traffic

29. *Maintain project vessel speed limits below 10 knots and dredge vessel speeds of 4 knots maximum, while dredging.*

    The occasional use of vessels to access the work space and remove the bridge superstructure may occur, but these vessels would never approach or exceed 10 knots. The project does not include dredging, so the 4 knot maximum does not apply.

30. *Maintain a 150-foot buffer between project vessels and ESA-listed whales and sea turtles (1,500 feet for right whales) and while dredging, at least a 300-foot buffer between dredge vessels and ESA-listed whales and sea turtles (1,500 feet for right whales).*

    Whales and sea turtles are not expected to be encountered during construction, and the project does not include dredging. If any whales or turtles are encountered, project vessels would adhere to the required 150-foot buffer.

31. *The number of project vessels must be limited to the greatest extent possible, as appropriate to size and scale of project.*

    One or more project vessel may be used when the GSB superstructure is removed in addition to the use of the causeways and trestles that would run parallel to the bridge.

32. *A project must not result in the permanent net increase of commercial vessels.*

    The project is to provide pedestrian and bicycle connectivity over Little Bay between Newington and Dover. The preferred alternative will not change the width of the navigational channel nor increase clearances as permitted by the USGS for the existing Little Bay Bridges. As such the project will not change the amount of boat traffic or commercial vessels traveling through Little Bay.

References

Celikkol, B, T. Shevenell, Z Aydinoglu, and J. Scott. 2006. *"Hydrodynamic Computer Model Study of the Great Bay Estuarine System, New Hampshire, In Support of the Little Bay Bridge Project."* Computer Modeling Group, Ocean Engineering, University of New Hampshire, Durham, NH.

Grizzle, R. and M. Brodeur. 2003. *Spaulding Turnpike Environmental Impact Study: Technical Report for Phase 1 – Data Collection and Coordination (Assessment of Existing Conditions in Little Bay*. Progress Report on Jackson Estuarine Laboratory Work Tasks 1-4. Jackson Estuarine Laboratory, University of New Hampshire, Durham, NH.

Morrissey, E., and C. Nash. 2013. *Identifying Blue Mussel (*Mytilus edulis*) Resource in Coastal New Hampshire*. NH Department of Environmental Services' Shellfish Program. Accessed January 14, 2019 <https://www.des.nh.gov/organization/divisions/water/wmb/shellfish/red-tide/aquaculture.htm>.

Memorandum

To: Marc Laurin, NHDOT

Date: June 5, 2019

Project #: 52381.01

From: Jason Ross, P.E. Director of Noise and Vibration

Re: General Sullivan Bridge - Hydroacoustic Impact Assessment from Pile Driving

---

VHB has assessed the potential for hydroacoustic effects from pile driving on ESA-listed species, including the Atlantic sturgeon and shortnose sturgeon, which may pass through the General Sullivan Bridge (GSB) project area during construction. This assessment includes background information on potential effects from pile driving, the types of piles and construction equipment used, methods to predict underwater sound propagation, how underwater sound is measured and evaluated, interim criteria used for assessing potential impacts, the results of the impact assessment for the General Sullivan Bridge project, and recommendations for Best Management Practices (BMPs) to minimize potential effects.

Background on Hydroacoustic Effects of Pile Driving on Fish

Sound generated by underwater pile driving has the potential to affect fish such as altering their behavior, disrupting their functions or physiology, causing injury or resulting in mortality. Behavioral effects from pile driving sound may include causing fish to be startled, moving away from typical habitats, reducing the ability to locate prey, or inability to communicate. Physiological effects may include stress, temporary hearing loss, or cellular changes to organs such as a fish's swim bladder, eyes or brain.

The severity of these effects depends on the intensity and characteristics of underwater sound and the size and type of fish present. Underwater sound levels depend on many factors such as the size and type of piles and pile driving equipment, the use of sound attenuation measures during construction, the proximity of fish to the source of sound and the efficiency that sound propagates at the project site.

Cast-in-shell steel (CISS) piles are most commonly used for permanent bridge structures. CISS piles generally produce higher sound levels compared to H-type steel piles, wood, or concrete piles. Smaller piles will typically result in lower underwater sound levels per strike than larger piles; however, there may be a need for more piles to be driven and the cumulative sound exposure could actually be greater than with fewer larger piles. Impact pile driving equipment is most commonly used and generally causes the highest sound levels compared to other installation equipment such as vibratory hammers, oscillating, or push-in methods.

Underwater Sound Propagation

Similar to airborne sound, underwater sound attenuates with distance from the source. Underwater sound propagation is complex and depends on several factors such as the depth of water, interactions with sound reflecting off the water surface and the ground surfaces, and the frequency of sound generated by the pile drivers. Underwater sound propagation is rather different and more complex in shallow water, where sound interacts more with the ground and the surface, compared to deep water sound propagation. Due to these complexities, sound

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3900

from pile driving in shallow waters is typically predicted based on empirical data from measurements of similar conditions. A substantial body of reference measurement data on the sound level emissions from pile driving has been collected and documented in Caltrans' "Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish."1

Reference sound measurements from pile driving are generally conducted 10 to 30 meters from the source. There are different sound attenuation methods that may be used to predict sound levels at other distances from the source. The Practical Spreading Loss Model (PSLM) is typically used for deep water conditions where sound interacts less with the ground. This model typically assumes that underwater sound will attenuate 4.5 dB per doubling of distance for a typical sound attenuation factor (F = 15). Therefore, if underwater sound is 200 dB at 10 meters, it would be 195.5 dB at 20 meters and 191 dB at 40 meters.

The NOAA Greater Atlantic Regional Fisheries Office (GARFO) has developed a Simplified Attenuation Formula (SAF) which is more accurate for predicting sound propagation in rivers and nearshore waters. The SAF assumes there is a constant sound reduction due to distance (typically 5 dB per 10 meters). Therefore, if underwater sound is 200 dB at 10 meters, it would be 195 dB at 20 meters, and 190 dB at 40 meters. Since the GSB study area is near shore with water heights of approximately 9 to 13 meters, the SAF sound propagation method is most appropriate.

Underwater Sound Levels

Sound is the rapid fluctuation of a fluid that is transferred away from a source via waves. Underwater sound levels are typically expressed in decibels based on a ratio of the change in pressure relative to a reference level of 1 micro-Pascal. There are several ways to describes sound levels to account for the way they change from moment-to-moment.

- "Peak" sound level (dBpeak) represents the maximum instantaneous change in sound pressure compared to ambient conditions. For pile driving, this would be highest instantaneous sound level during an individual strike.
- "RMS" sound level (dBRMS) represents the root-mean squared sound pressure over a duration (typically 50 to 100 milliseconds). For pile driving, this would represent the typical pressure and intensity over the course of an individual strike.
- "sSEL" is the single strike sound exposure level (dBsSEL) which takes into account the cumulative sound energy over an entire single pile driving strike.
- "cSEL" is the cumulative sound exposure level (dBcSEL) which takes into account the total sound energy over multiple strikes during a construction period (typically 24 hours).

---

[1] "Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish", Caltrans report No. CTHWANP-RT-15-306.01.01, November, 2015.

Interim Criteria

The Federal Highway Administration (FHWA), U.S. Fish and Wildlife Service, NOAA Fisheries Northwest and Southwest regions, and the California, Oregon, and Washington Departments of Transportation established the Fisheries Hydroacoustic Working Group (FHWG) to improve and coordinate on information about underwater sound caused by pile driving. The FHWG led to an *Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities* (AIP) in 2008. The National Marine Fisheries Service (NMFS) Greater Atlantic Region Fisheries Office (GARFO) has adopted the *Interim Criteria* which include thresholds for assessing potential effects on fish including potential injury. Table 1 presents the physiological/injury and behavioral thresholds for sturgeon and salmon.

Table 1: Behavioral and Physiological (Injury) Thresholds for ESA-Listed Species in NMFS' Greater Atlantic Region

Species	Threshold	Unit
Sturgeon/Salmon Behavioral	150	dBRMS (re 1 µPA)
Sturgeon/Salmon Physiological	206	dBpeak
Sturgeon/Salmon Physiological (>2g)	187	dBcSEL
Sturgeon/Salmon Physiological (<2g)	183	dBcSEL

Source: GARFO, 2018.

When the number of strikes that will be needed for the piles and the piling schedule is not known, it is not possible to accurately calculate the distance to the cumulative strike SEL 187 dBcSEL. In these circumstances, we calculate the distance to the single strike SEL level of 150 dBsSEL. When the received sound level from an individual pile strike is below a certain level, then the accumulated energy from multiple strikes would not contribute to injury, regardless of how many strikes occur. Beyond this distance, no physical injury is expected, regardless of the number of strikes. Since the number of strikes is not know at this time for the GSB project, impact has been evaluated according to 150 dBsSEL.

Impact Assessment

The current Preferred Alternative for General Sullivan Bridge (Alternative 9) is for a superstructure replacement, which involves complete removal and replacement of the existing superstructure. During project construction, temporary causeways and trestles will be installed from the Newington and Dover ends of the project. The causeways will be approximately 260 feet long on the Newington side of the bridge and 130 feet long on the Dover side of the bridge. The trestles will be approximately 450 to 460 feet long from the Newington side and approximately 470 to 480 feet long on the Dover side.

Construction of the preferred alternative is expected to take approximately 18 months and construction would begin with a one- to two-week period to install temporary causeways and trestles west of the existing GSB for staging and equipment access during the bridge replacement work.

The project will involve driving 14-inch steel piles to support two temporary trestles; no more than 50 such piles are anticipated. The method used to drive the piles will be based on the contractors' preference but will likely be via impact hammer. Table 2 presents reference sound levels from measurements of similar 14-inch steel pile driving at a

distance of 10 meters. The typical sound level emissions from a 14-inch steel pipe in a water depth of 15 meters are a peak sound level of 200 dBpeak, a single strike sound level of 174 dBsSEL , and an RMS sound level of 184 dBRMS.

Table 2: Underwater Sound Levels for Similar Pile Driving Operations

Pile Size / Type	Hammer Type	Water Depth (m)	Reference Sound Levels at 10 meters		
			Peak Sound Level (dBpeak)	Single Strike Sound Exposure Level (dBsSEL)	Pressure Level (dBRMS)
14" Steel Pipe	Impact	15	200	174	184

Source: Caltrans, 2012. Sound pressure levels from Table I.2-1 on page I-2

VHB has computed the distances to potential impact for injury based on thresholds of 206 dBpeak and 150 dBsSEL and potential behavioral disturbance based on a threshold of 150 dBRMS using the SAF method. As shown in Table 3, the impact assessment results indicate that exposure to peak sound levels that may result in injury are not anticipated to occur since this type of pile generates less than 206 dBpeak at 10 meters. At 58 meters from the piles, fish are far enough away that the sound from a single strike is below 150 dBsSEL and there is no potential for injury. At 78 meters from the piles, fish are far enough away to avoid behavioral disturbance.

Table 3: Estimated Distances to Sturgeon Injury and Behavioral Thresholds

Pile Size / Type	Hammer Type	Distance (m) to Injury at 206 dBpeak	Distance (m) to Injury at 150 dBsSEL (surrogate for 187 dBcSEL)	Distance (m) to Behavioral Disturbance at 150 dBRMS
14" Steel Pipe	Impact	N/A	58	78

Source: VHB, 2019.
N/A: Sound levels from this type of pile does not exceed 206 dBpeak at 10 meters

In order to be exposed to potentially injurious sound levels, a sturgeon would need to be within 58 meters of the pile for a prolonged period of time. This is unlikely to occur as we expect sturgeon to modify their behavior and move away from the area upon exposure to -underwater sound levels of 150 dBRMS. Given that sturgeon would be exposed to sound levels that cause behavioral modification (at 78 meters) before being exposed to injurious levels of noise (at 58 meters), we expect sturgeon would move away from the sound source before cumulative exposure results in injury.

If any sturgeon are within 58 meters of the pile at the time pile driving commences, we expect sturgeon to leave the area in a matter of seconds once pile driving commences. The additional utilization of a soft start technique will also give any sturgeon in the area time to move out of the range of any potential injury causing noise; therefore, no injury is anticipated.

Behavioral disturbances, such as becoming startled, moving away from typical habitats, reducing the ability to locate prey, or inability to communicate, may occur in sturgeon exposed to noise above 150 dBRMS. Underwater sound levels would be below 150 dBRMS at distances beyond 78 meters from the pile being installed. If sturgeon were to go into the area where sound levels exceed 150 dBRMS, it is reasonable to assume that a sturgeon will modify its

behavior such that it redirects its course of movement away from the area where pile driving occurs and the project area. It is extremely unlikely that these movements away from the project area would affect essential sturgeon behaviors such as spawning, foraging, resting, and migration, as the area is not a spawning area. Given the small distance a sturgeon would need to move to avoid disturbances, these effects would not be able to be measured or detected and are therefore insignificant.

Appendix F – NH Natural Heritage Bureau (NHNHB) Coordination

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Lindsay Matras, VHB
2 Bedford Farms Drive Suite 200
Bedford, NH 03110-6532

From: Amy Lamb, NH Natural Heritage Bureau
Date: 7/18/2019 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB19-2211 Town: Dover, Newington Location: Along NHDOT right-of-way.
Description: NHDOT and FHWA proposes to replace the General Sullivan Bridge located over Little Bay in Newington and Dover, NH. The Project would involve replacing the superstructure with a steel girder system with a structural steel frame extending from the bottom of the girders to the top of the existing piers. The existing piers would be preserved without requiring significant modification. Bridge replacement would require the temporary placement of causeways on either side of the bridge structure, as well as the temporary placement of piers, to facilitate bridge removal.

cc: Kim Tuttle

Appendix F - 1

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

Comments: Please contact the NH Fish & Game Department to address wildlife concerns. Please continue to work with NHB to address rare plant concerns. A site visit may be helpful to review for the listed plant species and examine existing conditions.

Natural Community	State[1]	Federal	Notes
Sparsely vegetated intertidal system	--	--	Threats to these communities are primarily alterations to the hydrology of the wetland (such as alterations that might affect the sheet flow of tidal waters across the intertidal flat) and increased input of nutrients and pollutants in storm runoff.
Subtidal system	--	--	Threats to these communities are primarily alterations to the hydrology of the wetland (such as alterations that might affect the sheet flow of tidal waters across the intertidal flat) and increased input of nutrients and pollutants in storm runoff.

Plant species	State[1]	Federal	Notes
prolific yellow-flowered knotweed (*Polygonum ramosissimum ssp. prolificum*)*	E	--	Threats to estuarine plants are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that

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

Memo

NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

			eliminate plants, and increased input of nutrients and pollutants in storm runoff.
smooth black sedge (*Carex nigra*)*	E	--	The largest threat to this species is loss of habitat.

Vertebrate species	State[1]	Federal	Notes
Atlantic Sturgeon (*Acipenser oxyrinchus*)	T	T	Contact the NH Fish & Game Dept and the US Fish & Wildlife Service (see below).
Cliff Swallow (*Petrochelidon pyrrhonota*)	T	--	Contact the NH Fish & Game Dept (see below).
Shortnose Sturgeon (*Acipenser brevirostrum*)	E	E	Contact the NH Fish & Game Dept and the US Fish & Wildlife Service (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.

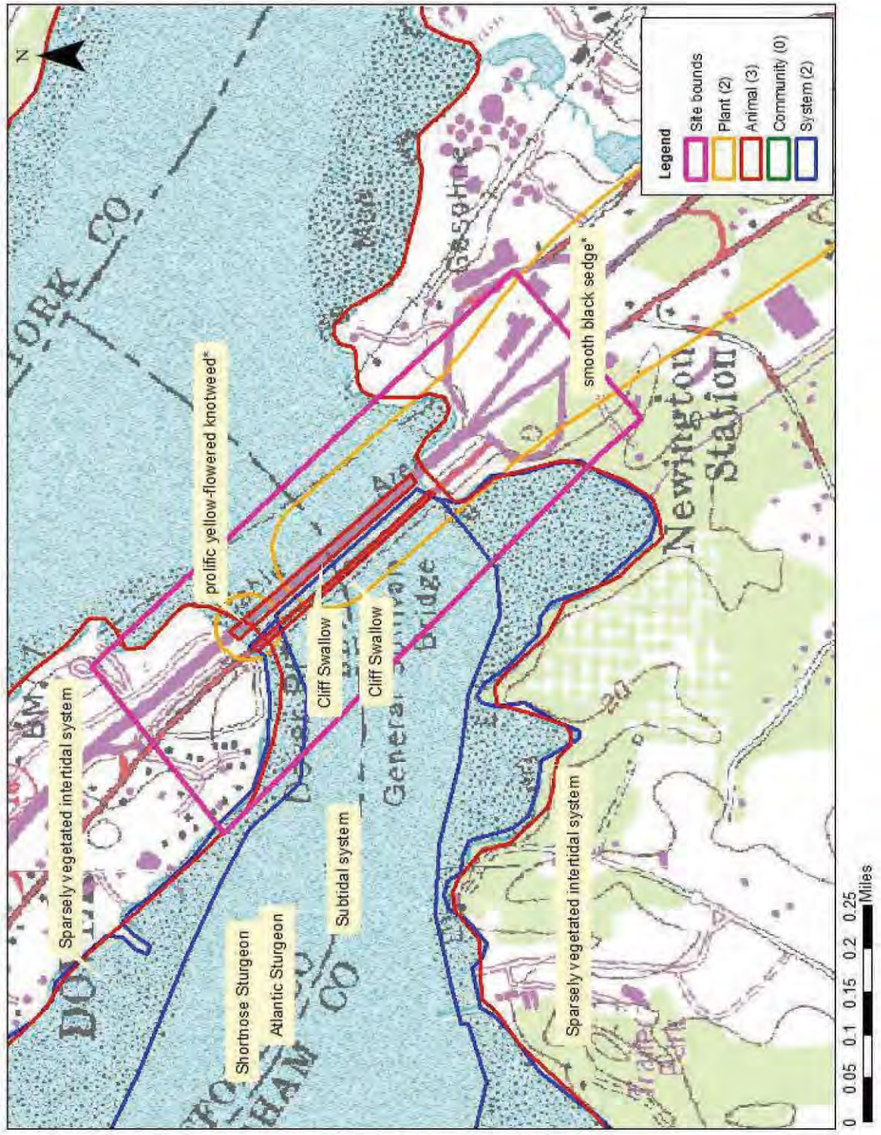
Appendix F - 2

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



NHB19-2211

New Hampshire DOT
Department of Transportation

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Victoria F. Sheehan
Commissioner

William Cass, P.E.
Assistant Commissioner

July 29, 2019

Amy Lamb
NH Natural Heritage Bureau
DNCR – Forests & Lands
172 Pembroke Road
Concord, NH 03301

RE: NH DataCheck Report (NHB19-2211)
General Sullivan Bridge Project
Spaulding Turnpike / Little Bay Bridge: NHS-027-1(037), 11238S
Newington and Dover, New Hampshire

Dear Ms. Lamb:

The New Hampshire Department of Transportation (NHDOT) is planning to rehabilitate or replace the General Sullivan Bridge (GSB) located over the Little Bay. The GSB was most recently used as a pedestrian bridge connecting Dover with Newington over the Little Bay, and NHDOT is seeking to continue to provide pedestrian/bike access along this route. In preparation for the rehabilitation/replacement work, NHDOT and FHWA are preparing a Supplemental Environmental Impact Statement (SEIS) for the project. The SEIS will consider an analysis of the project's impacts to rare, threatened, or endangered species known to occur within the project area. Below is a brief project overview, followed by a description of state-listed threatened or endangered species managed by the NH Natural Heritage Bureau (NHNHB).

Project Overview
The GSB was built in 1934 and connected Newington and Dover, New Hampshire, over the Little Bay. Although originally designed to support two lanes of highway traffic over the mouth of the Little Bay, the bridge was closed to vehicular traffic in 1984, when the adjacent Little Bay Bridge, located east of the GSB, was completed. Now the bridge is closed even to pedestrian and bicycle traffic due to a recent inspection completed in September 2018, which found additional deterioration of a critical floor beam under the bridge deck.

The condition of the GSB has been declining over the last few decades. To address this issue, options for the rehabilitation or replacement of the GSB were previously reviewed in a 2007 Final Environmental Impact Statement (FEIS) and a 2008 Record of Decision (ROD), which were produced by NHDOT and the Federal Highway Administration (FHWA) under the National Environmental Policy Act (NEPA). In the ROD, NHDOT and FHWA committed to maintain pedestrian/bicycle connectivity between Dover and Newington, and to accomplish that by rehabilitating the GSB.

Since the 2008 ROD, further inspections and studies of the GSB condition were completed to prepare for the rehabilitation project. The information gathered by these inspections and studies revealed that the GSB was more deteriorated than originally thought. Bridge rehabilitation would have very high costs, high risks, and a limited life span. Therefore, NHDOT and FHWA are proceeding to further evaluate rehabilitation and consider other alternatives; these alternatives and their environmental and cultural resource impacts will be presented in a Supplemental Environmental Impact Statement (SEIS) currently in preparation.

Of the various alternatives being considered in the SEIS, the current Preferred Alternative is Alternative 9 – Superstructure Replacement (Girder Option), which involves complete removal and replacement of the GSB

JOHN O. MORTON BUILDING • 7 HAZEN DRIVE • P.O. BOX 483 • CONCORD, NEW HAMPSHIRE 03302-0483
TELEPHONE: 603-271-3734 • FAX: 603-271-3914 • TDD: RELAY NH 1-800-735-2964 • INTERNET: WWW.NHDOT.COM

superstructure. Under Alternative 9, the GSB superstructure would be replaced with a steel girder system with a structural steel frame extending from the bottom of the girders to the top of the existing GSB piers. Alternative 9 would reuse the existing piers without requiring significant modifications. This approach eliminates permanent impacts to intertidal and subtidal habitat. Plans of the Preferred Alternative are attached.

Construction of the Preferred Alternative is expected to take approximately 18 months. Construction would begin with a one- to two-week period of installing a temporary causeways and trestles west of the existing GSB for staging and equipment access during the bridge replacement work. The bridge would be removed and replaced using these causeways, the trestles, and water craft. Upon completion of the bridge replacement, the causeways and trestles would be removed, and the area restored to pre-construction conditions, which is anticipated to take approximately one to two weeks. The causeways and trestles are considered a temporary impact within the Little Bay and are the only in-water work that is proposed. We've attached a plan that depicts the construction phase impacts but note that these plans are for planning purposes only and may be modified during construction if required to allow for safe and efficient contractor access.

NHF&G Species Resources Summary
A NH Natural Heritage Bureau (NHNHB) DataCheck report was generated for the project on July 18, 2019 (NHB19-2211). This report indicated the presence of two systems, sparsely vegetated intertidal system and subtidal system, as well as two plant species, prolific yellow-flowered knotweed (*Polygonum ramosissimum spp. prolificum*) and smooth black sedge (*Carex nigra*) in the vicinity of the proposed project.

Plant Species
The NHNHB report indicates prolific yellow-flowered knotweed under the GSB and Little Bay Bridges in Hilton Park, as well as smooth black sedge south of the GSB in Newington. Coordination with the NHNHB initially occurred in 2012 (see attached NHNHB memo dated July 27, 2012), at which time NHNHB conducted surveys within wetland areas along the Spaulding Turnpike south of the GSB. During the 2012 surveys, smooth black sedge was found within five wetlands along the Turnpike. Additional coordination with NHNHB occurred in 2016. In a memo from you which relayed information regarding surveys you conducted for smooth black sedge and prolific yellow-flowered knotweed (refer to attached NHNHB memo dated October 11, 2016), you indicated that the area where prolific yellow-flowered knotweed was historically known to occur has been heavily impacted by the construction of the Little Bay Bridges. No smooth black sedge plants were discovered during the survey conducted in 2016, however you indicated that the survey was conducted within the latter end of the ideal survey window for this species.

Smooth Black Sedge: Although smooth black sedge was found within Newington in 2012, this species is only known to occur in freshwater wetland habitats. No freshwater wetlands will be impacted by the project; while one wetland would be impacted by the project in Newington, this wetland is located along the shoreline of Little Bay and is likely to contain brackish water due to its location. This wetland is immediately south of the pedestrian on/off ramp and south of the water crossing which drain via a deeply cut channel to the Little Bay shoreline. This wetland is composed of a series of interconnected palustrine emergent ditches. Due to the wetland's proximity to Little Bay and presence within a tidal area, the wetland is not suitable habitat for smooth black sedge. Therefore, we believe it is unlikely that smooth black sedge is located within the area of proposed temporary impact.

Prolific Yellow-Flowered Knotweed: As indicated in the NHNHB memo dated October 11, 2016, the presence of prolific yellow-flowered knotweed under the GSB and Little Bay Bridges was previously impacted and therefore not observed. No additional surveys for this species have been completed since 2016, however it is NHDOT's understanding that this species is no longer present within Hilton Park. Temporary impacts associated with a temporary access road and staging area within uplands along the Dover side of the GSB would be limited to areas west of the GSB.

Systems
The NHNHB report indicated that the project spans a sparsely vegetated intertidal system and subtidal system. The proposed in-water work would impact both of these systems. The NHDOT has coordinated with the National Oceanic and Atmospheric Administration (NOAA) regarding the proposed impacts to fish and marine habitat. Additionally, coordination with the NH Fish & Game Department (NHF&G) Marine Program is ongoing. Proposed impacts to jurisdictional wetlands where these systems are located will be noted in the Draft SEIS.

Please let me know if you have any specific concerns regarding these species and systems located within or near the project area, of if you recommend any additional plant surveys. Any recommendations regarding best management practices or mitigation will be included in the SEIS. We look forward to continuing coordination with you on this project.

Sincerely,

Marc G. Laurin
Senior Environmental Manager
Room 109 – Tel (603) 271-4044
E-mail – marc.laurin@dot.nh.gov

Attachments:
NHNHB DataCheck Report (NHB19-2211)
Alternative 9 Construction Impact Plan
Figure 2 – Conceptual Design Rendering
Representative Site Photographs
NHNHB Memo – July 27, 2012
NHNHB Memo – October 11, 2016

cc: Keith Cota, NHDOT
Jamie Sikora, FHWA
P. Walker, VHB
G. Goodrich, VHB

s:\environment\projects\newington\11238\11238s\nhnhb\20190729lt lamb.docx

Matras, Lindsay

From: Laurin, Marc <Marc.Laurin@dot.nh.gov>
Sent: Thursday, November 7, 2019 3:47 PM
To: Walker, Peter; Matras, Lindsay; Beato, Hannah
Subject: [External] FW: Newington-Dover, 11238S - NHB Resources General Sullivan Bridge Project
Attachments: NHB-photos_10-03-19.pdf

FYI

From: Lamb, Amy
Sent: Thursday, November 07, 2019 3:38 PM
To: Laurin, Marc
Subject: RE: Newington-Dover, 11238S - NHB Resources General Sullivan Bridge Project

Hi Marc,

Thank you for sending this information. On October 3, 2019, NHB reviewed the site, focusing survey efforts along the shoreline where rare brackish species could occur. NHB examined both the north (Dover) and south (Newington) approaches, with an emphasis on less-impacted areas west of the existing bridge, while also reviewing the locations of the proposed temporary stone fill causeways.

There are small areas of tidal marsh west of the bridge, on both the Dover and Newington sides. NHB collected and reviewed plant material from these marshes, but did not positively identify any State-Listed plant species. In Dover, there was little vegetation in the immediate vicinity of the proposed stone fill causeways, and in Newington, this area contained mostly invasive and/or weedy species. Please see attached photos. No plant species of concern were found within proposed impact areas. NHB has no further concerns about the project as proposed.

Best,
Amy

Amy Lamb
Ecological Information Specialist
(603) 271-2834
amy.lamb@dncr.nh.gov

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

From: Laurin, Marc <Marc.Laurin@dot.nh.gov>
Sent: Monday, July 29, 2019 2:10 PM
To: Lamb, Amy <Amy.Lamb@dncr.nh.gov>
Cc: Cota, Keith <Keith.Cota@dot.nh.gov>; Jamie Sikora <jamie.sikora@dot.gov>; Peter Walker <pwalker@vhb.com>; Goodrich, Gregory <GGoodrich@VHB.com>
Subject: Newington-Dover, 11238S - NHB Resources General Sullivan Bridge Project

Amy,

NHDOT is evaluating the replacement or rehabilitation of the General Sullivan Bridge (GSB) located over the Little Bay to continue to provide pedestrian/bike access along this route. NHDOT's Preferred Alternative involves the complete removal and replacement of the GSB superstructure, and an SEIS is being prepared that considers the project's impacts to environmental resources. Attached is current information regarding the project for your review.

Please let me know if you have any specific concerns or recommendations for inclusion in the SEIS on the plant species and natural communities identified in the NHNHB database review. Coordination with NHF&G department on vertebrate species is on-going.

Thanks,

Marc

Existing bridge abutment, and proposed location of temporary stone fill causeway. (Dover, north side)

Existing abutment in Dover, facing west to show existing conditions.

View toward existing abutment in Newington, and location of proposed temporary causeway.

View of rocky substrate and weedy vegetation around Newington abutment.

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

To: Hannah Beato, Vanasse Hangen Brustlin, Inc.
101 Walnut Street
Watertown, MA 02471

From: Amy Lamb, NH Natural Heritage Bureau
Date: 2/8/2021 (valid until 02/08/2022)
Re: Review by NH Natural Heritage Bureau
Permits: NHDES - Shoreland Standard Permit, NHDES - Wetland Standard Dredge & Fill - Major, USACE - General Permit, USCEQ - Federal: NEPA Review, USEPA - Stormwater Pollution Prevention

NHB ID: NHB21-0203 Town: Dover, Newington Location: Along NHDOT right-of-way
Description: NHDOT and FHWA propose to replace the General Sullivan Bridge located over Little Bay in Newington and Dover, NH. The Project would involve replacing the superstructure with a steel girder system with a structural steel frame extending from th e bottom of the girders to the top of the existing piers. The existing piers would be preserved without requiring substantial modification . Bridge replacement would require the temporary placement of causeways on either side of the bridge structure, as well as the temporary placement of piers, to facilitate bridge remo val.

cc: Kim Tuttle

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

Comments NHB: Please continue to coordinate with NHB.
F&G: Please continue to coordinate with NHFG.

Natural Community	State[1]	Federal	Notes
Eelgrass bed	--	--	
Sparsely vegetated intertidal system	--	--	Threats to these communities are primarily alterations to the hydrology of the wetland (such as alterations that might affect the sheet flow of tidal waters across the intertidal flat) and increased input of nutrients and pollutants in storm runoff.
Subtidal system	--	--	Threats to these communities are primarily alterations to the hydrology of the wetland (such as alterations that might affect the sheet flow of tidal waters across the intertidal flat) and increased input of nutrients and pollutants in storm runoff.

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

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

Plant species	State[1]	Federal	Notes
prolific yellow-flowered knotweed (*Polygonum ramosissimum ssp. prolificum*)*	E	--	Threats to estuarine plants are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that eliminate plants, and increased input of nutrients and pollutants in storm runoff.
smooth black sedge (*Carex nigra*)*	E	--	The largest threat to this species is loss of habitat.

Vertebrate species	State[1]	Federal	Notes
Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)	T	T	Contact the NH Fish & Game Dept and the US Fish & Wildlife Service (see below).
Cliff Swallow (*Petrochelidon pyrrhonota*)	T	--	Contact the NH Fish & Game Dept (see below).
Shortnose Sturgeon (*Acipenser brevirostrum*)	E	E	Contact the NH Fish & Game Dept and the US Fish & Wildlife Service (see below).

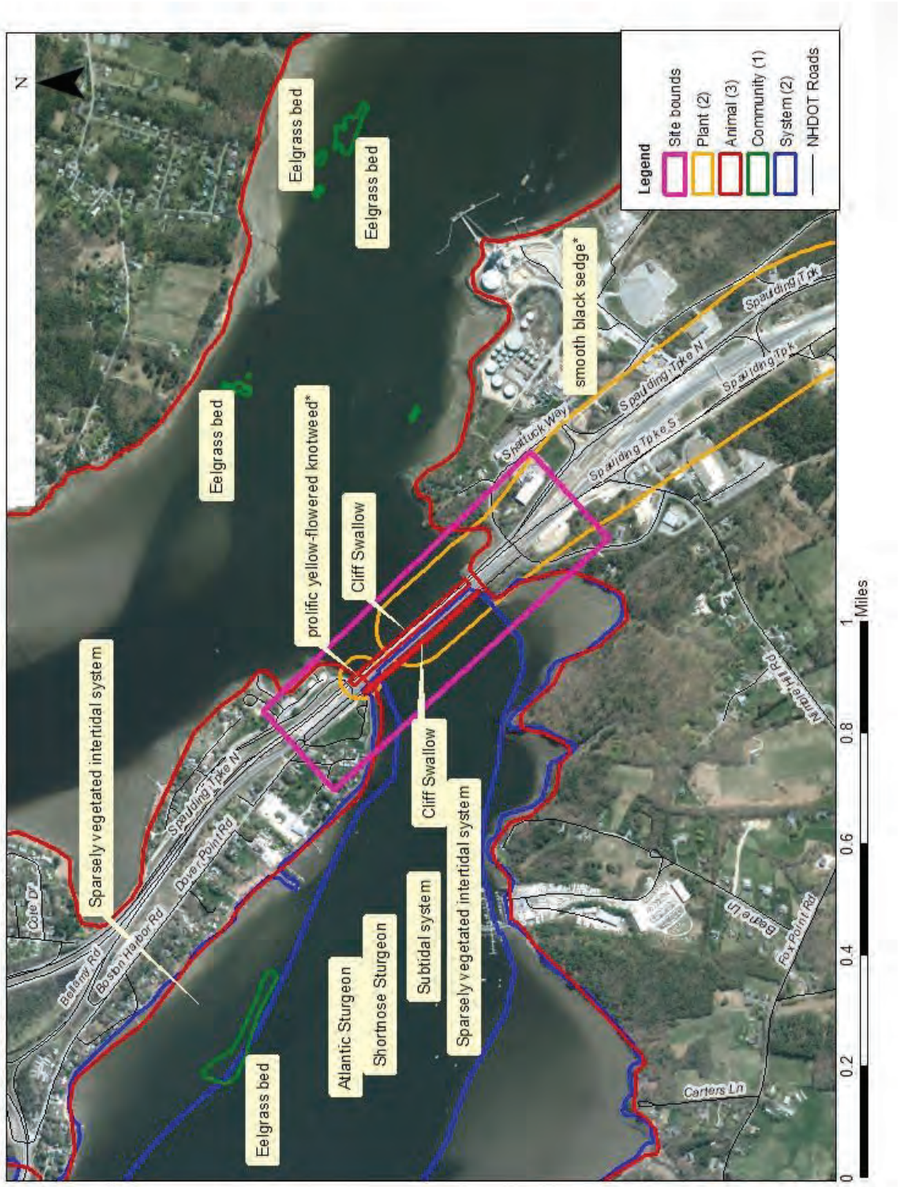
[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than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



Beato, Hannah

From: Lamb, Amy <Amy.E.Lamb@dncr.nh.gov>
Sent: Wednesday, March 31, 2021 10:17 AM
To: Laurin, Marc
Cc: Reczek, Jennifer; Walker, Peter; Beato, Hannah
Subject: [External] RE: Newington-Dover, 11238S - General Sullivan Bridge Replacement and Eelgrass Locations, NHB21-0203

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Marc,

Thank you for clarifying the meaning of the 2000 x 800 ft project area footprint as the potential area for direct/indirect impacts.

There are three locations where eelgrass beds have been documented in the general vicinity of the project. Their distances to the bridge itself are as follows:
Westerly population – 2800 ft
Easterly population – 1700 ft
Northeasterly population – 2800 ft

While one of these populations is within the 2000 ft area of potential impacts, NHB does not expect impacts to eelgrass beds as a result of this project based on the following information in the documents provided:

Will SAV be impacted?
"Kelp beds and macroalgal beds will be temporarily impacted by the placement of causeways and trestles in the project area. Additionally, the NH Coastal Viewer was used to identify the nearest eel grass bed to the project area, which is over 500 feet away. No direct or indirect impacts are anticipated to occur to eelgrass."

Will turbidity increase?
"The causeways and trestles are expected to take approximately one to two weeks to install and remove. Mitigation measures, such as turbidity curtains, may be placed around the area of in-water impact if determined necessary to prevent sedimentation and turbidity effects."

Will water quality be altered?
"With the use of standard BMPs for marine construction, no significant water quality degradation of any EFH is expected. Any impacts are likely to be limited to a temporary increase in turbidity and suspended solids. Because of substantial tidal exchange and normal river flows, water quality at the project site is expected to return quickly to its pre-disturbance condition. Minimal, temporary water quality impacts may occur during the in-water construction phases of the project since the temporary causeways and trestles may disturb bottom sediments. This in-water work to install and remove the causeways/trestle is anticipated to take approximately one to two weeks at the start and end of the bridge replacement work."

Please contact NHB if anticipated work areas, impact areas, or project methods change such that impacts to eelgrass could occur.

Best,
Amy

From: Laurin, Marc <marc.g.laurin@dot.nh.gov>
Sent: Tuesday, March 30, 2021 7:47 AM
To: Lamb, Amy <Amy.E.Lamb@dncr.nh.gov>
Cc: Reczek, Jennifer <Jennifer.E.Reczek@dot.nh.gov>; 'Walker, Peter' <PWalker@VHB.com>; Hannah Beato <hbeato@VHB.com>
Subject: RE: Newington-Dover, 11238S - General Sullivan Bridge Replacement and Eelgrass Locations

Amy,

The footprint of the project itself is localized as shown on the plans. It is more specifically identified as the project limits. Those are the areas that will have direct temporary or permanent impacts associated with the construction itself.

The 2,000 feet waterbody and 800 feet land areas are better characterized as the extent of the potential impacts, likely indirect, that may occur during construction outside the project limits. The project area is evaluated to identify environmental and/or cultural resources that may be present and could be affected by the construction activities; such as sedimentation, noise or construction access to the project.

Marc

From: Lamb, Amy <Amy.E.Lamb@dncr.nh.gov>
Sent: Monday, March 29, 2021 2:18 PM
To: Laurin, Marc <marc.g.laurin@dot.nh.gov>
Cc: Reczek, Jennifer <Jennifer.E.Reczek@dot.nh.gov>; 'Walker, Peter' <PWalker@VHB.com>; Hannah Beato <hbeato@VHB.com>
Subject: RE: Newington-Dover, 11238S - General Sullivan Bridge Replacement and Eelgrass Locations

Hi Marc,

Thank you for sending this supplemental information, it is very helpful.

I just have one clarifying question: On page 3 of the pdf (Appendix E-5), it states that "The project area footprint is currently defined as the GSB and surrounding Little Bay waterbody within 2,000 feet of the bridge, as well as land areas approximately 800 feet north and south of the Newington and Dover bridge abutments." Can you explain why the project area is defined as within 2,000 feet of the bridge when the plans address a much more localized area?

Thank you,
Amy

From: Laurin, Marc <marc.g.laurin@dot.nh.gov>
Sent: Monday, March 29, 2021 8:02 AM
To: Lamb, Amy <Amy.E.Lamb@dncr.nh.gov>
Cc: Reczek, Jennifer <Jennifer.E.Reczek@dot.nh.gov>; 'Walker, Peter' <PWalker@VHB.com>; Hannah Beato <hbeato@VHB.com>
Subject: RE: Newington-Dover, 11238S - General Sullivan Bridge Replacement and Eelgrass Locations

Amy,

Attached is information on the anticipated construction phase impacts, including an excerpt from the Essential Fish Habitat Assessment Worksheet, which provides supplemental information about the project and the in-water work that is anticipated to be conducted. A total of 0.75 acres of disturbance is estimated to occur for the construction of the

causeway with an estimated 50 temporary 14 inch diameter steel piles to support the two trestles. As noted the plans are for planning purposes and may be modified.

Let me know if you need more information or clarification.

Thanks,

Marc

From: Lamb, Amy <Amy.E.Lamb@dncr.nh.gov>
Sent: Thursday, March 25, 2021 9:46 AM
To: Laurin, Marc <marc.g.laurin@dot.nh.gov>
Cc: Reczek, Jennifer <Jennifer.E.Reczek@dot.nh.gov>; 'Walker, Peter' <PWalker@VHB.com>; Hannah Beato <hbeato@VHB.com>
Subject: RE: Newington-Dover, 11238S - General Sullivan Bridge Replacement and Eelgrass Locations

Hello Mark,

Thank you for reaching out about the potential for the project to impact eelgrass beds, which were recently added to the NHB database and not included in past DataChecks for this project.

Regarding the potential for impacts to eelgrass beds from temporary changes in tidal velocities and sedimentation from in-water work, do you have any graphics or other information that would help illustrate the minor nature of the anticipated impacts?

Could you send additional information about the standard marine construction BMPs that would be in place wherever feasible?

Thank you,
Amy

From: Laurin, Marc <marc.g.laurin@dot.nh.gov>
Sent: Thursday, March 25, 2021 9:35 AM
To: Lamb, Amy <Amy.E.Lamb@dncr.nh.gov>
Cc: Reczek, Jennifer <Jennifer.E.Reczek@dot.nh.gov>; 'Walker, Peter' <PWalker@VHB.com>; Hannah Beato <hbeato@VHB.com>
Subject: Newington-Dover, 11238S - General Sullivan Bridge Replacement and Eelgrass Locations

Amy,

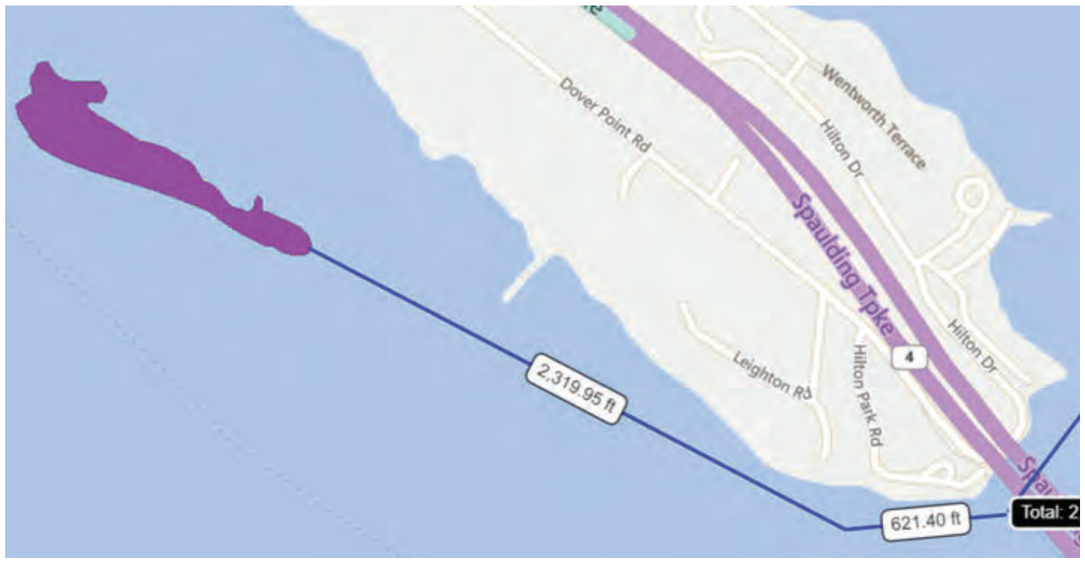
As you may recall, NHDOT and FHWA are preparing a Supplemental EIS for the rehabilitation or replacement of the General Sullivan Bridge (GSB) over Little Bay in Newington and Dover, NH. Our consultant recently ran a new NHB DataCheck because the previous report had expired(see attached). The only difference between the previous report and the updated report is the identification of eelgrass beds within the Piscataqua River and Little Bay. I am reaching out to discuss the potential impacts of the GSB Project and the sedimentation potential for any eel grass beds.

The project would require the temporary placement of causeways and trestles adjacent to the existing bridge from both banks to facilitate bridge removal and new construction. The Project will cause temporary, in-water disturbance from installation and removal of the proposed causeways and trestles for construction access. The installation and removal of these structures over a one- to two-month period may cause limited sedimentation. Specifically, placement of the causeways and trestles involve temporary alterations to the currents of Little Bay at a localized scale and would cause minor changes in tidal velocities. Current flows in the Project Study Area are complex and have a wide range of directional

components and speeds during the tidal cycle. These tidal flow characteristics were studied during the preparation of the 2007 Final Environmental Impact Statement. Tidal flows, currents, and wave patterns are not expected to be permanently altered as a result of the temporary impacts associated with construction access. Any changes to tidal flow, currents, and wave patterns due to the placement of the causeways and trestles would be temporary and minor.

BMPs would be implemented to mitigate the potential for suspension of sediments and consequent siltation during in-water construction. Based on correspondence with NOAA's Greater Atlantic Regional Fisheries Office, the following list of environmental commitments would be implemented to protect the water quality and aquatic habitat of Little Bay, and reduce risk of impact to aquatic species:

- A drainage and erosion control plan for all shoreside construction would be implemented, including BMPs to control and capture silt-laden stormwater runoff.
- Standard marine construction BMPs would be implemented wherever feasible to mitigate the potential for suspension of sediments and consequent siltation.
- The contractor would be directed to divert runoff to temporary erosion check dams or to capture runoff using silt fences, hay bales, silt socks, mulch filter berms, or temporary detention basins.
- Areas of soil disturbance would be seeded and mulched as quickly as possible after initial grading.
- The contractor would be required to inspect all construction BMPs on a daily basis to ensure that they are properly installed and maintained.
- Standard BMPs will be used for in-water and shoreside construction to address potential fuel or oil spills from the construction equipment, and to mitigate the potential for suspension of sediments and consequent siltation.



Based on the distance to the nearest eelgrass beds, approximately 1,800 feet to the east and 2,900 feet to the west, the very limited impacts and durations of the in-stream work, we conclude that the potential impacts to eelgrass beds is unlikely. Please let us know if you concur, or if you feel additional conservation measures or coordination is necessary. We hope to include your response in the Draft Supplemental EIS which we intend to print on April 5. If you are not able to respond by then, you will have the opportunity to comment on the project during the Public Hearing, anticipated to be held in May 2021, and during its comment period.

Let me know if you need further information.

Thanks,

Appendix G – NH Fish & Game Department (NHF&GD) Coordination

New Hampshire DOT
Department of Transportation

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Victoria F. Sheehan
Commissioner

William Cass, P.E.
Assistant Commissioner

July 15, 2019

Cheri Patterson
Marine Program Supervisor
NH Fish and Game Department
225 Main Street
Durham NH 03824

RE: Marine Fisheries Resources
General Sullivan Bridge Project
Spaulding Turnpike / Little Bay Bridge: NHS-027-1(037), 11238S
Newington and Dover, New Hampshire

Dear Ms. Patterson:

The New Hampshire Department of Transportation (NHDOT) is planning to rehabilitate or replace the General Sullivan Bridge (GSB) located over the Little Bay. The GSB was most recently used as a pedestrian bridge connecting Dover with Newington over the Little Bay, and NHDOT is seeking to continue to provide pedestrian/bike access along this route. In preparation for the rehabilitation/replacement work, NHDOT and FHWA are preparing a Supplemental Environmental Impact Statement (SEIS) for the project. The work is proposed to involve in-water work within the Little Bay, therefore the SEIS will consider an analysis of the project's impacts to fisheries resources. Below is a brief project overview, followed by a description of the fisheries analyses conducted to date.

Project Overview
The GSB was built in 1934 and connected Newington and Dover, New Hampshire, over the Little Bay. Although originally designed to support two lanes of highway traffic over the mouth of the Little Bay, the bridge was closed to vehicular traffic in 1984, when the adjacent Little Bay Bridge, located east of the GSB, was completed. Now the bridge is closed even to pedestrian and bicycle traffic due to a recent inspection completed in September 2018, which found additional deterioration of a critical floor beam under the bridge deck.

The condition of the GSB has been declining over the last few decades. To address this issue, options for the rehabilitation or replacement of the GSB were previously reviewed in a 2007 Final Environmental Impact Statement (FEIS) and a 2008 Record of Decision (ROD), which were produced by NHDOT and the Federal Highway Administration (FHWA) under the National Environmental Policy Act (NEPA). In the ROD, NHDOT and FHWA committed to maintain pedestrian/bicycle connectivity between Dover and Newington, and to accomplish that by rehabilitating the GSB.

Since the 2008 ROD, further inspections and studies of the GSB condition were completed to prepare for the rehabilitation project. The information gathered by these inspections and studies revealed that the GSB was more deteriorated than originally thought. Bridge rehabilitation would have very high costs, high risks, and a limited life span. Therefore, NHDOT and FHWA are proceeding to further evaluate rehabilitation and consider other alternatives; these alternatives and their environmental and cultural resource impacts will be presented in a Supplemental Environmental Impact Statement (SEIS) currently in preparation.

Of the various alternatives being considered in the SEIS, the current Preferred Alternative is Alternative 9 – Superstructure Replacement (Girder Option), which involves complete removal and replacement of the GSB superstructure. Under Alternative 9, the GSB superstructure would be replaced with a steel girder system with a structural steel frame extending from the bottom of the girders to the top of the existing GSB piers. Alternative 9 would reuse the existing piers without requiring significant modifications. This approach eliminates permanent impacts to intertidal and subtidal habitat. Plans of the preferred alternative are attached.

Construction of the preferred alternative is expected to take approximately 18 months. Construction would begin with a one- to two-week period of installing a temporary causeways and trestles west of the existing GSB for staging and equipment access during the bridge replacement work. The bridge would be removed and replaced using these causeways, the trestles, and water craft. Upon completion of the bridge replacement, the causeways and trestles would be removed, and the area restored to pre-construction conditions, which is anticipated to take approximately one to two weeks. The causeways and trestles are considered a temporary impact within the Little Bay and are the only in-water work that is proposed. We've attached a plan that depicts the construction phase impacts but note that these plans are for planning purposes only and may be modified during construction if required to allow for safe and efficient contractor access.

Fisheries Resources Summary
The Little Bay is designated as essential fish habitat (EFH) for several fish species. Therefore, a NOAA Fisheries EFH Assessment Worksheet was completed for the proposed project, which determined that the preferred alternative would not have a substantial adverse effect on EFH. The EFH Assessment Worksheet was submitted to Mike Johnson at NOAA, who concurred with the finding of no substantial adverse effect and indicated that NOAA did not have any conservation recommendations for the project.

The project area is also located within designated critical habitat for Atlantic sturgeon (*Acipenser oxyrhynchus oxyrhynchus*) and within the estimated range for shortnose sturgeon (*Acipenser brevirostrum*) according to the ESA Section 7 Mapper.[1] Based on the work that is anticipated to be completed to rehabilitate or replace the bridge, NOAA concurred that the project "*may affect but is not likely to adversely affect*" Atlantic/shortnose sturgeon critical habitat.

NHDOT would like to give the NH Fish and Game Department (NHFGD) opportunity to add to the discussion of rare, threatened, or endangered aquatic species that occur within the project area, or to voice any concerns about the proposed project's impact on fisheries habitat or species based on known NHFGD records. Please let me know if you have any specific concerns or recommendations for inclusion in the SEIS. We look forward to coordinating with you on this project.

Sincerely,

Marc G. Laurin
Senior Environmental Manager
Room 109 – Tel (603) 271-4044
E-mail – marc.laurin@dot.nh.gov

Attachments:
Figure 1 – USGS Location Map
Figure 2 – Conceptual Design Rendering
Figure 3 – Habitat Types
Existing Condition Plan
Alternative 9 Elevation and Typical Sections
Alternative 9 Construction Impact Plan

[1] NOAA Fisheries. 2018. *Section 7 Mapper*. Greater Atlantic Region. Accessed January 11, 2019 <https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e03b250ac11f9914a27>.

cc: Keith Cota, NHDOT
Jamie Sikora, FHWA
Carol Henderson, F&G
P. Walker, VHB
G. Goodrich, VHB

s:\environment\projects\newington\11238\11238s\comm\20190715lt-patterson nhf&g.docx

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Victoria F. Sheehan
Commissioner

William Cass, P.E.
Assistant Commissioner

July 22, 2019

Kim Tuttle
NH Fish and Game Department
11 Hazen Drive
Concord, NH 03301

RE: NH DataCheck Report (NHB19-2211)
General Sullivan Bridge Project
Spaulding Turnpike / Little Bay Bridge: NHS-027-1(037), 11238S
Newington and Dover, New Hampshire

Dear Ms. Tuttle:

The New Hampshire Department of Transportation (NHDOT) is planning to rehabilitate or replace the General Sullivan Bridge (GSB) located over the Little Bay. The GSB was most recently used as a pedestrian bridge connecting Dover with Newington over the Little Bay, and NHDOT is seeking to continue to provide pedestrian/bike access along this route. In preparation for the rehabilitation/replacement work, NHDOT and FHWA are preparing a Supplemental Environmental Impact Statement (SEIS) for the project. The SEIS will consider an analysis of the project's impacts to rare, threatened, or endangered species known to occur within the project area. Below is a brief project overview, followed by a description of state-listed threatened or endangered species managed by the NH Fish & Game Department (NHF&G).

Project Overview
The GSB was built in 1934 and connected Newington and Dover, New Hampshire, over the Little Bay. Although originally designed to support two lanes of highway traffic over the mouth of the Little Bay, the bridge was closed to vehicular traffic in 1984, when the adjacent Little Bay Bridge, located east of the GSB, was completed. Now the bridge is closed even to pedestrian and bicycle traffic due to a recent inspection completed in September 2018, which found additional deterioration of a critical floor beam under the bridge deck.

The condition of the GSB has been declining over the last few decades. To address this issue, options for the rehabilitation or replacement of the GSB were previously reviewed in a 2007 Final Environmental Impact Statement (FEIS) and a 2008 Record of Decision (ROD), which were produced by NHDOT and the Federal Highway Administration (FHWA) under the National Environmental Policy Act (NEPA). In the ROD, NHDOT and FHWA committed to maintain pedestrian/bicycle connectivity between Dover and Newington, and to accomplish that by rehabilitating the GSB.

Since the 2008 ROD, further inspections and studies of the GSB condition were completed to prepare for the rehabilitation project. The information gathered by these inspections and studies revealed that the GSB was more deteriorated than originally thought. Bridge rehabilitation would have very high costs, high risks, and a limited life span. Therefore, NHDOT and FHWA are proceeding to further evaluate rehabilitation and consider other alternatives; these alternatives and their environmental and cultural resource impacts will be presented in a Supplemental Environmental Impact Statement (SEIS) currently in preparation.

Of the various alternatives being considered in the SEIS, the current Preferred Alternative is Alternative 9 – Superstructure Replacement (Girder Option), which involves complete removal and replacement of the GSB superstructure. Under Alternative 9, the GSB superstructure would be replaced with a steel girder system with a

JOHN O. MORTON BUILDING • 7 HAZEN DRIVE • P.O. BOX 483 • CONCORD, NEW HAMPSHIRE 03302-0483
TELEPHONE: 603-271-3734 • FAX: 603-271-3914 • TDD: RELAY NH 1-800-735-2964 • INTERNET: WWW.NHDOT.COM

structural steel frame extending from the bottom of the girders to the top of the existing GSB piers. Alternative 9 would reuse the existing piers without requiring significant modifications. This approach eliminates permanent impacts to intertidal and subtidal habitat. Plans of the Preferred Alternative are attached.

Construction of the Preferred Alternative is expected to take approximately 18 months. Construction would begin with a one- to two-week period of installing a temporary causeways and trestles west of the existing GSB for staging and equipment access during the bridge replacement work. The bridge would be removed and replaced using these causeways, the trestles, and water craft. Upon completion of the bridge replacement, the causeways and trestles would be removed, and the area restored to pre-construction conditions, which is anticipated to take approximately one to two weeks. The causeways and trestles are considered a temporary impact within the Little Bay and are the only in-water work that is proposed. We've attached a plan that depicts the construction phase impacts, but note that these plans are for planning purposes only and may be modified during construction if required to allow for safe and efficient contractor access.

NHF&G Species Resources Summary

A NH Natural Heritage Bureau (NHNHB) DataCheck report was generated for the project on July 18, 2019 (NHB19-2211). This report identified the presence of Atlantic sturgeon (*Acipense oxyrinchus*), shortnose sturgeon (*Acipenser brevirostrum*), and cliff swallow (*Petrochelidon pyrrhonota*) within the project area. Provided below is a brief discussion regarding these species.

Atlantic and Shortnose Sturgeon

The NHNHB report identified Atlantic sturgeon and shortnose sturgeon within the vicinity of the project, which is consistent with the mapping of designated critical habitat for these species according to the USFWS ESA Section 7 Mapper.[1] Based on the work that is anticipated to be completed to rehabilitate or replace the bridge, NOAA has concurred that the project "*may affect but is not likely to adversely affect*" Atlantic/shortnose sturgeon critical habitat per correspondence with William Barnhill, NOAA, June 18, 2019.

Additionally, NHDOT has submitted a letter to Cheri Patterson with the NHF&G Marine Program regarding the proposed project and its potential impacts on sturgeon and other marine species. NHDOT is currently awaiting a response from the NHF&G Marine Program.

Cliff Swallow

The NHNHB report indicates that 18 cliff swallow nests were observed on the General Sullivan Bridge as of 2009. NHDOT requests your review of the potential effects of the project on cliff swallows that may still nest on the GSB and adjacent Little Bay bridge. We have attached additional information regarding the project for your review. We would be interested to receive your recommendations on project considerations or mitigation to limit the potential impact to this species.

Please let me know if you have any specific concerns or recommendations for inclusion in the SEIS. We look forward to coordinating with you on this project.

Sincerely,

Marc Laurin
Senior Environmental Manager
Room 109 – Tel (603) 271-4044
E-mail – marc.laurin@dot.nh.gov

[1] NOAA Fisheries. 2018. *Section 7 Mapper*. Greater Atlantic Region. Accessed January 11, 2019 <https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e03b250ac11f9914a27 >.

Attachments:
NHNHB DataCheck Report (NHB19-2211)
Figure 1 – USGS Location Map
Figure 2 – Conceptual Design Rendering
Existing Condition Plan
Alternative 9 Elevation and Typical Sections
Alternative 9 Construction Impact Plan

cc: Keith Cota, NHDOT
Jamie Sikora, FHWA
P. Walker, VHB
G. Goodrich, VHB

s:\environment\projects\newington\11238\11238s\comm\nhf&g\2019-07-19_tuttle_nhf&g_nhdot.docx

Matras, Lindsay

From: Henderson, Carol <Carol.Henderson@wildlife.nh.gov>
Sent: Wednesday, November 6, 2019 10:12 AM
To: Laurin, Marc; Pamela Hunt
Cc: Cota, Keith; Johnson, Steve; Corcoran, John; Landry, Robert; Nyhan, Kevin; Crickard, Ronald; Boodey, Tim; Beato, Hannah; Walker, Peter; Matras, Lindsay
Subject: RE: [External] RE: Cliff Swallow: General Sullivan Bridge (NHDOT 11238S)

Hi Marc:

It is unfortunate that DOT is not considering the use of these clay nests for this bridge. I understand the maintenance concerns for an active vehicle bridge but sine this bridge is scheduled to be for pedestrian usage only, will it still need the level of maintenance of cleaning and structural maintenance that is required for an active non-motorized bridge? I would think it would be minimal maintenance for a historic pedestrian bridge but I will acquiesce to DOT for guidance. Thank you, Carol

From: Laurin, Marc <Marc.Laurin@dot.nh.gov>
Sent: Tuesday, November 5, 2019 1:24 PM
To: Pamela Hunt <phunt@nhaudubon.org>
Cc: Henderson, Carol <Carol.Henderson@wildlife.nh.gov>; Cota, Keith <Keith.Cota@dot.nh.gov>; Johnson, Steve <Steve.Johnson@dot.nh.gov>; Corcoran, John <John.Corcoran@dot.nh.gov>; Landry, Robert <Robert.Landry@dot.nh.gov>; Nyhan, Kevin <Kevin.Nyhan@dot.nh.gov>; Crickard, Ronald <Ronald.Crickard@dot.nh.gov>; Boodey, Tim <Tim.Boodey@dot.nh.gov>; Beato, Hannah <hbeato@VHB.com>; Walker, Peter <PWalker@VHB.com>; Matras, Lindsay <lmatras@vhb.com>
Subject: RE: [External] RE: Cliff Swallow: General Sullivan Bridge (NHDOT 11238S)

Pam,

Regarding the proposal for incorporating Cliff Swallows attractants on the proposed pedestrian bridge over the Little Bay in Newington and Dover.

I have been in touch with the Administrator of the Department's Bureau of Bridge Maintenance and of the Bureau of Turnpikes, who would be responsible for the future maintenance of the bridge. They have expressed concerns with this proposal as the Department discourages nesting of any kind on a bridge since it inevitably leads to accumulations of guano, which then needs to be cleaned off the structure, and creates issues with maintenance or construction occurring during nesting season. In addition, nesting season occurs during the timeframe when the Department would be washing the bridges and bridge seats. Even if the nests are not directly located where the washing will occur, the work is usually considered disruptive to the nesting.

As such, the Department will not entertain this proposal at this time.

If you would like to further discuss this proposal, please contact me or Keith Cota, the Project Manager (keith.cota@dot.nh.gov or 217-1615).

Marc Laurin
Senior Environmental Manager
Bureau of Environment
NH Department of Transportation
(603) 271-4044

From: Matras, Lindsay [mailto:lmatras@vhb.com]
Sent: Monday, November 04, 2019 10:58 AM
To: Pamela Hunt
Cc: Laurin, Marc; Walker, Peter; Beato, Hannah; Henderson, Carol
Subject: FW: [External] RE: Cliff Swallow: General Sullivan Bridge (NHDOT 11238S)
Importance: High

Hi Pam,

Thank you for reaching out. I will put you in touch with Marc Laurin at NHDOT (cc'd in this email) to complete collaboration regarding cliff swallows on the General Sullivan Bridge.

Thanks!

Lindsay Matras
Environmental Scientist

P 603.391.3916
www.vhb.com

From: Pamela Hunt <phunt@nhaudubon.org>
Sent: Monday, November 4, 2019 10:36 AM
To: Matras, Lindsay <lmatras@vhb.com>
Cc: Kim Tuttle (Kim.Tuttle@wildlife.nh.gov) <Kim.Tuttle@wildlife.nh.gov>; Henderson, Carol <Carol.Henderson@wildlife.nh.gov>
Subject: [External] RE: Cliff Swallow: General Sullivan Bridge (NHDOT 11238S)
Importance: High

Hey Lindsay,

Not having heard anything in response to my last email on the subject of Cliff Swallows on the General Sullivan Bridge, I figured I'd check in again. While I realize that the current absence of swallows at that location places no requirements on DOT, I still think it'd be a worthy opportunity to try collaborating. I also realize that you and VHB would probably not be directly involved in anything tangential like I proposed, but could you perhaps put me in touch with the appropriate person or persons at NHDOT so we can determine if there's any possibility of moving forward on the idea of installing artificial nests?

Thank you very much,
Pam

Pamela D. Hunt, Ph.D.
Avian Conservation Biologist
New Hampshire Audubon
84 Silk Farm Road
Concord, NH 03301

(603) 224-9909 x328
phunt@nhaudubon.org

Please consider making a donation to support the work of the Conservation Department

"We have a hunger of the mind. We ask for all the knowledge around us and the more we get, the more we desire."
– Maria Mitchell, 19th Century American Astronomer

From: Pamela Hunt
Sent: Tuesday, October 08, 2019 3:23 PM
To: 'Matras, Lindsay'
Cc: Kim Tuttle (Kim.Tuttle@wildlife.nh.gov); Henderson, Carol
Subject: RE: Cliff Swallow: General Sullivan Bridge (NHDOT 11238S)

Hi Lindsay,

Sorry we keep missing each other on the phone, so thanks for sending me this email!

Cliff Swallows don't currently nest on the General Sullivan bridge, and seem to have abandoned the site around 2012-13 (there has been some ongoing confusion over the name of the bridge they used to use, and they have used the GS, Little Bay, and Scammel bridges over the years). As such, there is no danger of disturbing the birds during the work on the GSB.

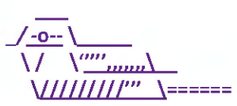
HOWEVER, given the historic use by Cliff Swallows, and some tendency for this species to return to former colony sites after an absence, we were wondering if there was any possibility of incorporating Cliff Swallow attractants into the redesign/replacement. This would involve installation of clay "starter nests" to which the swallows add new mud to form a complete nest. I have a colleague who designed these nests, and who is currently working indirectly with Mass DOT on a somewhat similar project. If you think this is something that DOT might be amendable to, I can get more info from the Massachusetts side of things and we can go from there. In the long run, it wouldn't impact the bridge's design or construction significantly, and just might help out a state threatened species.

Happy to talk more about this as needed.

Pam

Pamela D. Hunt, Ph.D.
Avian Conservation Biologist
New Hampshire Audubon
84 Silk Farm Road
Concord, NH 03301

(603) 224-9909 x328
phunt@nhaudubon.org



Please consider making a donation to support the work of the Conservation Department

"We have a hunger of the mind. We ask for all the knowledge around us and the more we get, the more we desire."
– Maria Mitchell, 19th Century American Astronomer

From: Matras, Lindsay [mailto:lmatras@vhb.com]
Sent: Tuesday, October 08, 2019 11:18 AM
To: Pamela Hunt
Cc: mlaurin@dot.state.nh.us; Henderson, Carol; Walker, Peter; Beato, Hannah
Subject: Cliff Swallow: General Sullivan Bridge (NHDOT 11238S)

Hello Pam,

NHDOT is planning to rehabilitate or replace the General Sullivan Bridge locate over the Little Bay in Newington and Dover. The NH Natural Heritage Bureau DataCheck report generated for this project identified cliff swallow (*Petrochelidon pyrrhonota*) within the project area.

It is my understanding that Carol Henderson from the NH Fish & Game Department reached out to you recently about this project, and you provided the information below regarding nest locations on the General Sullivan Bridge:

2009: sw "face" of bridge, mostly on nw end or in middle (~20 nests)
2010: most nests appeared to be on the NW end
2011: maybe down to <10 nests, more concentrated in the center of the span
2012: apparently 7 nests, but location not specified

We are currently preparing a Supplemental Environmental Impact Statement (EIS) for the project's Preferred Alternative (Superstructure Replacement – Girder). Since cliff swallow nests would be disturbed during the proposed superstructure replacement, if present, I was wondering if you could provide some recommendations for determining the current locations of cliff swallow nests on the General Sullivan Bridge and what your recommendations would be when these nests are disturbed (i.e., placement of clay nests). Attached is a conceptual design rendering and design plans of the Preferred Alternative for reference.

Please let me know if you have any questions or need any additional information. We appreciate any input you are able to provide.

Lindsay Matras, WSA
Environmental Scientist

2 Bedford Farms Drive
Suite 200
Bedford, NH 03110-6532
P 603.391.3916 | **F** 603.518.7495
lmatras@vhb.com

Engineers | Scientists | Planners | Designers
www.vhb.com

VHB Viewpoints. Explore trends with our thought leaders.
Read | Watch | Connect

Appendix H – US Fish & Wildlife (USFWS) Coordination

United States Department of the Interior

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

In Reply Refer To: January 19, 2021
Consultation Code: 05E1NE00-2019-SLI-2285
Event Code: 05E1NE00-2021-E-03250
Project Name: Newington-Dover General Sullivan Bridge

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

To Whom It May Concern:

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

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

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

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

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

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

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

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 05E1NE00-2019-SLI-2285
Event Code: 05E1NE00-2021-E-03250
Project Name: Newington-Dover General Sullivan Bridge
Project Type: TRANSPORTATION
Project Description: NHDOT and FHWA proposes to rehabilitate or replace the General Sullivan Bridge located over Little Bay in Newington and Dover, NH.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.11776020677442,-70.8259373684309,14z

Counties: Rockingham and Strafford counties, New Hampshire

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
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: July 12, 2019
Consultation Code: 05E1NE00-2019-SLI-2285
Event Code: 05E1NE00-2019-E-05854
Project Name: Newington-Dover General Sullivan Bridge

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.

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

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

Project Summary

Consultation Code: 05E1NE00-2019-SLI-2285

Event Code: 05E1NE00-2019-E-05854

Project Name: Newington-Dover General Sullivan Bridge

Project Type: TRANSPORTATION

Project Description: NHDOT and FHWA proposes to rehabilitate or replace the General Sullivan Bridge located over Little Bay in Newington and Dover, NH.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.11776020677442N70.8259373684309W

Counties: Rockingham, NH | Strafford, NH

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

Mammals

NAME	STATUS
Northern Long-eared Bat 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 UNDER THIS OFFICE'S JURISDICTION.

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

IPaC Record Locator: 129-17510927 August 20, 2019

Subject: Consistency letter for the 'Newington-Dover General Sullivan Bridge' project (TAILS 05E1NE00-2019-R-2285) under the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated to verify that the Newington-Dover General Sullivan Bridge (Proposed Action) may rely on the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures, and may affect, and is likely to adversely affect the endangered Indiana bat (Myotis sodalis) and/or the threatened Northern long-eared bat (Myotis septentrionalis). Consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) is required.

This "may affect - likely to adversely affect" determination becomes effective when the lead Federal action agency or designated non-federal representative uses it to ask the Service to rely on the PBO to satisfy the agency's consultation requirements for this project. Please provide this consistency letter to the lead Federal action agency or its designated non-federal representative with a request for its review, and as the agency deems appropriate, transmittal to this Service Office for verification that the project is consistent with the PBO.

This Service Office will respond by letter to the requesting Federal action agency or designated non-federal representative within 30 calendar days to:

- verify that the Proposed Action is consistent with the scope of actions covered under the PBO;
- verify that all applicable avoidance, minimization, and compensation measures are included in the action proposal;
- identify any action-specific monitoring and reporting requirements, consistent with the monitoring and reporting requirements of the PBO, and
- identify anticipated incidental take.

ESA Section 7 compliance for this Proposed Action is not complete until the Federal action agency or its designated non-federal representative receives a verification letter from the Service.

For Proposed Actions that include bridge/structure removal, replacement, and/or maintenance activities: If your initial bridge/structure assessments failed to detect Indiana bats, but you later detect bats during construction, please submit the Post Assessment Discovery of Bats at Bridge/Structure Form (User Guide Appendix E) to this Service Office. In these instances, potential incidental take of Indiana bats may be exempted provided that the take is reported to the Service.

If the Proposed Action may affect any other federally-listed or proposed species and/or designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please advise the lead Federal action agency for the Proposed Action accordingly.

Project Description

The following project name and description was collected in IPaC as part of the endangered species review process.

Name

Newington-Dover General Sullivan Bridge

Description

NHDOT and FHWA proposes to rehabilitate or replace the General Sullivan Bridge located over Little Bay in Newington and Dover, NH.

Determination Key Result

Based on your answers provided, this project is likely to adversely affect the endangered Indiana bat and/or the threatened Northern long-eared bat. Therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.) is required. However, also based on your answers provided, this project may rely on the conclusion and Incidental Take Statement provided in the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

Qualification Interview

1. Is the project within the range of the Indiana bat[1]?

   [1] See Indiana bat species profile

   Automatically answered
   No

2. Is the project within the range of the Northern long-eared bat[1]?

   [1] See Northern long-eared bat species profile

   Automatically answered
   Yes

3. Which Federal Agency is the lead for the action?

   A) Federal Highway Administration (FHWA)

4. Are all project activities limited to non-construction[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

   [1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

   No

5. Does the project include any activities that are greater than 300 feet from existing road/rail surfaces[1]?

   [1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

   No

6. Does the project include any activities within 0.5 miles of a known Indiana bat and/or NLEB hibernaculum[1]?

   [1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

   No

7. Is the project located within a karst area?

   No

8. Is there any suitable[1] summer habitat for Indiana Bat or NLEB within the project action area[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

   [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

   [2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the national consultation FAQs.

   Yes

9. Will the project remove any suitable summer habitat[1] and/or remove/trim any existing trees within suitable summer habitat?

   [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

   Yes

10. Will the project clear more than 20 acres of suitable habitat per 5-mile section of road/rail?

    No

11. Have presence/probable absence (P/A) summer surveys[1][2] been conducted[3][4] within the suitable habitat located within your project action area?

    [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

    [2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

    [3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

    [4] Negative presence/probable absence survey results obtained using the summer survey guidance are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

    No

12. Does the project include activities within documented NLEB habitat[1][2]?

    [1] Documented roosting or foraging habitat - for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry biangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

    [2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

    No

13. Will the removal or trimming of habitat or trees occur within suitable but undocumented NLEB roosting/foraging habitat or travel corridors?

    Yes

14. What time of year will the removal or trimming of habitat or trees within suitable but undocumented NLEB roosting/foraging habitat or travel corridors occur?

    C) During both the active and inactive seasons

15. Will any tree trimming or removal occur within 100 feet of existing road/rail surfaces?

    Yes

16. Will more than 10 trees be removed between 0-100 feet of the road/rail surface during the active season[1]?

    [1] Areas containing more than 10 trees will be assessed by the local Service Field Office on a case-by-case basis with the project proponent.

    No

17. Has a visual emergence survey[1] been conducted?

    [1] Refer to the summer survey guidance

    No

18. Do you plan on conducting a visual emergence survey prior to removing trees[1]?

    [1] If bats are detected during a visual emergence survey conducted in suitable but undocumented Indiana and/or NLEB habitat, this consultation will no longer be valid and a new consultation will be conducted through IPaC with the habitat now considered as documented Indiana and/or NLEB habitat.

    No

19. Will the tree removal alter any documented Indiana bat or NLEB roosts and/or alter any surrounding summer habitat within 0.25 mile of a documented roost?

    No

20. Will any tree trimming or removal occur between 100-300 feet of existing road/rail surfaces?

    Yes

21. Are all trees that are being removed clearly demarcated?

    Yes

22. Will the removal of habitat or the removal/trimming of trees involve the use of temporary lighting?

    No

23. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing permanent lighting?

    Yes

24. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

    No

25. Does the project include slash pile burning?

    No

26. Does the project include any bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

    Yes

27. Is there any suitable habitat[1] for Indiana bat or NLEB within 1,000 feet of the bridge? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

    [1] See the Service's current summer survey guidance for our current definitions of suitable habitat.

    Yes

28. Has a bridge assessment[1] been conducted within the last 24 months[2] to determine if the bridge is being used by bats?

    [1] See User Guide Appendix D for bridge/structure assessment guidance

    [2] Assessments must be completed no more than 2 years prior to conducting any work below the deck surface on all bridges that meet the physical characteristics described in the Programmatic Consultation, regardless of whether assessments have been conducted in the past. Due to the transitory nature of bat use, a negative result in one year does not guarantee that bats will not use that bridge/structure in subsequent years.

    Yes

SUBMITTED DOCUMENTS

- GSB - Bat Assessment 2018 2.pdf https://ecos.fws.gov/ipac/project/VTQSJMDQFJCKNB3XACPD4E33HA/projectDocuments/17505697

29. Did the bridge assessment detect any signs of Indiana bats and/or NLEBs roosting in/under the bridge (bats, guano, etc.)[1]?

    [1] If bridge assessment detects signs of any species of bats, coordination with the local FWS office is needed to identify potential threatened or endangered bat species. Additional studies may be undertaken to try to identify which bat species may be utilizing the bridge prior to allowing any work to proceed.

    Note: There is a small chance bridge assessments for bat occupancy do not detect bats. Should a small number of bats be observed roosting on a bridge just prior to or during construction, such that take is likely to occur or does occur in the form of harassment, injury or death, the PBO requires the action agency to report the take. Report all unanticipated take within 2 working days of the incident to the USFWS. Construction activities may continue without delay provided the take is reported to the USFWS and is limited to 5 bats per project.

    No

30. Will the bridge removal, replacement, and/or maintenance activities include installing new or replacing existing permanent lighting?

    Yes

31. Does the project include the removal, replacement, and/or maintenance of any structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

    No

32. Will the project involve the use of temporary lighting during the active season?

    Yes

33. Is there any suitable habitat within 1,000 feet of the location(s) where temporary lighting will be used?

    Yes

34. Will the project install any new or replace any existing permanent lighting in addition to the lighting already indicated for habitat removal (including the removal or trimming of trees) or bridge/structure removal, replacement or maintenance activities?

    Yes

35. Is there any suitable habitat within 1,000 feet of the location(s) where permanent lighting (other than the lighting already indicated for habitat removal (including the removal or trimming of trees) or bridge/structure removal, replacement or maintenance activities) will be installed or replaced?

    Yes

36. Does the project include percussives or other activities (not including tree removal/ trimming or bridge/structure work) that will increase noise levels above existing traffic/ background levels?

    No

37. Are all project activities that are not associated with habitat removal, tree removal/ trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

    Examples: lining roadways, unlighted signage , rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

    Yes

38. Will the project raise the road profile above the tree canopy?

    No

39. Are the project activities that are not associated with habitat removal, tree removal/ trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives consistent with a No Effect determination in this key?

    Automatically answered

    Yes, other project activities are limited to actions that DO NOT cause any additional stressors to the bat species as described in the BA/BO

40. Is the habitat removal portion of this project consistent with a Likely to Adversely Affect determination in this key?

    Automatically answered

    Yes, because tree removal that occurs during the active season occurs within 100 feet from the existing road/rail surface, is not in documented NLEB roosting/foraging habitat or travel corridors, and a visual survey has not been conducted

41. Is the habitat removal portion of this project consistent with a Likely to Adversely Affect determination in this key?

    Automatically answered

    Yes, because tree removal that occurs during the active season is 100-300 feet from the existing road/rail surface and is not in documented NLEB roosting/foraging habitat or travel corridors

42. Is the habitat removal portion of this project consistent with a Not Likely to Adversely Affect determination in this key?
Automatically answered
Yes, because the tree removal/trimming that occurs outside of the active season occurs greater than 0.5 miles from the nearest hibernaculum, is less than 100 feet from the existing road/rail surface, includes clear demarcation of the trees that are to be removed, and does not alter documented roosts and/or surrounding summer habitat within 0.25 miles of a documented roost

43. Is the habitat removal portion of this project consistent with a Likely to Adversely Affect determination in this key?
Automatically answered
Yes, because the tree removal that occurs during the winter is 100-300 feet from the existing road/rail surface, and is not in documented roosting/foraging habitat or travel corridors

44. Is the bridge removal, replacement, or maintenance activities portion of this project consistent with a No Effect determination in this key?
Automatically answered
Yes, because the bridge has been assessed using the criteria documented in the BA and no signs of bats were detected

45. General AMM 1
Will the project ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?
Yes

46. Tree Removal AMM 1
Can all phases/aspects of the project (e.g., temporary work areas, alignments) be modified, to the extent practicable, to avoid tree removal[1] in excess of what is required to implement the project safely?
Note: Tree Removal AMM 1 is a minimization measure, the full implementation of which may not always be practicable. Projects may still be NLAA as long as Tree Removal AMMs 2, 3, and 4 are implemented and LAA as long as Tree Removal AMMs 3, 5, 6, and 7 are implemented.

[1] The word "trees" as used in the AMMs refers to trees that are suitable habitat for each species within their range. See the USFWS' current summer survey guidance for our latest definitions of suitable habitat.

Yes

47. Tree Removal AMM 3
Can tree removal be limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits)?

Yes

48. Lighting AMM 1
Will all temporary lighting used during the removal of suitable habitat and/or the removal/trimming of trees within suitable habitat be directed away from suitable habitat during the active season?

Yes

49. Lighting AMM 2
Does the lead agency use the BUG (Backlight, Uplight, and Glare) system developed by the Illuminating Engineering Society[1][2] to rate the amount of light emitted in unwanted directions?

[1] Refer to Fundamentals of Lighting - BUG Ratings

[2] Refer to The BUG System - A New Way To Control Stray Light

No

50. Lighting AMM 2
Will all permanent lighting used during removal of suitable habitat and/or the removal/trimming of trees within suitable habitat use downward-facing, full cut-off[1] lens lights (with same intensity or less for replacement lighting)?

[1] Refer to Luminaire classification for controlling stray light

Yes

51. Lighting AMM 2
Will all permanent lighting used during removal of suitable habitat and/or the removal/trimming of trees within suitable habitat be directed away from all areas with suitable habitat?

Yes

52. Lighting AMM 1
Will all temporary lighting be directed away from suitable habitat during the active season?

Yes

53. Lighting AMM 2
Does the lead agency use the BUG (Backlight, Uplight, and Glare) system developed by the Illuminating Engineering Society[1][2] to rate the amount of light emitted in unwanted directions?

[1] Refer to Fundamentals of Lighting - BUG Ratings

[2] Refer to The BUG System - A New Way To Control Stray Light

No

54. Lighting AMM 2
Will all permanent lighting (other than any lighting already indicated for tree clearing or bridge/structure removal, replacement or maintenance activities) use downward-facing, full cut-off[1] lens lights (with same intensity or less for replacement lighting)?

[1] Refer to Luminaire classification for controlling stray light

Yes

55. Lighting AMM 2
Will the permanent lighting (other than any lighting already indicated for tree clearing or bridge/structure removal, replacement or maintenance activities) be directed away from all areas with suitable habitat?

Yes

56. For Indiana bat, if applicable, compensatory mitigation measures are required to offset adverse effects on the species (see Section 2.10 of the BA). Please select the mechanism in which compensatory mitigation will be implemented:
6. Not Applicable

Project Questionnaire

1. Have you made a No Effect determination for all other species indicated on the FWS IPaC generated species list?
N/A

2. Have you made a May Affect determination for any other species on the FWS IPaC generated species list?
N/A

3. How many acres[1] of trees are proposed for removal between 0-100 feet of the existing road/rail surface?

[1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

0.1

4. How many acres[1] of trees are proposed for removal between 100-300 feet of the existing road/rail surface?

[1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

0.1

5. Please verify:
All tree removal will occur greater than 0.5 mile from any hibernaculum.

Yes, I verify that all tree removal will occur greater than 0.5 miles from any hibernaculum.

6. Is the project location 0-100 feet from the edge of existing road/rail surface?
Yes

7. Is the project location 100-300 feet from the edge of existing road/rail surface?
Yes

8. Please verify:
No documented NLEB roosts or surrounding summer habitat within 150 feet of documented roosts will be impacted between June 1 and July 31.

Yes, I verify that no documented NLEB roosts or surrounding summer habitat within 150 feet of documented roosts will be impacted during this period.

9. Please describe the proposed bridge work:
The project proposes to replace the General Sullivan Bridge superstructure. The superstructure would be replaced with a steel girder system with a structural steel frame extending from the bottom of the girders to the top of the existing bridge piers. The existing piers would be used and would not require significant modifications.

10. Please state the timing of all proposed bridge work:

Fall 2021 - Spring 2023 (estimated)

11. Please enter the date of the bridge assessment:
    9/26/2018, 9/27/2018

12. You have indicated that the following Avoidance and Minimization Measures (AMMs) will be implemented as part of the proposed project:
    - General AMM 1
    - Lighting AMM 1
    - Lighting AMM 2
    - Tree Removal AMM 1
    - Tree Removal AMM 3

Avoidance And Minimization Measures (AMMs)

This determination key result includes the committment to implement the following Avoidance and Minimization Measures (AMMs):

GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

LIGHTING AMM 1

Direct temporary lighting away from suitable habitat during the active season.

LIGHTING AMM 2

When installing new or replacing existing permanent lights, use downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting); or for those transportation agencies using the BUG system developed by the Illuminating Engineering Society, be as close to 0 for all three ratings with a priority of "uplight" of 0 and "backlight" as low as practicable.

TREE REMOVAL AMM 1

Modify all phases/aspects of the project (e.g., temporary work areas, alignments) to avoid tree removal.

TREE REMOVAL AMM 3

Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits).

Determination Key Description: FHWA, FRA, FTA Programmatic Consultation For Transportation Projects Affecting NLEB Or Indiana Bat

This key was last updated in IPaC on March 16, 2018. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered Indiana bat (Myotis sodalis) and the threatened Northern long-eared bat (NLEB) (Myotis septentrionalis).

This decision key should only be used to verify project applicability with the Service's February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects. The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

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

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 11238S, Newington and Dover, NH
TAILS: 05E1NE00-2019-F-2285

Dear Mr. Laurin:

The U.S. Fish and Wildlife Service (Service) is responding to your request, dated August 20, 2019, to verify that the New Hampshire Department of Transportation (NHDOT) Project 11238S (Project), the proposed rehabilitation or replacement of the General Sullivan Bridge in Newington and Dover, 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 23, 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 rehabilitation or replacement of the General Sullivan Bridge over Little Bay for continued bike and pedestrian access. Approximately 0.2 acre of tree clearing will occur which may be implemented during the bat active season.

NHDOT also determined the Project may rely on the programmatic BO to comply with section 7(a)(2) of the ESA, because the Project meets the conditions outlined in the BO and all tree clearing related to the proposed work will occur farther than 0.25 mile from documented roosts and farther than 0.5 mile from any known hibernacula. The Service reviewed the LAA Consistency Letter and concurs with NHDOT's determination. This concurrence concludes your ESA section 7 responsibilities relative to this species for this Project, subject to the Reinitiation Notice below.

Conclusion

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

Incidental Take of the Northern Long-eared Bat

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

Reporting Dead or Injured Bats

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

Reinitiation Notice

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

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

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 I – Section 106 Materials

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES
State of New Hampshire, Department of Natural and Cultural Resources 603-271-3483
19 Pillsbury Street, Concord, NH 03301-3570 603-271-3558
TDD Access Relay NH 1-800-735-2964 FAX 603-271-3433
www.nh.gov/nhdhr preservation@dncr.nh.gov

Dec. 13, 2018

Jillian Edelmann
Bureau of Environment
NH Department of Transportation
Hazen Drive
Concord NH 03302-0483

Re: DOT/FHWA NHS-IS-0271(037) 11238S RPR 7241

Dear Jill:

Thank you for submitting a Project Area Form for the project listed above. As requested, the Division of Historical Resources' Determination of Eligibility Committee has reviewed the *Project Area Form* prepared by VHB; based on the information available, the DHR's comments are:

TOWN/CITY	PROJECT AREA	DETERMINATION
Spaulding Turnpike [GSB] Project Area Form		Not Evaluated for Eligibility

This Project Area Form is an update to one completed for the Spaulding Turnpike Project in 2005. In 2005 the project included rehabilitation of the 1934 General Sullivan Bridge. This project area form update explains that the Section 106 process has been re-opened to address current conditions of the bridge and accommodate current alternatives analysis. The form is well done, laying out a clear methodology related to current APE, changes in the area since 2005, and cultural resources as of 2018. The form provides updates to the historical background in the area, noting that later periods reinforced trends already in place. The form provides a concise architectural description section, using example properties to support overall descriptions of property types. The form also lays out the survey work completed prior to and around 2005 in support of earlier project consultation, as well as which properties currently warrant survey based on integrity. The form also provides supporting information as to why previously surveyed properties determined Not Eligible in 2005 don't warrant updates per the 10-year survey policy – loss of integrity is still relevant. Recommendations are supported by photographs and narrative, which are easily cross-referenced between the text, tables, graphics, and photos.

Topics of note:

- An update to the Individual Inventory Form for the General Sullivan Bridge was completed in August 2018.
- Concur with DOE committee (2005) and current PAF recommendation for individual inventory for the Axel Johnson Conference Center.
- Concur with recommendation for individual inventory for 137 Beane Lane.

- Concur with recommendation for continuation sheet update to the 2005 Hilton Park inventory noting the current loss of integrity to the park pavilion.
- Note change of addresses for NWN0162 and NWN0163 due to road shifts resulting from the constructed phases of the project.

Please contact me at 271-6438 or Laura.Black@DNCR.NH.Gov if you have questions.

Sincerely,

Laura S. Black
Preservation Compliance Specialist and Easement Program Coordinator

Enclosure

cc: Elizabeth Muzzey / State Historic Preservation Officer
Jamison Sikora, FHWA
Nicole Benjamin-Ma, VHB

New Hampshire Division of Historical Resources

Determination of Eligibility (DOE) **Inventory #: DOV0158**

DOE Review Date: 1/27/2006 ***Date Received:*** 9/26/2018 ☑ Final DOE Approved

MPR

Property Name: **General Sullivan Bridge**

Area: Newington-Dover Project Area (ND)

Address: Spaulding Turnpike over Little Bay

Town: Dover **County:** Strafford

Reviewed For: R&C **DOE Program(s):** Federal Highway, NH Dept. of Transportatio

DETERMINATION OF ELIGIBILITY

National Register eligible, individu **Integrity:** Yes **Level:** National

State Register eligible, individually

Criteria: ***A:*** Yes ***B:*** ***C:*** Yes ***D:*** ***E:***

STATEMENT OF SIGNIFICANCE:

10/10/2018: Inventory form was updated to include a discussion on the bridge's integrity since it was first evaluated in 2006 as well as a comparative analysis of remaining bridges of similar design and engineering firm. The bridge remains eligibile for listing in the National Register of Historic Places on a national level for its history and engineering significance.
The DHR disagrees with the proposed boundary which should include the entire resource (counting the modern elements as not historic).

AREAS OF SIGNIFICANCE(S)
Engineering
Transportation

Period of Significance: 1934 to 1968
☐ Period not applicable

Boundary: footprint of bridge, abutments and approaches

Follow Up:
Notify appropriate parties.

Comments:

52391.01
GSB

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES
State of New Hampshire, Department of Cultural Resources 603-271-3483
19 Pillsbury Street, Concord, NH 03301-3570 603-271-3558
TDD Access: Relay NH 1-800-735-2964 FAX 603-271-3433
www.nh.gov/nhdhr preservation@dcr.nh.gov

May 14,, 2019

Jillian Edelmann
Bureau of Environment
NH Department of Transportation
Hazen Drive
Concord NH 03302-0483

Re: DOT 11238S, RPR 7241

Dear Jill:

Thank you for requesting a determination of National Register eligibility for the property listed below. As requested, the Division of Historical Resources' Determination of Eligibility Committee has reviewed the *DHR individual Inventory Form* prepared by Vanesse Hangen Brustlin; based on the information available, the DOE Committee's evaluation of National Register eligibility is:

TOWN/CITY	PROPERTY	DETERMINATION
Dover	Hilton Park Roadside Safety Rest Area, Spaulding Turnpike/Hilton Park, DOV0150	Not Eligible

A copy of the DHR evaluation form is attached for your use. The inventory data and the evaluation will also be added to the statewide survey database for historic properties in New Hampshire.

Please contact Megan Rupnik at 271-6435 or Megan.Rupnik@DNCR.NH.gov if you have questions.

Sincerely,

Chris

Christina St.Louis
Program Specialist

Enclosure

cc: Elizabeth Muzzey / State Historic Preservation Officer
Vanesse Hangen Brustlin, Inc.

New Hampshire Division of Historical Resources
Determination of Eligibility (DOE)

Inventory #: DOV0150

DOE Review Date: 5/8/2019 **Date Received:** 5/1/2019 **Final DOE Approved:** Yes

MR

Property Name: Hilton Park Roadside Safety Rest Area
Area: Newington-Dover Project Area (ND)
Address: Spaulding Turnpike / Hilton Park
Town: Dover
County: Strafford

RECEIVED
MAY 16 2019
VHB

Reviewed For: R&C

DOE Program(s):
Federal Highway, NH Dept. of Transportation

Determination of Eligibility:

Not eligible for NR			Integrity:		Level:
Criteria:	A:	B:	C:	D:	E:

Areas of Significance(s):

Period of Significance:

Boundary:
5-8-19 Survey boundary for pavilion was footprint and immediate environs.

Statement of Significance:
5-8-19: At the time the inventory form for the Hilton Park area was completed in 2005, an individual form for the pavilion was recommended if/when needed to determine individual eligibility. This update/addendum to the park form was completed to evaluate the pavilion itself, which was determined not eligible for listing in the NR individually due to subsequent loss of integrity.

Comments:

Follow Up:
Notify appropriate parties

NEW HAMPSHIRE DIVISION OF HISTORICAL RESOURCES
State of New Hampshire, Department of Cultural Resources
19 Pillsbury Street, Concord, NH 03301-3570
TDD Access: Relay NH 1-800-735-2964
www.nh.gov/nhdhr
603-271-3483
603-271-3558
FAX 603-271-3433
preservation@dcr.nh.gov

July 1, 2019

Jillian Edelmann
Bureau of Environment
NH Department of Transportation
Hazen Drive
Concord NH 03302-0483

Re: DOT 11238S, RPR 7241

Dear Jill:

Thank you for requesting a determination of National Register eligibility for the property listed below. As requested, the Division of Historical Resources' Determination of Eligibility Committee has reviewed the *DHR individual Inventory Form* prepared by Vanesse Hangen Brustlin; based on the information available, the DOE Committee's evaluation of National Register eligibility is:

TOWN/CITY	PROPERTY	DETERMINATION
Newington	Margeson Cottage, 137 Beane Lane, NWN0246	Not Eligible

A copy of the DHR evaluation form is attached for your use. The inventory data and the evaluation will also be added to the statewide survey database for historic properties in New Hampshire.

Please contact Megan Rupnik at 271-6435 or Megan.Rupnik@DNCR.NH.gov if you have questions.

Sincerely,

Marika Labash
R&C Program Specialist

Enclosure

cc: Elizabeth Muzzey / State Historic Preservation Officer
Vanesse Hangen Brustlin, Inc.

New Hampshire Division of Historical Resources
Determination of Eligibility (DOE)

Inventory #: NWN0246

DOE Review Date: 6/26/2019 **Date Received:** 6/20/2019 **Final DOE Approved:** Yes MR

Property Name: Margeson Cottage
Area:
Address: 137 Beane Lane
Town: Newington
County: Rockingham

Reviewed For: R&C

DOE Program(s):
DOT Department of Transportation

Determination of Eligibility:

Not eligible for NR			**Integrity:** Partial		**Level:**
Criteria:	A: No	B: No	C: No	D:	E:

Areas of Significance(s):

Period of Significance:

Boundary:
parcel map 6, parcels 06/08

Statement of Significance:
The Margeson Cottage was originally constructed c 1939 as a summer residence. It was added to between c. 1976-1978 by the prominent Colonial Revival architectural firm of Royal Barry Wills Associates. These additions are less than fifty years old and have altered the original integrity of the house. The house is not eligible for listing in the National Register of Historic Places due to a loss of integrity. However, once the additions become 50 years or older, reassessment may be warranted.

Comments:

Follow Up:
Notify appropriate parties

NH Division of Historical Resources
Determination of Eligibility (DOE)

Date received: 9-17-19 Inventory #: NWN-BLPT

Date of group review: 9-25-19 Area: Bloody Point Area

DHR staff: Laura Black

Property Name: Bloody Point Area Town/City: Newington

Address: Shattuck Way btwn Trickey's Cove and Piscataqua River County: Rockingham

Reviewed for: [X]R&C [ ]PTI [ ]NR [ ]SR [ ]Survey [ ]Other
Agency, if appropriate: FHWA/DOT

Individual Properties

NR	SR	
[X]	[ ]	Not evaluated for individual eligibility
[ ]	[ ]	Eligible
[ ]	[ ]	Eligible, also in district
[ ]	[ ]	Eligible, in district
[ ]	[ ]	Not eligible
[ ]	[ ]	Incomplete information or evaluation

Districts

NR	SR	
[ ]	[ ]	Not evaluated @ district
[ ]	[ ]	Eligible
[X]	[ ]	Not eligible
[ ]	[ ]	Incomplete information or evaluation

Integrity: [ ] ALL ASPECTS [ ]Location [ ]Design [ ]Setting [ ]Materials [ ]Workmanship [ ]Feeling [ ]Association

Criteria: [ ]A. Event [ ]B. Person [ ]C. Architecture/Engineering [ ]D. Archaeology [ ]E. Exception

Level: [ ]Local [ ]State [ ]National
[ ]IF THIS PROPERTY IS REVIEWED IN THE FUTURE, ADDITIONAL DOCUMENTATION IS NEEDED.

STATEMENT OF SIGNIFICANCE:
This area is a local historic district associated with the themes of transportation and economic development in Bloody Point. This form was prepared to assess whether the area meets the criteria to be eligible for listing in the National Register.

The form provides a good historical overview laying out the economic, transportation, residential, etc. trends in the Bloody Point area, linking this local area to broad changes in the Town of Newington and regional connections. The architectural description discusses changes that have happened to the layout, roadways, and landscape of the area as well as noting buildings and above-ground features. The area currently has 7 extant above-ground features on the landscape: 2 commemorative markers (mid-20th c, modern), 2 potential site locations of historic activity/resource (ferry landing and wrecked schooner), 2 transportation features (altered approach to GSB, modern overpass), and the NR-listed Newington Depot.

The consultant recommends that the area is not eligible for listing in the National Register due to loss of integrity. See p.19-20 for detailed discussion of consultant's assessment. The DOE Committee concurred with the determination.

☒ ENTERED INTO DATABASE
ACREAGE: 16.5
PERIOD OF SIGNIFICANCE: N/A
AREA OF SIGNIFICANCE: N/A
BOUNDARY: surveyed area based on local Bloody Point Historic District boundary
SURVEYOR: Nicole Benjamin-Ma and Hannah Beato; VHB

FOLLOW-UP: Notify appropriate parties.

Final DOE approved by: MR

7241

New Hampshire DOT
Department of Transportation

Victoria F. Sheehan
Commissioner

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

William Cass, P.E.
Assistant Commissioner

Newington-Dover
NHS-02719(037)
11238S
RPR 7241

Adverse Effect Memo

Pursuant to meetings and discussions on December 10, 2015; August 11, 2016; December 14, 2017; April 12, July 12, and September 13, 2018; and February 12, June 13, July 11, August 8, and October 10, 2019 and for the purpose of compliance with regulations of the National Historic Preservation Act, as amended, and the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), the NH Division of the Federal Highway Administration (FHWA) and the NH Division of Historical Resources (NHDHR) have coordinated the identification and evaluation of historic and archeological properties with plans to replace the General Sullivan Bridge superstructure in Dover and Newington, New Hampshire.

FHWA is the lead federal agency for this consultation. FHWA must approve the replacement of the General Sullivan Bridge superstructure under the National Environmental Policy Act and Section 4(f) of the US Department of Transportation Act. Additionally, FHWA funds may be applied to the construction of the proposed project.

Project Description:

The General Sullivan Bridge was determined eligible for the National Register of Historic Places (National Register) in 1988 when representatives from FHWA, NHDHR and the New Hampshire Department of Transportation (NHDOT) completed a thematic review of continuous steel truss bridges. This finding was later reinforced on an NHDHR Determination of Eligibility sheet dated January 25, 2006, that was completed for the Newington-Dover 11238 project. This project determined that there would be an adverse effect to the General Sullivan Bridge, documented in an adverse effect memo dated February 9, 2006, due to the removal of the north embankment approach and rebuilding the north abutment to allow the reconfiguration of the connector road under the Little Bay Bridges. In the Section 106 Memorandum of Agreement signed for the 11238 project, "the NHDOT agreed to rehabilitate the bridge for utilization by pedestrians and bicyclist and for its continued use for fishing," therefore resulting in a net benefit for the historic bridge. However, since the MOA was signed in 2008, inspections of the bridge conducted in 2010, 2014, and 2016 resulted in a re-evaluation of the feasibility and costs associated with the rehabilitation of the General Sullivan Bridge. Through the preparation of a Type, Span, and Location (TS&L) Study completed in 2017 and a limited-scope Supplemental EIS evaluation that is in process, NHDOT evaluated several potential alternatives to provide recreational access and connectivity between Dover and Newington over the Little Bay (Newington-Dover 11238S).

JOHN O. MORTON BUILDING • 7 HAZEN DRIVE • P.O. BOX 483 • CONCORD, NEW HAMPSHIRE 03302-0483
TELEPHONE: 603-271-3734 • FAX: 603-271-3914 • TDD RELAY NH 1-800-735-2964 • INTERNET: WWW.NHDOT.COM

The Preferred Alternative for the 11238S Contract has been determined to be Alternative 9: Superstructure Replacement - Girder Option, which involves the complete removal and replacement of the General Sullivan Bridge superstructure. Under Alternative 9, the superstructure would be replaced with a steel girder superstructure with a structural steel frame extending from the bottom of the girders to the top of the existing piers. This alternative follows the existing General Sullivan Bridge alignment, thereby allowing the reuse of the existing repointed stone masonry piers and approaches without requiring significant modifications.

The Preferred Alternative would have a 16-foot wide multiuse path, would comply with the ADA for accessibility, and would have fencing along both sides of the new bridge deck. The new path would be 22.5 feet from the Little Bay Bridge, approximately 7.4 feet further from the Little Bay Bridge than the existing General Sullivan Bridge (at 15.1 feet).

Identification:

Above-Ground Resources
In December 2015, a Request for Project Review (RPR) was submitted to NHDHR for the Newington-Dover 11238S project. A Project Area Form was completed in November 2018 for the approximately 275-acre Area of Potential Effects (APE).[1] The APE accounted for potential impacts across a range of alternatives including possible modifications to the approaches to the General Sullivan Bridge crossing as well as the structure itself, and project components such as a temporary detour route for bicycles and pedestrians and construction staging. The visibility and setting of the General Sullivan Bridge factored into the APE for the project as well. The result is an irregularly-shaped APE, beginning approximately 600 feet north of the bridge crossing on Dover Point, and extending up to 1,500 feet west, 700 feet east, and 1,200 feet south of the crossing. Field surveys were conducted intermittently between August and December of 2018.

Multiple alternatives and elements of the proposed project were evaluated and narrowed down by the spring of 2019, when inventory forms were completed for the following properties within the APE:

- Hilton Park (DOV0150) - determined not eligible (inventory form update)
- General Sullivan Bridge (DOV0158) - determined eligible (inventory form update)
- 137 Beane Lane (NWN0246) – determined not eligible
- Bloody Point Area (NWN-BLPT) – determined not eligible

It is noted that the following properties within the APE were inventoried and evaluated during the initial Section 106 consultation process, which concluded in 2008:

- Ida M. Dame House/Linwood Lodge (DOV0090) - determined not eligible
- John E. Pinkham House (DOV0091) - determined not eligible
- 435 Dover Point Road (DOV0092) - determined not eligible
- Hilton Park (DOV0150) - determined not eligible

[1] The November 2018 Project Area Form provides an update to the original form finalized in November 2005 by Kari Laprey of Preservation Company, as part of the Section 106 evaluation and environmental planning process for the proposed Spaulding Turnpike Project in Newington and Dover, NH (Newington-Dover 11238).

- Ira F. Pinkham House/Wentworth Summer Residence (DOV0093) - determined eligible
- General Sullivan Bridge (DOV0158) - determined eligible
- 516 Shattuck Way (NWN0162) - determined not eligible
- 518 Shattuck Way (NWN0163) - determined not eligible
- Newington Railroad Depot and Toll House (NWN0168/ NR #10000187) – eligible
- Axel Johnson Conference Center, Sprague Energy Area Form (NWN-SP) – more information needed
- NWN0159 and NWN0161 – determined not eligible (both are since demolished)

The Newington Railroad Depot and Toll House was listed in the National Register in 2010. In 2012, the Ira F. Pinkham House/Wentworth Summer Residence was recorded in a state-level Historic American Building Survey report, prepared by VHB (NH State No. 626).

Based on a review pursuant to 36 CFR 800.4 and 36 CFR 67.8 of the architectural and/or historical significance of above-ground resources in the APE, three (3) properties are currently identified as listed in the National Register or eligible for listing. Inventory and National Register forms are on file at NHDHR offices in Concord, NH, and online through the NHDHR Enhanced Mapping and Management Information Tool (EMMIT), available at https://emmit.dncr.nh.gov.

Archaeological Sites
The 2007 FEIS identified areas of archaeological sensitivity for the Newington-Dover, 11238 project. Within Dover, the FEIS Phase IA archaeological analysis identified the western side of Hilton Park and additional developed area to the northwest (approximately 12.7 acres) as exhibiting sensitivity (*i.e.*, Area 16). This area includes an approximately 0.5 acre verified site, identified as a brickyard (27-ST-55 and 27-ST-56, *i.e.*, Area 17) within Hilton Park.

Due to the presence of sensitive areas within or adjacent to the project construction access area, a Phase IB Intensive Archaeological Investigation has been completed to further investigate the APE within Hilton Park. The Phase 1B investigation identified archaeological features related to a historic brickyard. Based on this investigation, the project construction access area has been relocated to another site within Hilton Park which is not archaeologically sensitive.

Public Consultation:

Public informational meetings were held on the following dates: October 25, 2016, January 30, 2018, and September 5, 2018. During these meetings, information regarding the Section 106 process and the role of consulting parties was included in the presentation and take-home materials. As of October 8, 2019, the following consulting parties have been identified and approved by the Federal Highway Administration:

Consulting Party	Contact Information
Kitty Henderson, Executive Director Historic Bridge Foundation	P.O. Box 66245 Austin, Texas 78766 kitty@historicbridgefoundation.com
Nathan Holth Historic Bridges.org	2767 Eastway Drive Okemos, MI 48864 nathan@historicbridges.org
Lulu Pickering Newington Historic District Commission	339 Little Bay Road Newington, NH pickering@informagen.com
Anne Rugg, Manager CommuteSMART Seacoast	Cooperative Alliance for Seacoast Transportation 42 Sumner Drive Dover, NH 03820 603-743-5777 x. 109 (office) arugg@commutesmartseacoast.org
Karen Saltus, President Seacoast Area Bicycle Riders	16 Pocahontas Road Kittery Point, ME 03905 kitterykaren@yahoo.com
Christopher G. Parker, Assistant City Manager, Director of Planning and Strategic Initiatives	City of Dover, NH 288 Central Avenue Dover, NH 03820-4169 c.parker@dover.nh.gov
Karen Anderson (Interested Party)	Newington Special Project Coordinator kanderson@townofnewingtonnh.com
Martha Roy (Interested Party)	Newington Town Administrator mroy@townofnewingtonnh.com
Senator David Watters (Interested Party)	Senate Office Legislative Office Building, Room 101-A 33 North State Street Concord, NH 03301 David.Watters@leg.state.nh.us

Determination of Effect:

General Sullivan Bridge (DOV0158)
The General Sullivan Bridge (DOV0158) is significant under Criterion A at the state level for its role in the transportation history of the Seacoast area. The bridge is nationally significant under Criterion C for its design and engineering, as an early and highly-influential example of continuous truss highway design in the United States.

Removal of the bridge superstructure for the project essentially negates its significance under Criteria A and C. As the most visible and recognizable element of the General Sullivan Bridge, the superstructure embodies the engineering advances and aesthetics that define the bridge's contribution to the development of the national highway network. Although recent modifications to the north and south approaches and north abutment make those features non-contributing, they have not drastically affected the integrity and significance of the bridge as a whole. The replacement of the historic bridge will result in the physical loss of an early, nationally-significant example of its engineering design; dwindling of the bridge type in New Hampshire and nationally; and the loss of this major link in the transportation network of the region, whose evolution is intertwined with the history of the region itself.

Newington Railroad Depot and Toll House (NWN0168)
The Newington Railroad Depot and Toll House (NWN0618) is listed in the National Register as significant at the local level, under Criteria A and C. It is a well-preserved example of a relatively rare property type, combining the functions of railroad station, toll house and residence for the stationmaster/bridge tender/toll taker.

Although the Period of Significance of the Depot officially ends in 1934 when the General Sullivan Bridge was constructed, they are both extant evidence of the evolution of a regional transportation network, demonstrating a transitioning period of the network in the 1930s. They have existed on the landscape simultaneously for over seven decades. The bridge crossing is located approximately 1400 feet from the resource's National Register boundary and is set on the far side of multiple bridge structures constructed over the last fifty-plus years. The historic center span peeks up over the modern spans and the proposed girder bridge will not. Although the last remnant of visual connection between the Depot and the General Sullivan Bridge will be removed by this project, for the most part the visual link between the two resources was previously severed by the twentieth-century construction of new bridge structures. The full impact of the current loss related to the transportation network is directly borne by the 1934 bridge.

Ira F. Pinkham House/Wentworth Summer Residence (DOV0093)
The property is eligible for listing in the National Register under Criteria A and C, for its associations with Dover Point's former brick-making industry and the 20th century development of Dover Point as a seasonal destination. A contributing barn was demolished on the property in 2012, as a result of the 11238 project undertaking.

Removal of the General Sullivan Bridge superstructure under the Preferred Alternative will have no effect on this historic property. There will be no physical impacts to this property, and the distance (approximately 2,000 feet) is great enough to preclude a visual relationship to the bridge crossing. The spans of the bridge to be replaced through this undertaking are located around a slight curve in the road, which along with tree obstructions and distance, helps to block views of the project area. The plans for the Preferred Alternative do not require roadwork at or near the bridge crossing approaches.

Applying the criteria of effect at 36 CFR 800.5(a)(2), we have determined that the project will result in an Adverse Effect to the General Sullivan Bridge; No Adverse Effect for the Newington Railroad Depot and Toll House; and No Historic Properties Affected for the Ira F. Pinkham House/Wentworth Summer Residence.

Archaeology
As noted above, the Phase IB Intensive Archaeological Investigation identified an archaeologically sensitive area of Hilton Park. Preliminary construction plans have been developed to avoid the site.

The result of identification and evaluation for the proposed 11238S Contract is a finding of ***Adverse Effect***.

Mitigation Measures:

Appropriate mitigation will be determined in consultation with FHWA, NHDHR, Dover and Newington municipalities and the consulting parties. Mitigation will be recorded in a Memorandum of Agreement.

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.

for Patrick Bauer, Administrator — 12/31/2019 Date
Federal Highway Administrator

Jill Edelmann — 12/27/2019 Date
Cultural Resources Manager

Concurred with by the NH State Historic Preservation Officer:

Nadine Miller, DSHPO for — 1/2/2020 Date
Benjamin Wilson
State Historic Preservation Officer
NH Division of Historical Resources

cc: Jamie Sikora, FHWA; Marika Labash, NHDHR; Keith Cota, NHDOT; Marc Laurin, NHDOT; Peter Walker, VHB

s:\environment\projects\newington\11238\11238s\cultural\effects\11238s_adverse_effect_memo_2019-10-17.docx

NEWINGTON-DOVER 11238S
SECTION 106 – DRAFT MITIGATION STIPULATIONS
MARCH 31, 2021

Potential mitigation for the loss of the GSB was discussed throughout the Section 106 process, and a list of ideas was updated periodically as input was provided. After the Adverse Effects Memo was signed on January 2, 2020, meetings among NHDOT, NHDHR, FHWA, ACOE, and the Consulting/Interested Parties focused exclusively on developing mitigation for adverse effects resulting from the project.

While the language of the stipulations to be included in a Memorandum of Agreement (MOA) will be finalized following the publication of and public input on the draft SEIS, the following mitigation measures relate directly to the adverse effects resulting from the project, and have support among most of the agencies and Consulting/Interested Parties.

A. Marketing the GSB

i. NHDOT shall market the bridge for re-use (either in whole or in part) in compliance with 23 USC Section 144. The structure shall be marketed to the public for relocation with preservation and/or maintenance covenants as agreed to by NHDOT, NHDHR, and FHWA. NHDOT, in consultation with NHDHR and FHWA, shall develop a notice to include, at a minimum, the following:
   a. A description of the structure;
   b. Notice that the bridge is eligible for the National Register for its engineering significance;
   c. Notice that NHDOT will transfer the structure with consideration for the offer that best protects the historic integrity of the bridge; and
   d. Notice of the requirement that the bridge will be transferred subject to covenants regarding its preservation and maintenance for a period of ten (10) years in accordance with the Secretary of the Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*.

ii. The contents of the advertisements, the publications in which they appear, and the frequency of publication shall be approved by NHDHR and FHWA. The advertising period shall last a minimum of 60 days.

iii. If efforts to market the bridge are unsuccessful, final bid and construction documents shall be completed to specify demolition and disposal of the bridge.

iv. If all or part of the bridge is re-used, the PWA plaque shall be reused with the salvaged portion. If the entire bridge is not re-used, up to 200 feet of the bridge railing will be made available to the Town of Newington.

B. Documentation of the GSB

i. NHDOT shall ensure that the bridge is recorded prior to demolition or relocation, in accordance with the Historic American Engineering Record (HAER) standards.

ii. The documentation shall be completed by a 36 CFR 61-qualified Architectural Historian.

iii. The documentation shall follow the guidelines available at https://www.nps.gov/hdp/standards/haerguidelines.htm, using the version noted below or subsequent updates, whichever is more recent at the time of documentation:
   a. Report: NHDOT shall consult with the NPS to determine whether the documentation will follow the "short format" report for engineering structures described in the HAER guidelines (updated 2017), and to determine how previous state documentation of the bridge can be incorporated into the HAER submission.
   b. Photography: to follow the guidelines for the HABS/HAER/HALS programs (updated 2015). Photographs shall consist of archival, large-format black and white 4x5" photographs of the superstructure, substructure, relationship of the bridge to its setting, and engineering/aesthetic details.
   c. Drawings: to follow the HAER drawing guidelines. Original and historic construction plans shall be included as archival copies, or photographed as archival large-format black and white 4x5" photographs.
   d. The final HAER package shall meet the requirements for HAER documentation transmittal (updated January 2020).

iv. A digital draft of the HAER documentation shall be submitted to NHDHR for a review and comment period of 45 days.

v. After addressing NHDHR comments, NHDOT shall, on behalf of FHWA, provide a draft digital copy to NPS for review and comment.

vi. One final copy of the completed HAER documentation shall be submitted to NPS by NHDOT.

vii. One archival copy of the final HAER documentation shall be produced by NHDOT for NHDHR, which will provide an electronic copy. The NHDHR copy of the HAER materials shall include: large format photos and negatives, photo location maps, narrative, and high-quality photocopies of the photos.

viii. One archival hard copy and one electronic copy of the final documentation shall be provided to each of the City of Dover, the Town of Newington, and the Newington Historical Society for storage at an appropriate local repository. An electronic copy shall be provided to the Portsmouth Athenaeum. An electronic copy shall be provided to additional local repositories upon request. NHDOT, in coordination with Consulting/Interested Parties, may proactively identify additional local repositories which may be interested in receiving an electronic copy of the completed HAER documentation.

ix. An electronic copy shall be provided to additional Consulting/ Interested Parties, upon request.

C. NHDOT Bridge Inventory and Bridge Management Plan – Promotion and Accessibility

i. NHDOT shall assist NHDHR in the integration of the finalized bridge inventory into the EMMIT online database and mapping tool, which is available by subscription. NHDOT shall also provide the finalized bridge inventory on its own website, where the inventory will be freely available to the public. To complete this stipulation:
   a. NHDOT or their consultant shall publish the final bridge inventory as an ArcGIS map service that can be accessed directly (live) by the EMMIT application.
   b. NHDOT or their consultant shall be responsible for updating the map service with any changes to be published such that the EMMIT application will automatically consume the latest data.
   c. NHDOT or their consultant, in consultation with NHDHR, shall develop the following enhancements to the EMMIT application to support the integration of the final bridge inventory:
      i. The bridge inventory map service will be integrated into the EMMIT map display Data Query function, and Map Search function. The EMMIT Search Results page and Export Results function will be updated to include bridge inventory information. A View Details page will be developed for the Bridge Inventory which will display the fields for a single bridge like the existing EMMIT View Details pages.

ii. A single page inventory form report will be developed allowing a PDF to be generated from the View Details page for a single bridge.

ii. NHDOT shall ensure that promotion of the finalized bridge management plan includes a broad range of internal and external outreach to engineers, municipalities, state DOT employees, and the public, including the use of virtual platforms. NHDOT shall be responsible for three outreach and educational sessions. Possible venues include:
   a. The American Council of Engineering Companies (ACEC) annual conference;
   b. The New Hampshire Municipalities Association (NHMA) annual conference;
   c. Internal training for NHDOT employees and its consultants;
   d. Regional workshop for engineers, including representatives from other state DOTs regarding their own state's efforts to maintain historic bridges; or
   e. Potential workshop and session partnerships with NHDHR, and/or the New Hampshire Preservation Alliance.

D. Interpretive Program

i. NHDOT and/or its consultant shall develop an interpretive program centered around the historic significance of the GSB:
   a. On-Site Interpretive Panels – NHDOT shall fund and oversee four (4) interpretive panels located at or near the bridge crossing, including locations at, but not limited to: Bloody Point in Newington, Hilton Park in Dover, and/or the bridge.
      - The panels topics will include:
        - Ferries, Trains, and Automobiles Across the Little Bay: How people have crossed the Little Bay over the centuries and why the Little Bay is so challenging to cross.
        - Visualizing Routes through History (for placement on the bridge): Using the unique vantage point of the bridge and its view toward Fox Point, this panel will use maps and other visuals to help readers "see" where previous crossings were located.
        - Bringing Continuous Trusses to the American Highway: Celebrating how the GSB merged aesthetics and economy to create a graceful composition that provided the necessary clearance at the center while saving resources at the approaches.
        - GSB as a Textbook Example: The GSB was one of four FST designs that the firm used to refine their continuous truss design. What characteristics were taken from the Lake Champlain Bridge, and what improvements/ advancements were made for the GSB?
        - A Viewing Station may be used in place of one of the above-mentioned panels, if determined feasible as site planning progresses. The Viewing Station would consist of a clear etched glass panel or other suitable material displaying an image of the GSB superimposed onto the current view, for visitors to understand the location and configuration of the bridge.
      - The content will be developed by an Architectural Historian qualified under 36 CFR 61, and a professional graphic designer shall be engaged to create the design and layout of the interpretive panels and/or elements.
      - NHDHR shall be consulted for review and comment on the preliminary draft content of the panels as well as the draft final mockups of the panel design(s) in their entirety.

      - After submission of the preliminary draft content and draft final panels, NHDHR and the Consulting Parties shall have 30 days to review and comment on the draft final text/layout of the displays.
      - NHDOT and the content developers will determine whether the incorporation of elements salvaged from the GSB as support structures for interpretive elements is feasible (not as public art).
      - NHDOT and the content developers will determine whether the incorporation of a QR code linking to additional online content is feasible.
   b. NHDOT shall develop an installation and related learning exhibit in collaboration with the Woodman Museum about how bridges are used to facilitate multiple modes of transportation, and the importance of these connections to people and the economy on a regional scale.
      - The installation shall include the use of primary sources, including items from the collections of repositories such as Historic New England's archives; the Woodman Institute; the Portsmouth Athenaeum; the archives of NHDOT, and local historical organizations.
      - The installation will focus on visual and textual documents associated with spanning the Little Bay over time, and tourism ephemera from the same era as the construction of the GSB.
      - NHDOT and the Woodman Institute will determine whether a series of short educational videos can be incorporated into the exhibit.

E. Rehabilitation of the Newington Railroad Depot and Toll House and State-Owned Land on Bloody Point

i. NHDOT shall support the future rehabilitation and reuse of the state-owned portion of the Newington Depot property, according to the *Secretary of the Interior's Standards for Rehabilitation*. Specifically, NHDOT shall:
   a. Engage a consultant to prepare a building assessment of the Newington Depot, following the NH Preservation Alliance's format, identifying extant character-defining features and potential future uses that can support the retention of these historic features. An electronic copy of the final assessment shall be provided to NHDOT, NHDHR, and the Town of Newington.
   b. Develop a land master plan and a rehabilitation plan for the Newington Depot property based on the results of the building assessment.
   c. Provide direct financial support for the rehabilitation of the Newington Depot property based on the building assessment, land master plan, and rehabilitation plan up to $150,000. Any costs beyond this amount shall be provided by the Town of Newington or a third party (see Stipulation E.ii below).

ii. NHDOT shall continue discussions about the feasibility of transferring ownership of the property to the Town of Newington. If a mutual agreement cannot be reached, NHDOT shall market the property for sale at fair market value with a historic preservation covenant, to be held by NHDHR, requiring rehabilitation by the future owner that meets the *Standards for Rehabilitation,* to be overseen and approved by NHDHR. Any transfer shall comply with the requirements of the New Hampshire Surplus Land Review Process, including all NH Revised Statutes Annotated, policies and procedures applicable to the disposal of state-owned real estate.

F. Dover Recreational Trail

i. NHDOT shall coordinate with the City of Dover to evaluate the feasibility of constructing a link between the existing Community Trail on the former rail bed of the Newington-Dover Branch line and the GSB. The Community Trail currently ends in the vicinity of Central Avenue (NH 108) and Rutland Street and options may include a short section of shared use path within the Spaulding Turnpike right-of-way to then follow Finch, Spur and Boston Harbor Roads to the bridge. If a plan for the trail can be mutually agreed upon, NHDOT shall determine the nature and extent of support the agency can provide for the undertaking.

ii. The feasibility study shall develop information which highlights the history of the Newington-Dover Branch line and its connection to the history of the transportation corridor including the GSB. The study shall make recommendations on incorporating interpretive signage into the design of the recreational trail.

   a. Interpretive Signage – NHDOT shall fund and oversee the development of up to three interpretive signs/panels to be installed along the trail, conveying the history of the railroad and/or the transportation history of the area.
   b. In recognition that exact siting of the signage cannot be finalized during a feasibility study, NHDOT will provide high-resolution digital copies of the signage to the City of Dover to make available to the public. These files will contain production-ready content for later fabrication.
   c. Consultation on the content of the panels shall be between NHDOT, NHDHR, and the City of Dover.
   d. The content will be developed by an Architectural Historian qualified under 36 CFR 61, and a professional graphic designer shall be engaged to create the design and layout of the interpretive panels and/or elements.
   e. NHDHR and the Dover Heritage Commission shall be consulted for review and comment on the preliminary draft content and layout of the signage as well as the draft final mockups of the signs in their entirety.
   f. After submission of the preliminary draft and draft final signage, NHDHR and the Dover Heritage Commission shall have 30 days to review and comment on the draft final text/layout of the displays.

Appendix J – US Coast Guard Coordination

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Victoria F. Sheehan
Commissioner

William Cass, P.E.
Assistant Commissioner

November 12, 2019

James Rousseau
Bridge Management Specialist
First District Bridge Branch
United States Coast Guard
One South Street
New York, NY 10004-1466

RE: Bridge Project Initiation Request
Spaulding Turnpike / Little Bay Bridge: NHS-027-1(037), 11238S
Newington and Dover, New Hampshire

Dear Mr. Rousseau:

We are providing this letter and the attached information regarding the proposed rehabilitation or replacement of the General Sullivan Bridge (GSB) over the Little Bay in Newington and Dover, New Hampshire ("the Project"). On January 16, 2018, the U.S. Coast Guard accepted the invitation to become a cooperating agency under the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 *et seq.*) process for the Project. Having moved forward with preliminary planning, we are informing you of the selection of the Preferred Alternative for the Project and the ongoing development of a Draft Supplemental Environmental Impact Statement (DSEIS). This package is being submitted to satisfy the requirements of the Bridge Project Initiation Request as outlined in Section 2 of the Bridge Permit Application Guide (Commandant Publication P16591.3D), published by the U.S. Coast Guard in July 2016.

The Preferred Alternative has been determined to be Alternative 9: Superstructure Replacement – Girder Option, which involves the complete removal and replacement of the GSB superstructure, which spans a navigable water of the United States. Once Federal Highway Administration (FHWA) issues a Supplemental Record of Decision (SROD), it is anticipated that the New Hampshire Department of Transportation (NHDOT) will begin the application process for a U.S. Coast Guard permit. To facilitate early coordination, we are requesting that the U.S. Coast Guard provide any comments or concerns within 30 days of receipt of this letter.

A brief description of the proposed project, including information about constraints or flexibility with respect to the project

The GSB was built in 1934 and connects Newington and Dover, New Hampshire, over the Little Bay. Although originally designed to support two lanes of highway traffic over the mouth of the Little Bay, the bridge was closed to vehicular traffic in 1984, when the adjacent Little Bay Bridge (LBB), located east of the GSB, was completed. Now the GSB is closed even to pedestrian and bicycle traffic due to a recent inspection completed in September 2018, which found additional deterioration of a critical floor beam under the bridge deck. Under the terms of

the existing permit for the GSB and expanded LBB issued by the U.S. Coast Guard, the GSB would eventually need to be removed.[1]

The condition of the GSB has been declining over the last few decades. The superstructure has experienced substantial deterioration due to its age and location in a coastal environment. To address this issue, options for the rehabilitation or replacement of the bridge were previously reviewed in a 2007 Final Environmental Impact Statement (FEIS) and a 2008 ROD, which were produced by NHDOT and the FHWA under NEPA. In the 2008 ROD, NHDOT and FHWA committed to maintain pedestrian and bicycle connectivity between Dover and Newington and would accomplish that by rehabilitating the bridge.

Of the various reasonable alternatives being considered in the DSEIS, the Preferred Alternative is Alternative 9: Superstructure Replacement – Girder Option, which involves complete removal and replacement of the GSB superstructure. Under the Preferred Alternative, the superstructure would be replaced with a steel girder superstructure with a structural steel frame extending from the bottom of the girders to the top of the existing piers. This alternative follows the existing GSB alignment, thereby allowing the reuse of the existing stone masonry piers and approaches without requiring significant modifications. This alternative eliminates permanent impacts to intertidal and subtidal habitat due to reuse of the GSB piers, and maintains the current navigational patterns. Plans of the Preferred Alternative are attached.

A brief description of the purpose and need of the bridge project

Since the 2008 ROD, further inspections and studies of the GSB condition were completed. The information gathered by these investigations revealed that deterioration was occurring at a faster rate than initially estimated. Therefore, NHDOT and FHWA are proceeding to further evaluate rehabilitation and consider other reasonable alternatives; these alternatives and their environmental and cultural resource impacts will be presented in the DSEIS.

The revised purpose of the project element (GSB) that is the subject of the DSEIS is to provide recreational access and connectivity between Newington and Dover, across Little Bay, for non-motorized use, while accommodating emergency response and maintenance vehicles from Newington. The need for the Project is to continue providing access across Little Bay for pedestrians and non-motorized vehicles providing alternative community options and recreational opportunities.

Proposed schedule (if known), including timeframe for filing necessary Federal and State applications, construction start date, and planned in-service date, if approved

Construction of the Preferred Alternative is anticipated to take approximately 18 months. Currently, construction is funded for 2021. Construction would begin with a one- to two-month period of installing temporary causeways and trestles from the Dover and Newington shorelines. The GSB superstructure would be removed and replaced using these causeways, trestles, and watercrafts. Removal and replacement of the center spans will likely require temporary closure of the navigational channel; closure would be planned in close coordination with the U.S. Coast

[1] On November 30, 2006, Gary Kassof of the U.S. Coast Guard sent a letter to Marc G. Laurin, Senior Environmental Manager of NHDOT, regarding the Draft Environmental Impact Statement for the Newington-Dover, 11238 project. The U.S. Coast Guard advised NHDOT that the GSB should be removed as it no longer served a transportation purpose, and that a clear and reasonable rationale must be presented for retaining or rebuilding the structure. The letter also stipulated that the bridge permit application to be submitted must address the need to retain or rebuild the GSB and, if the old bridge is to be removed, should include complete removal of all parts not utilized in the new structure.

Guard. During the majority of construction, the main navigation channel (a 200-foot zone of passage under the center span of the GSB) would remain open.

Upon completion of the Project, the causeways and trestles would be removed, and the area restored to pre-construction conditions, which is anticipated to take approximately one to two months. The causeways and trestles are considered a temporary impact within the Little Bay and are the only in-water work that is proposed. Temporary causeways and trestles will not be used in the 200-foot navigational channel. We have attached a plan that depicts the construction phase impacts but note that these plans are for planning purposes only and may be modified during construction if required to allow for safe and efficient contractor access.

Federal agencies and non-federal agencies which must grant approvals, easements, or other actions for the Project are listed below in Table 1.

Table 1 Required Federal Permits, Approvals, or Certifications

Issuing Agency	Regulation/Jurisdiction	Name of Filing
FHWA	NEPA	Final Supplemental EIS; SROD
U.S. Army Corps of Engineers	Clean Water Act, Section 404; Federal Rivers and Harbors Act, Section 10	Individual Permit
NH Department of Environmental Services (NHDES)	Coastal Federal Consistency Program – Coastal Zone Management Act	Consistency Certification
NHDES	NH Revised Statutes Annotated 482-A, Wetlands Bureau	Wetlands Permit
NHDES	NH Revised Statutes Annotated 483-B, Shoreland Program	Shoreland Permit
Advisory Council on Historic Preservation	National Historic Preservation Act, Section 106	Section 106 Consultation
NH Division of Historical Resources	National Historic Preservation Act, Section 106	Memorandum of Agreement

Based on existing, relevant and reasonably available information, a description of the known existing major project site conditions, potential changes to the waterway and/or any other areas of concern.

In compliance with NEPA, the 2007 FEIS and in-progress DSEIS include in-depth analyses of the resources within the area that may be affected by the Project, referred to as the Study Area. The Study Area for the DSEIS is defined to include both the GSB and the LBBs, as well as an area approximately 800 feet north and 800 feet south of the bridge abutments in Dover and Newington. When completed, the DSEIS will be shared with the U.S. Coast Guard and other cooperating agencies.

The DSEIS will evaluate the Preferred Alternative's impacts to natural, social, and economic resources. The Preferred Alternative would result in an adverse effect to the GSB pursuant to Section 106 of the National Historic Preservation Act, due to the removal and replacement of the steel superstructure. However, under the No-Action Alternative, the most prevalent permanent impacts to the human environment would result in impacts to vehicular, bicycle and pedestrian traffic through a loss of alternative commuting options and recreational opportunities. Under the Preferred Alternative, temporary structures needed for construction are conceptual and will be decided by contractor means and methods during the construction phase. The placement of temporary structures would result in minor, temporary impacts to hydrodynamics, and wildlife and fisheries. The U.S. Fish and Wildlife is in concurrence with NHDOT that the Project would not have a substantial effect on Essential Fish Habitat outlined in the Essential Fish Habitat Worksheet (concurrence received May 17, 2019). Also, FHWA and NHDOT determined that the Project *may affect but is not likely to adversely affect* the Endangered Species Act-listed fish species under a programmatic agreement with the National Marine Fisheries Office, Greater Atlantic Regional Fisheries Office. The Greater Atlantic Regional Fisheries Office Protected Resources Division concurred with FHWA's determination that the Project complies with the Program on June 18, 2019.

The alternatives that were considered, impacts related to the construction of the proposed bridge, and recommendations of resource agencies for mitigating potential impacts were documented in both submissions.

Navigable waters

The Preferred Alternative would construct a steel girder superstructure rather than a truss structure, which would allow for an increase in the vertical clearance above the water surface. As shown in the Alternative 9 Elevation and Typical Sections (attached), the Preferred Alternative would benefit the 200-foot navigation channel through increasing the existing 34.7-foot vertical navigational clearance beneath the GSB. Under the "V-Frame" option, the vertical navigational clearance would increase by 9.6 feet, for a new total clearance of 44.3 feet. Similarly, the "Super Haunch" design option would benefit the 200-foot navigation channel through increasing the vertical navigational clearance beneath the GSB by 12.8 feet, for a new total clearance of 47.5 feet. The Project would not benefit the vertical navigational clearance of the 100-foot navigation channel because the restriction is the northbound LBB, which is lower than both the existing GSB and Preferred Alternative (note that the existing LBB clearance within the 100-foot navigation channel is 46.5 feet). Additionally, because the Preferred Alternative would not involve any modifications to the GSB piers, there would be no hydrodynamic effects. Please reference the Conceptual Design Renderings in the attachments for measurements and clearances.

FHWA and NHDOT respectfully request your evaluation of the attached materials. Please contact me at (603) 271-1615 or Keith.Cota@dot.nh.gov if you have any questions or would like to discuss in more detail the Project or project roles and responsibilities during the preparation of the DSEIS. Thank you for your continued coordination on this important project.

Sincerely,

Keith A. Cota, PE
Chief Project Manager

KAC/PJW/hb

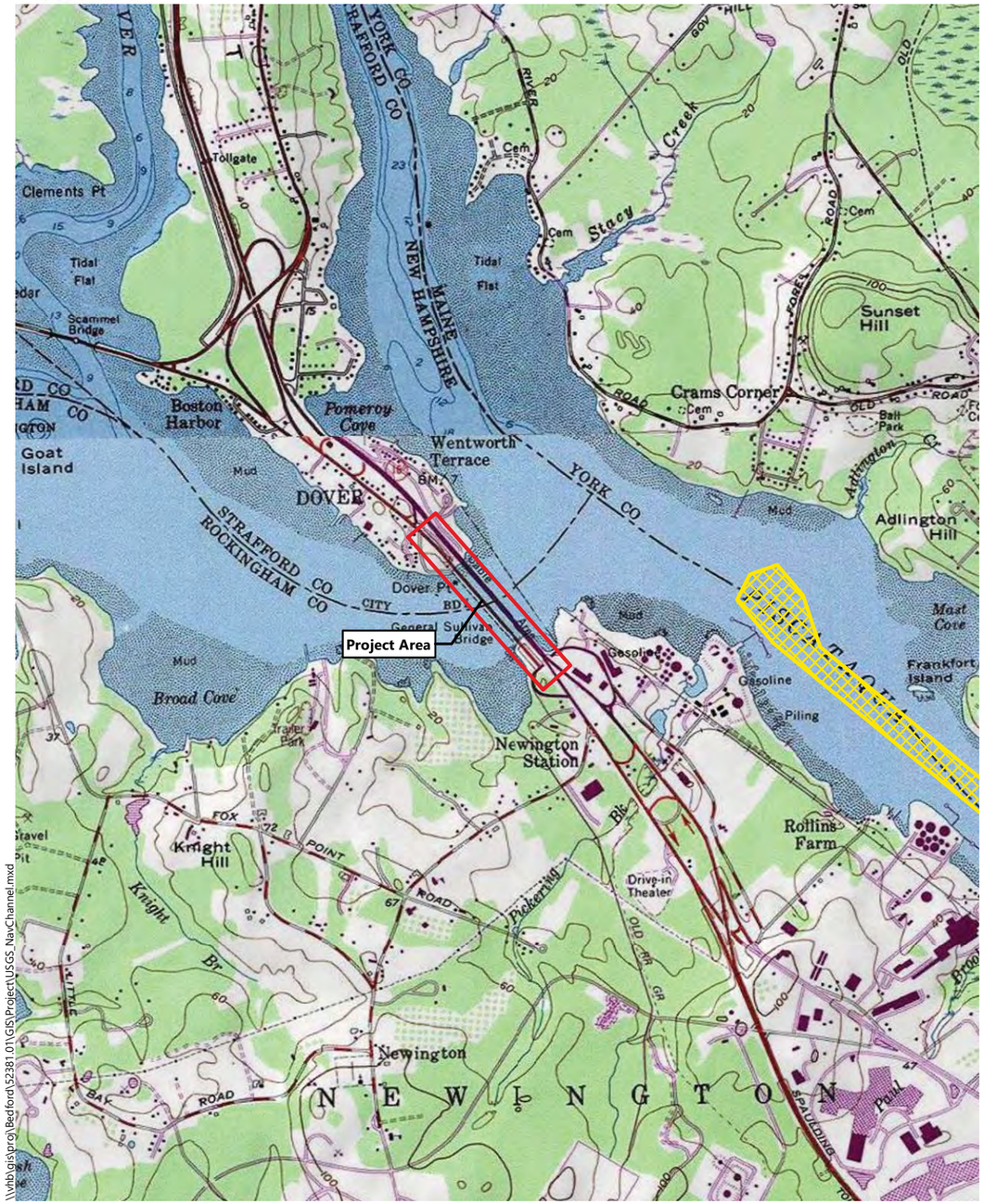
Attachments:
Figure 1 – USGS Location Map
Figure 2 – Conceptual Design Rendering – Alternative 9
Gen. Sullivan Bridge and Little Bay Bridge – Existing Conditions
Alternative 9 Elevation and Typical Sections
Alternative 9 Construction Impact Plan
USCG Cooperating Agency Acceptance Letter – January 16, 2018

cc: Marc Laurin, Bureau of Environment
Robert Juliano, Bureau of Bridge Design
Jamie Sikora, FHWA
P. Walker, VHB
G. Goodrich, VHB

S:/Highway Design/Newington/11238S/Letter/USCG_BridgeInitiationProject_Preferred_Alt_Coordination_111219

New Hampshire DOT Department of Transportation

vhb **FIGURE 1**



\\vhb\gis\proj\Bedford\523811.01\GIS\Project\USGS_NavChannel.mxd

0 1000 2000 4000 Feet

Newington-Dover 11238S | Newington & Dover, New Hampshire

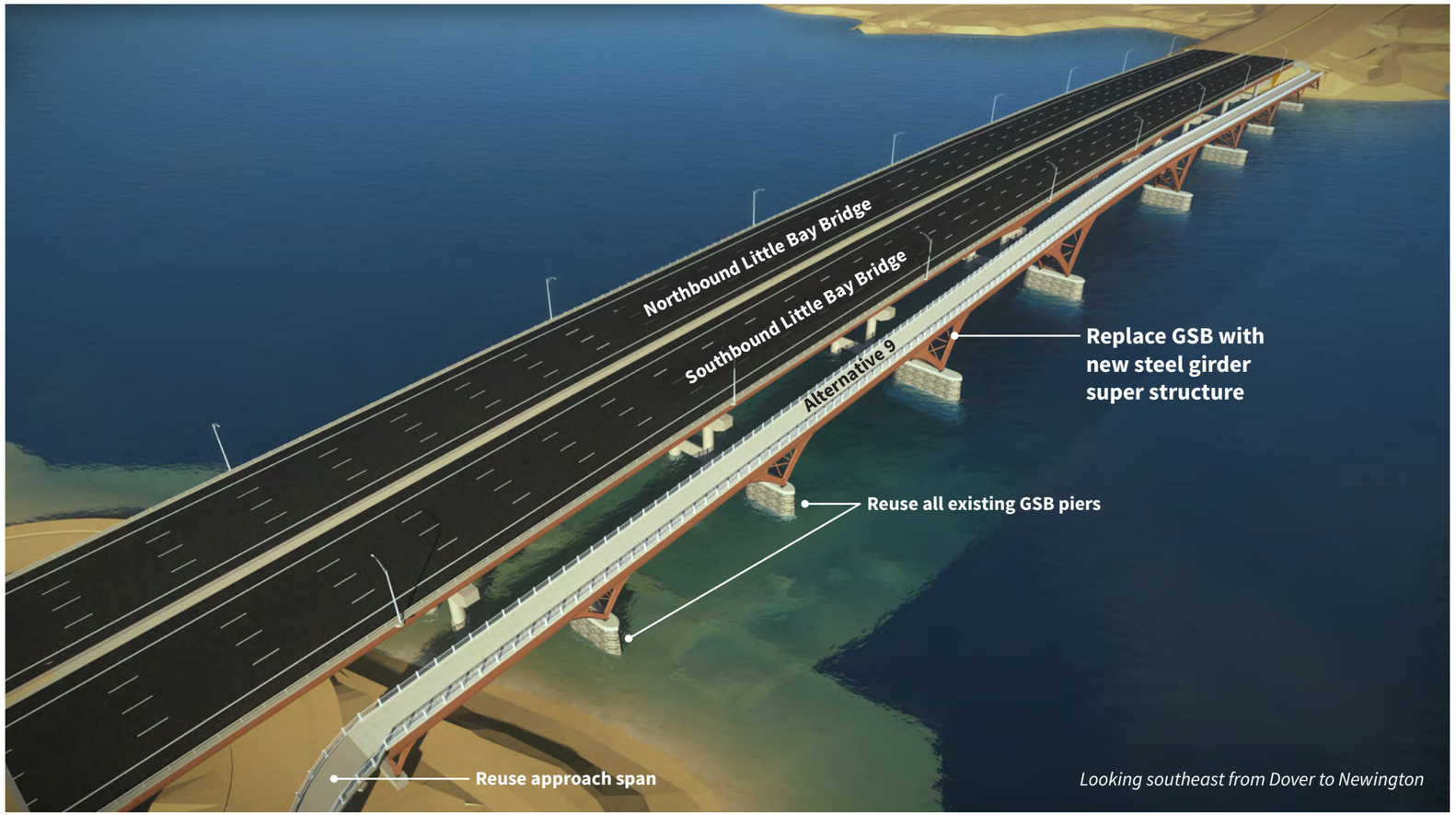
GSB Project Area

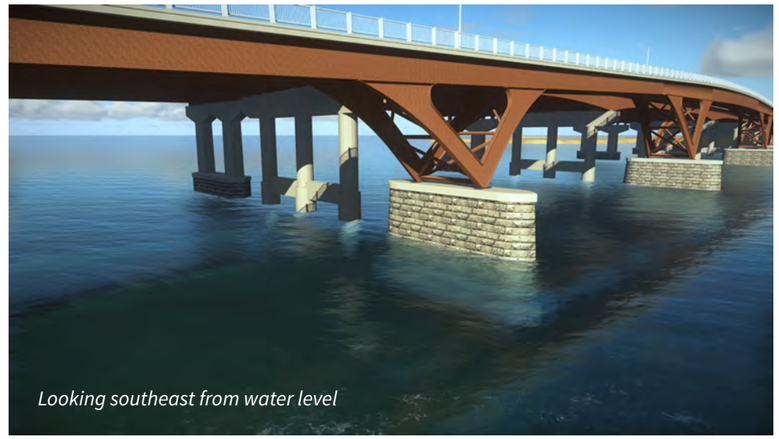
Approx. Limits of Federal Navigation Project

Note: USGS topographic source map does not reflect all current conditions.

General Sullivan Bridge Project Location

Source: VHB, NH GRANIT, USGS 7.5-minute Topographic Quadrangles Dover East and Portsmouth, dated 1983





"V-Frame" design option shown. "Super Haunch" similar.

Newington-Dover 11238S | Newington and Dover, NH

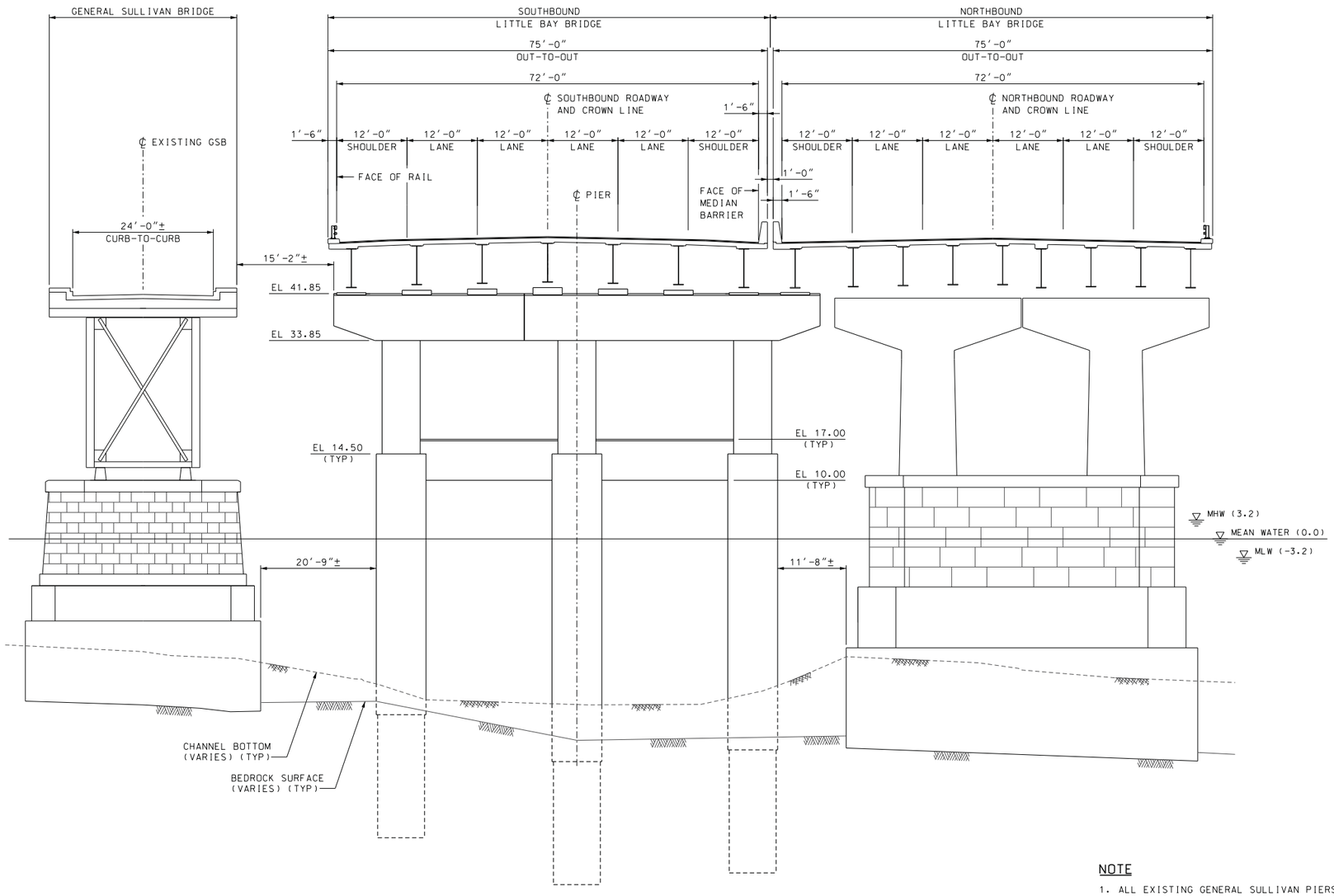
General Sullivan Bridge Supplemental EIS

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Alternative 9: Superstructure Replacement—Girder Option (Preferred Alternative) Conceptual Design Renderings

EXISTING CONDITION



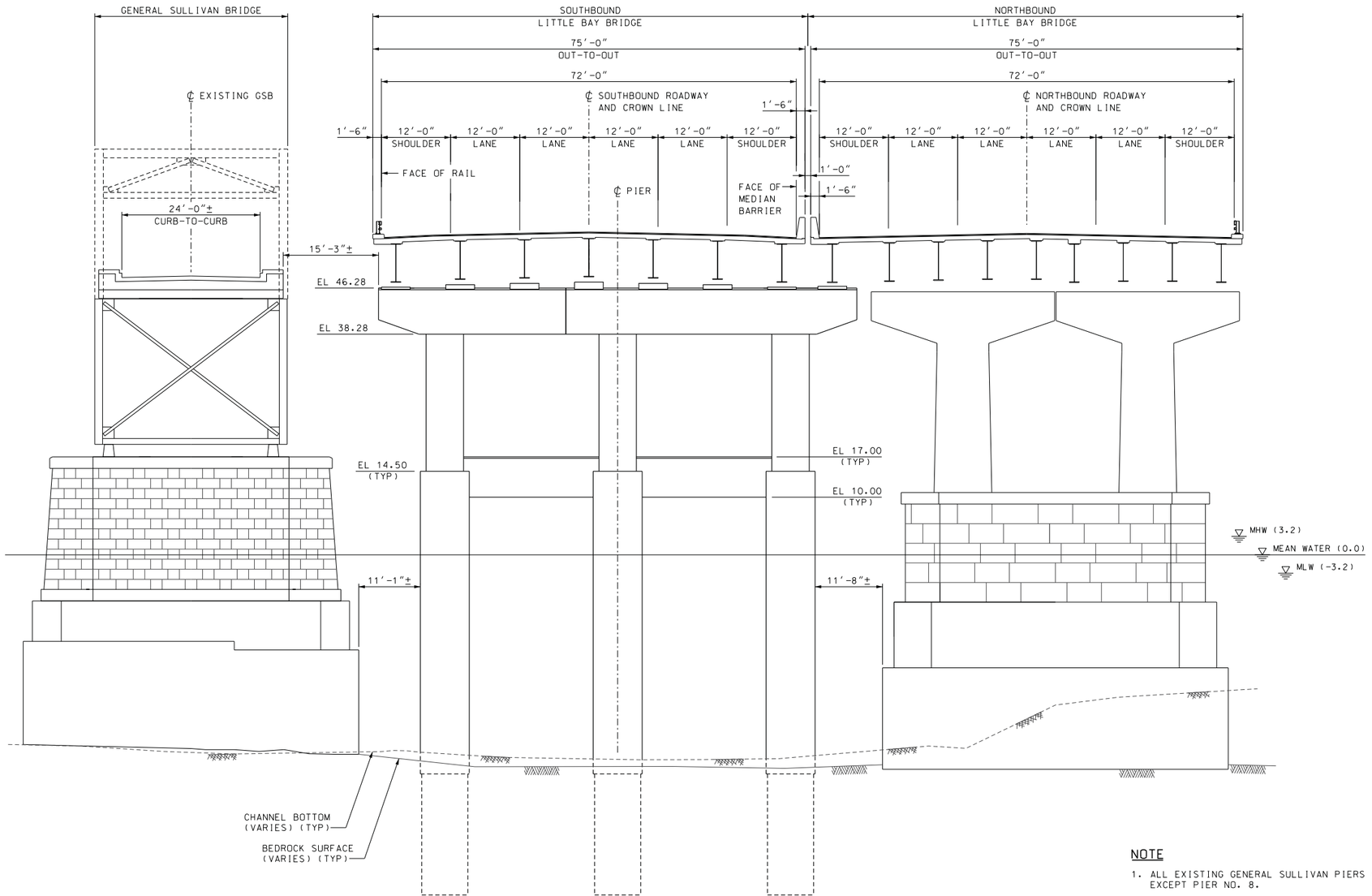
TYPICAL BRIDGE SECTION (PIERS 1, 2, 7 & 8) – EXISTING

SCALE: $\frac{3}{32}$″ = 1′-0″

NOTE

1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH LBB BRIDGE PIERS EXCEPT PIER NO. 8.

EXISTING CONDITION



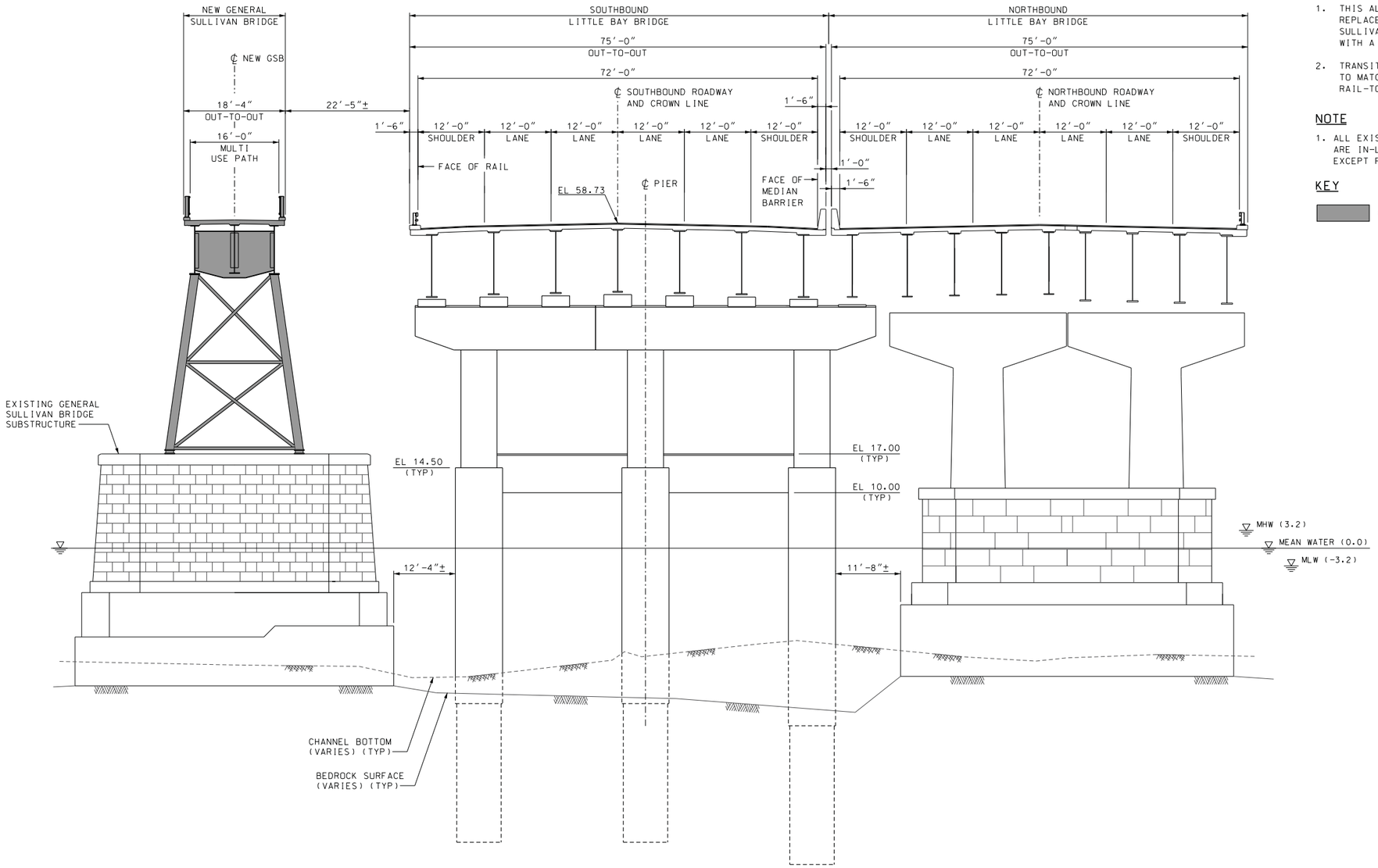
TYPICAL BRIDGE SECTION (PIERS 3, 4, 5, & 6) - EXISTING

SCALE: $\frac{3}{32}$″ = 1′-0″

NOTE

1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH LBB BRIDGE PIERS EXCEPT PIER NO. 8.

ALTERNATIVE 9 - GENERAL SULLIVAN BRIDGE SUPERSTRUCTURE REPLACEMENT - GIRDER OPTION



ELEVATION
SCALE: $\frac{3}{32}$" = 1'-0"

TYPICAL BRIDGE SECTION (PIERS 4 & 5, OTHER PIERS SIMILAR) - ALTERNATIVE 9

SCALE: $\frac{3}{32}$" = 1'-0"

ALTERNATIVE 9 NOTES:

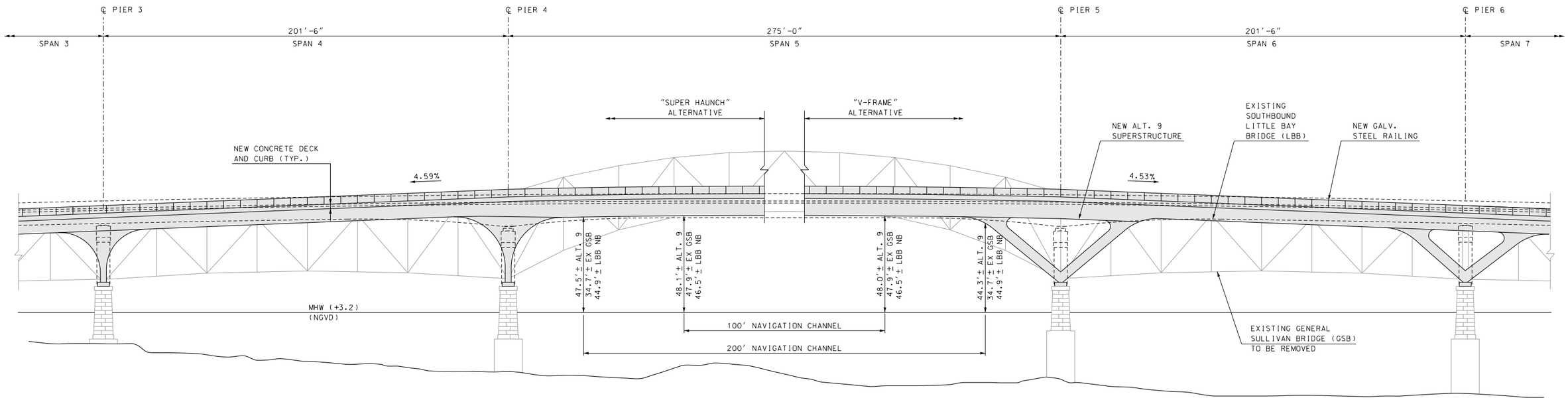
1. THIS ALTERNATIVE COMPLETELY REPLACES THE EXISTING GENERAL SULLIVAN BRIDGE SUPERSTRUCTURE WITH A GIRDER/FRAME SYSTEM.
2. TRANSITION THE NORTH END OF SPAN 1 TO MATCH THE NORTH APPROACH BRIDGE RAIL-TO-RAIL WIDTH OF 21'-0".

NOTE

1. ALL EXISTING GENERAL SULLIVAN PIERS ARE IN-LINE WITH LBB BRIDGE PIERS EXCEPT PIER NO. 8.

KEY

= NEW STRUCTURE

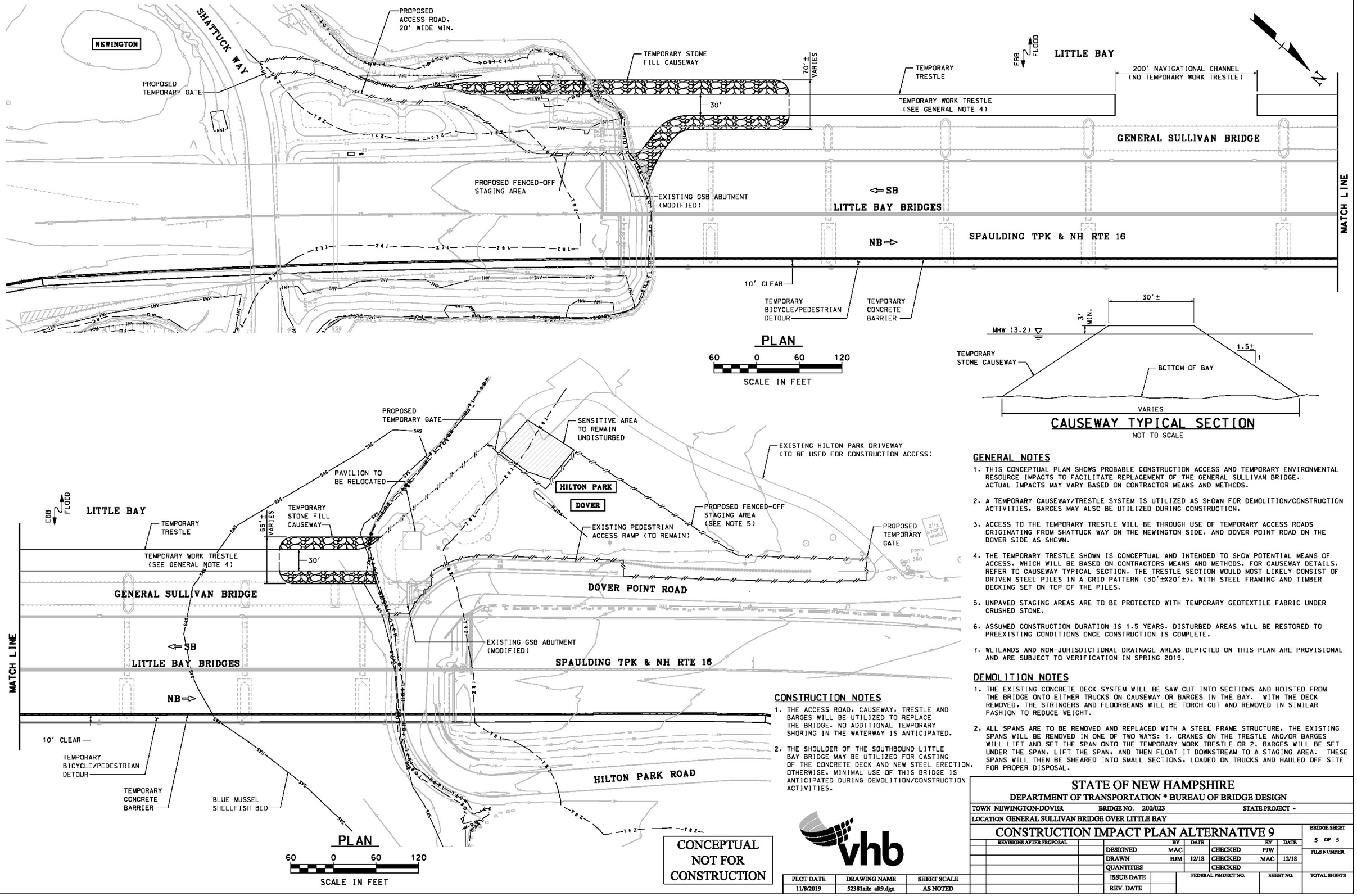


NAVIGATIONAL CLEARANCES
ELEVATION: ALTERNATIVE 9 – SPANS 4, 5, & 6

SUPERSTRUCTURE REPLACEMENT – GIRDER OPTION

NOTE:

1. VERTICAL NAVIGATIONAL CLEARANCE DIMENSIONS FOR THE NORTHBOUND LITTLE BAY BRIDGE CONTROL OVER THE SOUTHBOUND LITTLE BAY BRIDGE AND ARE DESCRIBED ON THIS SHEET ACCORDINGLY.



GENERAL NOTES

1. THIS CONCEPTUAL PLAN SHOWS PROBABLE CONSTRUCTION ACCESS AND TEMPORARY ENVIRONMENTAL RESOURCE IMPACTS TO FACILITATE REPLACEMENT OF THE GENERAL SULLIVAN BRIDGE. ACTUAL IMPACTS MAY VARY BASED ON CONTRACTOR MEANS AND METHODS.
2. A TEMPORARY CAUSEWAY/TRESTLE SYSTEM IS UTILIZED AS SHOWN FOR DEMOLITION/CONSTRUCTION ACTIVITIES. BARGES MAY ALSO BE UTILIZED DURING CONSTRUCTION.
3. ACCESS TO THE TEMPORARY TRESTLE WILL BE THROUGH USE OF TEMPORARY ACCESS ROADS ORIGINATING FROM SHATTUCK WAY ON THE NEWINGTON SIDE, AND DOVER POINT ROAD ON THE DOVER SIDE AS SHOWN.
4. THE TEMPORARY TRESTLE SHOWN IS CONCEPTUAL AND INTENDED TO SHOW POTENTIAL MEANS OF ACCESS, WHICH WILL BE BASED ON CONTRACTORS MEANS AND METHODS. FOR CAUSEWAY DETAILS, REFER TO CAUSEWAY TYPICAL SECTION. THE TRESTLE SECTION WOULD MOST LIKELY CONSIST OF DRIVEN STEEL PILES IN A GRID PATTERN (30'±X20'±), WITH STEEL FRAMING AND TIMBER DECKING SET ON TOP OF THE PILES.
5. UNPAVED STAGING AREAS ARE TO BE PROTECTED WITH TEMPORARY GEOTEXTILE FABRIC UNDER CRUSHED STONE.
6. ASSUMED CONSTRUCTION DURATION IS 1.5 YEARS. DISTURBED AREAS WILL BE RESTORED TO PREEXISTING CONDITIONS ONCE CONSTRUCTION IS COMPLETE.
7. WETLANDS AND NON-JURISDICTIONAL DRAINAGE AREAS DEPICTED ON THIS PLAN ARE PROVISIONAL AND ARE SUBJECT TO VERIFICATION IN SPRING 2019.

DEMOLITION NOTES

1. THE EXISTING CONCRETE DECK SYSTEM WILL BE SAW CUT INTO SECTIONS AND HOISTED FROM THE BRIDGE ONTO EITHER TRUCKS ON CAUSEWAY OR BARGES IN THE BAY. WITH THE DECK REMOVED, THE STRINGERS AND FLOORBEAMS WILL BE TORCH CUT AND REMOVED IN SIMILAR FASHION TO REDUCE WEIGHT.
2. ALL SPANS ARE TO BE REMOVED AND REPLACED WITH A STEEL FRAME STRUCTURE. THE EXISTING SPANS WILL BE REMOVED IN ONE OF TWO WAYS: 1. CRANES ON THE TRESTLE AND/OR BARGES WILL LIFT AND SET THE SPAN ONTO THE TEMPORARY WORK TRESTLE OR 2. BARGES WILL BE SET UNDER THE SPAN, LIFT THE SPAN, AND THEN FLOAT IT DOWNSTREAM TO A STAGING AREA. THESE SPANS WILL THEN BE SHEARED INTO SMALL SECTIONS, LOADED ON TRUCKS AND HAULED OFF SITE FOR PROPER DISPOSAL.

CONSTRUCTION NOTES

1. THE ACCESS ROAD, CAUSEWAY, TRESTLE AND BARGES WILL BE UTILIZED TO REPLACE THE BRIDGE. NO ADDITIONAL TEMPORARY SHORING IN THE WATERWAY IS ANTICIPATED.
2. THE SHOULDER OF THE SOUTHBOUND LITTLE BAY BRIDGE MAY BE UTILIZED FOR CASTING OF THE CONCRETE DECK AND NEW STEEL ERECTION. OTHERWISE, MINIMAL USE OF THIS BRIDGE IS ANTICIPATED DURING DEMOLITION/CONSTRUCTION ACTIVITIES.

PLOT DATE	DRAWING NAME	SHEET SCALE
11/8/2019	52381site_al9.dgn	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN NEWINGTON-DOVER BRIDGE NO. 200/023 STATE PROJECT -

LOCATION GENERAL SULLIVAN BRIDGE OVER LITTLE BAY

CONSTRUCTION IMPACT PLAN ALTERNATIVE 9

BRIDGE SHEET 5 OF 5

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
			DESIGNED	MAC	
			DRAWN	BJM	12/18
			QUANTITIES		
			ISSUE DATE		
			REV. DATE		

CHECKED	PJW	
CHECKED	MAC	12/18
CHECKED		

FEDERAL PROJECT NO. | SHEET NO. | TOTAL SHEETS

FILE NUMBER

\\vhb\gbl\proj\Bedford\52381.01\cad\ref\Site Alts\52381site_al9.dgn

U.S. Department of Homeland Security
United States Coast Guard

Commander
First Coast Guard District

One South Street
Battery Park Bldg
New York, N.Y. 10004-1466
Staff Symbol: dbp
Phone: (212) 514-4331
FAX: (212)514-4337

16591

January 16, 2018

Mr. Jamison S. Sikora
Environmental Program Manager
Federal Highway Administration
New Hampshire Division
57 Pleasant Street, Suite 2200
Concord, NH 03301

Dear Mr. Sikora,

This responds to your letter of December 21, 2017, concerning preparation of a Supplemental Environmental Impact Statement (SEIS) pursuant to the National Environmental Policy Act (NEPA) for the Spaulding Turnpike Improvements Project [Newington-Dover 11238/NHS-027-1(37)].

The U.S. Coast Guard agrees to be a cooperating agency under the terms related in your letter as well as the responsibilities as stated in Section VI of the Memorandum of Understanding between our respective agencies signed on 14 January 2014.

Mr. Jim Rousseau of this office is the designated project manager for this action and may be contacted at (617) 223-8619 or e-mail at: james.l.rousseau2@uscg.mil.

If there are any questions or concerns, please call me at the above number.

Sincerely,

C. J. Bisignano
Supervisory Bridge Management Specialist
U.S. Coast Guard
By direction

E-copy: U.S. Coast Guard Sector Northern New England – Waterways Management

U.S. Department of Homeland Security
United States Coast Guard

Commander
First Coast Guard District

Battery Park Bldg.
1 South Street
New York, NY 10004-1466
Staff Symbol: (dpb)
E-Mail:D01-SG-BridgesD1obr-NY@uscg.mil

16591
November 19, 2019

New Hampshire Department of Transportation
Attn: Mr. Keith A. Cota, P.E.
Chief Project Manager
John O. Morton Building
7 Hazen Drive
P.O. Box 483
Concord, NH 03302-0483

Dear Mr. Cota:

We received your bridge project initiation request dated November12, 2019 for the proposed Little Bay (mile 0.1) permit modification for the Spaulding Turnpike, US Rte. 4, N.H. 16 /Little Bay (General Sullivan) Bridge project.

The project initiation request meets all requirements found in the U.S. Coast Guard Bridge Permit Application Guide. You may submit draft bridge permit application materials as described in the Application Guide including more detailed information as the existing site conditions and limitations are investigated. This includes further submission of environmental documentation and alternative concepts are developed.

If you have any questions please contact Mr. Jim Rousseau at (617) 223-8619 or at James.L.Rousseau2 @uscg.mil.

Sincerely,

C.J. BISIGNANO
Supervisory Bridge Management Specialist
First Coast Guard District
By direction

E-Attachment: Bridge Permit Application Guide

E-copy: Sector Northern New England Waterways
Marc Laurin, NHDOT
Robert Juliano, Bureau of Bridge Design
Jamie Sikora, FHWA
P. Walker VHB
G. Goodrich VHB

Appendix K – Hilton Park Temporary Occupancy Letter

New Hampshire DOT
Department of Transportation

Victoria F. Sheehan
Commissioner

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

William Cass, P.E.
Assistant Commissioner

NEWINGTON-DOVER, IMPROVEMENTS TO NH RTE. 16 / SPAULDING TURNPIKE / GENERAL SULLIVAN BRIDGE
Newington and Dover, New Hampshire
NHDOT Project#: 11238S

The project, as designed, requires a temporary occupancy of approximately 48,000 square feet of Hilton Park in Dover, New Hampshire, from the New Hampshire Department of Transportation (NHDOT) Bureau of Turnpikes. As Hilton Park is operated by a public entity and serves significant public recreational activity, it is subject to federal jurisdiction under Section 4(f) of the Federal Department of Transportation Act of 1966 (23 U.S.C. § 138 and 49 U.S.C. § 303), as amended. The identified temporary occupancy on the NHDOT parcel will be required for the purposes of construction staging. The temporary occupancy area be fenced off for staging will be about 7 percent of Hilton Park. To minimize land disturbance, unpaved areas within the fenced-off staging area are to be protected with temporary geotextile fabric under crushed stone. The Hilton Park driveway off of Dover Point Road will be used for construction access, but will not be fenced off. Approximately 14.5 acres of the 16-acre Hilton Park will remain open and accessible to the public during the temporary occupancy. An existing pavilion located within the staging area will be removed for construction access. Disposition of the pavilion will be coordinated with the NHDOT Bureau of Turnpikes. Disturbed areas will be restored to preexisting conditions once construction is complete including, but not limited to, the removal of any crushed stone and geotextile used on non-paved areas, restoration of any damaged pavement, re-grading as needed, removal of temporary fencing, and placement of loam and seed to re-establish grassed areas.

As the official with jurisdiction over Hilton Park, the NHDOT Bureau Turnpike has reviewed the following temporary conditions that will be in place in regard to the construction impacts and concurs that the temporary impacts to this recreational resource are so minimal as to not constitute a use within the meaning of Section 4(f):

1. The duration of the occupancy of Hilton Park will be temporary, with less than the time needed for construction of the project, and there will be no change in ownership of the land;
2. The scope of the work is minor, as both the nature and the magnitude of the changes to the 4(f) property are minimal;
3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the activities or purpose of the resource, on either a temporary or permanent basis;
4. The land being used temporarily will be fully restored, i.e., the resource will be returned to a condition which is at least as good as that which existed prior to the project;
5. The signatory below, identified as the "official having jurisdiction" is in agreement regarding the above-mentioned conditions.

John Corcoran
Bureau Administrator
NHDOT Bureau of Turnpikes

2/26/20
Date

JOHN O. MORTON BUILDING • 7 HAZEN DRIVE • P.O. BOX 483 • CONCORD, NEW HAMPSHIRE 03302-0483
TELEPHONE: 603-271-3734 • FAX: 603-271-3914 • TDD: RELAY NH 1-800-735-2964 • INTERNET: WWW.NHDOT.COM

Appendix L - Newington-Dover 11238 FEIS Environmental Commitments (2007)

LEGEND	
A - Transportation and Highway Design	L - Cultural Resources
B - Socio-Economic Resources	M - Petroleum, Hazardous Materials and Solid Waste
C - Wetland Resources	N - Construction Impacts
D - Drainage and Water Quality	O - Utility Impacts
E - Navigation	ROD - ROD
F - Marine Resources	
G - Floodplains	
H - Groundwater	
I - Noise	
J - Recreational Resources	
K - Visual Resources	

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

	FEIS Project Commitments		No Action Taken	Action Underway	Completed		Remarks
		Target Start Date	(✓)	(✓)	(✓)	Date	
	A. Transportation and Highway Design						
A 1.	Relative to commercial vehicles accessing and exiting the Wentworth Terrace neighborhood and Hilton Drive, the proposed improvements to Hilton Drive in the vicinity of Wentworth Terrace and Hilton Park (including the local connector roadway traversing under the Turnpike and adjacent to the channel) will be designed to accommodate tractor-trailer trucks. Also, as suggested, a portion of Hilton Drive extending north from the existing ramps to the pump station will be retained to create a loop road for trucks to more easily exit the neighborhood.	01/05/09			✓	10/01/20	The design of Hilton Drive beneath the LBB provides tractor trailer access. The design plans included the exit loop road from Wentworth Terrace through coordination with the City of Dover.
A 2.	The General Sullivan Bridge, an historic bridge eligible for the National Register of Historic Places, will be rehabilitated to a six-ton loading capacity to continue to function as a pedestrian/bicycle/recreational facility and to accommodate emergency response and maintenance vehicles from Newington.	01/05/09			✓	10/01/20	Design advancement had included this commitment. However, based on the Preferred Alternative in the Draft SEIS, the GSB may be replaced. Rehabilitation and replacement options of the GSB are currently evaluated within the supplemental NEPA action as a Draft SEIS.
A 3.	The Exit 6 proposed improvements at the US 4/Spur Road, Spur Road/local connector, and local connector/Boston Harbor Road intersections will be designed to safely and efficiently accommodate heavy commercial vehicles including tractor-trailer trucks.	01/05/09			✓	10/01/20	The design of the Exit 6 area has now included a roundabout at the intersection of US Route 4, Spur Road, and Boston Harbor Road which accommodates tractor trailer trucks. These improvements were constructed in Contract Q.
A 4.	In Dover, new sidewalks will be constructed in the following locations: ➢ Along the west side of Dover Point Road, between Hilton Park and the existing sidewalk located opposite the Division of Motor Vehicles (DMV) property; ➢ Along the north side of Spur Road between the Bayview Park parking area and the Scammell Bridge; ➢ Along the west side of the connector road between Spur Road and Boston Harbor Road and along the west side of Dover Point Road; ➢ Along the new two-way connector beneath the Little Bay Bridges as described above; and ➢ Along Hilton Drive connecting to the reconstructed walkway along Pomeroy Cove. Sidewalk construction is contingent on the City of Dover agreeing to accept maintenance responsibilities (both winter and summer maintenance) for the sidewalk in accordance with its accepted policies and practices as mandated in RSA 231:92-a. A municipal agreement between the City and the NHDOT documenting maintenance responsibilities will need to be executed prior to these sidewalks being incorporated into the project.	01/05/09			✓	10/01/20	Design advancement has included this commitment. The design concept now includes a roundabout at the intersection of US Route 4, Boston Harbor Road and Spur Road which eliminates the Spur Road connector. The Department and the City of Dover have entered into a municipal agreements for the maintenance responsibility for these sidewalks. These improvements were constructed in Contract Q.
A 5.	As part of the project in Dover, the NHDOT proposes to build minimum 4-foot wide shoulder areas, which will accommodate bicycles, along the reconstructed segments of Dover Point Road, US 4, Spur Road, Hilton Drive, along the new two-way connector beneath the Little Bay Bridges, and along Hilton Drive connecting to the reconstructed walkway along Pomeroy Cove.	01/05/09			✓	10/01/20	Design advancement included this commitment and these improvements were constructed in Contract Q.
A 6.	Retaining walls, ranging from 4 to 14 feet in height, will be constructed along the west side of the Turnpike to reduce slope impacts on the properties between the Turnpike and Dover Point Road.	01/05/09			✓	10/01/20	Design advancement included this commitment and these improvements were constructed in Contract Q.
A 7.	Retaining walls, ranging from 4 to 18 feet in height, will be constructed along the east side of the Turnpike to avoid impacts to Pomeroy Cove and to limit slope impacts on the properties in the Dover Point Road/Cote Drive neighborhood.	01/05/09			✓	10/01/20	Design advancement has included this commitment. However, there are minor impacts within Pomeroy Cove related to the proposed drainage outlets into the cove. These improvements were constructed in Contract Q.
A 8.	The existing bicycle/pedestrian path abutting Pomeroy Cove and connecting Hilton Park and Wentworth Terrace to Dover Point Road will be maintained	01/05/09			✓	10/01/20	Design advancement included this commitment and these improvements were constructed in Contract Q.

LEGEND

A - Transportation and Highway Design
B - Socio-Economic Resources
C - Wetland Resources
D - Drainage and Water Quality
E - Navigation
F - Marine Resources
G - Floodplains
H - Groundwater
I - Noise
J - Recreational Resources
K - Visual Resources
L - Cultural Resources
M - Petroleum, Hazardous Materials and Solid Waste
N - Construction Impacts
O - Utility Impacts
ROD - ROD

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

FEIS Project Commitments		No Action Taken	Action Underway	Completed		Remarks
	Target Start Date	(✓)	(✓)	(✓)	Date	
A 9. The two existing driveways that presently service parcel N031 (Exxon/Mobil gas station/convenience store in Newington) will be maintained. The present driveway on Nimble Hill Road will have direct access to and from the Turnpike on-ramp, but will be restricted to right turns in and out. The second driveway will have a direct connection to the new local connector road that is proposed south of the gas station.	01/05/09			✓	05/16/12	The design was completed in adherence with this commitment and was constructed as part of Contract M. There were no temporary or permanent ROW impacts to this property.
A 10. A local roadway, which would provide access to the gas station, Thermo Electron, and one other parcel (with existing direct access to the Turnpike) will be constructed as part of the project. This local roadway could also provide access to the former drive-in property via the roadbed of the existing southbound Turnpike if that property is developed in the future.	01/05/09			✓	05/16/12	The design was completed in adherence with this commitment and a road was constructed under Contract M, but has not been conveyed to the Town. This road will function as an access road to a new NHDOT maintenance facility currently planned to be constructed in 2021.
A 11. In Newington, new or reconstructed sidewalks will be included in the project on both sides of Woodbury Avenue between Fox Run Road and Exit 3. The sidewalk on the north side of the roadway will be extended through the interchange, across the Turnpike and into the Tradeport on Arboretum Drive. Sidewalk construction is contingent on the Town of Newington agreeing to accept maintenance responsibilities (both winter and summer maintenance) for the sidewalk in accordance with its accepted policies and practices as mandated in RSA 231:92-a. A municipal agreement between the Town and the NHDOT documenting maintenance responsibilities will need to be executed prior to the sidewalks being incorporated into the project.	01/05/09			✓	05/16/12	The design was completed in adherence with this commitment and was constructed as part of Contract M. The Department and the Town of Newington have entered into a municipal agreements for the maintenance responsibility for these sidewalks.
A 12. Roadside shoulder areas (4 to 5 feet wide) to accommodate bicyclists are proposed in Newington within the limits of the project along Woodbury Avenue, the bridge over the Turnpike within the Exit 3 Interchange area, and along the reconstructed sections of Arboretum Drive.	01/05/09			✓	05/16/12	The design was completed in adherence with this commitment and was constructed as part of Contract M.
A 13. The project will include provisions for a future Railroad Spur over the Turnpike into the Pease Tradeport. Right-of-way and easements will be procured as part of the project and a portion of the railroad bridge's pier foundation will be constructed within the median of the Turnpike. An agreement between the NHDOT and the PDA (with concurrence from FHWA if federal funds are to be used) will also be secured as part of the project to outline a shared cost arrangement should the rail spur be constructed in the future.	01/05/09		✓			The design was coordinated with the railroad in order to set the appropriate ROW. Discussion with PDA to occur to arrive at shared cost agreement
A 14. In addition to the already completed Transportation System Management provisions identified in the FEIS, NHDOT will implement short-term relief prior to the project at Exit 6 by re-striping the Exit 6 southbound on-ramp area to create two through lanes on the Turnpike and a one-lane on-ramp from US 4, as well as closing the existing access ramp from Boston Harbor Road.	01/05/09			✓	06/30/05	Construction of this commitment was completed.

LEGEND	
A - Transportation and Highway Design	L - Cultural Resources
B - Socio-Economic Resources	M - Petroleum, Hazardous Materials and Solid Waste
C - Wetland Resources	N - Construction Impacts
D - Drainage and Water Quality	O - Utility Impacts
E - Navigation	ROD - ROD
F - Marine Resources	
G - Floodplains	
H - Groundwater	
I - Noise	
J - Recreational Resources	
K - Visual Resources	

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

FEIS Project Commitments		No Action Taken	Action Underway	Completed		Remarks
	Target Start Date	(✓)	(✓)	(✓)	Date	
A 15. Early implementation of these Travel Demand Management actions will also provide greater options to study area commuters during construction: ➢ A new park-and-ride facility consisting of 416 spaces is under construction at the Exit 9 area in Dover. The facility is a separate project under the CMAQ program. Construction is scheduled to be completed in 2008 and will complement the COAST express bus service and Dover's planned downtown transit loop service. ➢ A park-and-ride facility consisting of approximately 200 spaces will be pursued at the Exit 13 area in Rochester either under the CMAQ program or as part of the Rochester 10620H project (currently planned to advertise in 2008). ➢ A park-and-ride facility consisting of approximately 30 to 50 spaces will be pursued for the US 4/NH 125 intersection area in Lee to accommodate travelers using US 4 eastbound. The NHDOT also recommends advancement of this project under the CMAQ program.	01/05/09		✓			In 2008, the NHDOT completed construction of a 416 park-and-ride facility at Exit 9 in Dover. The NHDOT completed this project under the CMAQ program. Concurrently, under the CMAQ program a new intercity bus service has been implemented from Dover to Portsmouth via the Spaulding Turnpike. The Rochester park-and ride facility provided approximately 200 spaces at Exit 13 in Rochester and was advertised for construction in the spring of 2013 with construction being completed. The Lee park-and-ride location is under investigation. The previous application for CMAQ funding was not approved, therefore funding for this site will be applied for in the next biennial funding cycle once the location has been identified.
A 16. To improve bus service in the seacoast area and reduce peak hour headways to provide a more attractive and reliable mass transit mode of travel, three bus alternatives will be advanced with capital investments and consideration of operating subsidies up to a maximum of five years. The items could be accomplished through the CMAQ program or with project-related funds and are intended to mitigate for the potential increased levels of congestion during construction and overall dependency on SOV travel in the region. ➢ Bus Alternative 1, involving expanded intercity service for Rochester, Dover, Portsmouth and Boston to serve the commuter market. ➢ Bus Alternative 2, involving expanding the planned COAST express bus service among Rochester, Dover, and Portsmouth to reduce headways during the peak period for the planned express commuter bus service. ➢ Bus Alternative 3, involving improving connectivity and headways for three existing bus routes: COAST Route 2 service between Rochester and Portsmouth; Wildcat Transit Route 4 service between Durham and Portsmouth; and COAST Tradeport Trolley services which connects these two routes with the Tradeport.	07/01/09			✓	12/01/09	To improve bus service in the seacoast area, Bus Alternative 3 was implemented and involves improving connectivity and reducing headway for three existing bus routes in the seacoast area. A CMAQ application was submitted in December 2009 and subsequently approved to implement Bus Alternative 3, which is now estimated to cost $6.58M (including operating expenses for three years). An additional $2.28M is estimated to be required to cover operating expenses for an additional 2-year period to fund a total of 5 years of operating costs.
A 17. NHDOT has provided support for expansion of the Downeaster service through a joint-sponsored CMAQ project (total cost $6.0 million) by the Maine DOT, NHDOT and NNEPRA for Rail Alternative 1C, which funded track and siding improvements in Maine and New Hampshire to allow NNEPRA to operate a fifth weekday roundtrip between Portland and Boston beginning in August 2007.	01/05/09			✓	08/07/09	Support Provided
A 18. To support the promotion of employer-based measures to encourage travel other than by SOV, NHDOT will support funding for the seacoast area TMA, Seacoast Commuter Options, to help supplement the service for a maximum period of five years. This extension of funding could be accomplished through the CMAQ program or with project-related funds.	06/01/09		✓			This commitment was discussed at a public informational meeting in the spring/summer of 2010. The project didn't receive CMAQ funding under the current program and will need to be re-apply for funded during the next program cycle.
B. Socio-Economic Resources						
B 1. Property requiring acquisition will be appraised utilizing techniques recognized and accepted by the appraising profession and in conformity with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and applicable to New Hampshire State Law.	08/01/09			✓	06/23/16	All applicable contracts utilized the Uniform Relocation Act to acquire property.

LEGEND	
A - Transportation and Highway Design	L - Cultural Resources
B - Socio-Economic Resources	M - Petroleum, Hazardous Materials and Solid Waste
C - Wetland Resources	N - Construction Impacts
D - Drainage and Water Quality	O - Utility Impacts
E - Navigation	ROD - ROD
F - Marine Resources	
G - Floodplains	
H - Groundwater	
I - Noise	
J - Recreational Resources	
K - Visual Resources	

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

FEIS Project Commitments			No Action Taken	Action Underway	Completed		Remarks
		Target Start Date	(✓)	(✓)	(✓)	Date	
B 2.	Completed appraisals will be reviewed by an independent appraiser to ensure that requirements of condemnation law and acceptable appraisal methods are met	08/01/09			✓	06/23/16	All contract appraisals were reviewed by independent appraisals and will also for future contracts.
B 3.	Two businesses will be acquired under the Selected Alternative. The displaced businesses are eligible for relocation benefits, which include: ➢ Fair market value for acquired property. ➢ Relocation advisory assistance services. ➢ Payments for actual reasonable moving. ➢ Business re-establishment costs.	08/01/09			✓		The two businesses, Doggy Daycare and Adaptations, were acquired and relocation benefits were offered.
	C. Wetland Resources						
C 1.	Compensation for unavoidable losses of wetlands and other natural resources will include a combination of restoration/enhancement and preservation.	01/05/09			✓	12/28/11	The project includes wetland compensation that includes restoration (Railway Brook) and preservation (Tuttle and Day properties in Dover and Saba and Hislop properties in Newington).
C 2.	NHDOT and FHWA will collaborate with the affected communities and the state and federal resource agencies, as well as area conservation organizations such as the SRC and TNC, to protect approximately 150 – 250 acres at three sites in Dover and Newington, described below. Preferred Preservation Properties: ➢ Tuttle Farm, Dover – In response to the property owner's request, NHDOT, in partnership with the City of Dover, has expedited the acquisition of a conservation easement on the Tuttle Farmstead to permanently preserve the 120-acre farm. The preservation was consummated on January 29, 2007 with the conservation easements executed and property rights on 109.1 acres transferred to the City, the NHDOT, and the SRC. ➢ Watson Property, Newington – This 35-acre parcel would protect upland forest and tidal wetlands adjacent to Little Bay at Trickys Cove precluding further coastal development. ➢ Blackwater Brook Preserve, Dover – NHDOT and FHWA will continue to work with the City to permanently protect a large portion of the 105-acre Tsimekles property in the Blackwater Brook watershed. If an agreement to acquire a large portion of the Tsimekles parcel is not reached, NHDOT and FHWA will work to acquire 30 to 40 acres of one or more of the several other parcels in the Blackwater Brook area that are deemed worthy of preservation and permanent protection. Alternative Preservation Properties: ➢ Knight Brook Riparian Corridor, Newington - If negotiation for an easement on the Watson Property is not successful, then NHDOT will pursue preservation of approximately 60 to 70 acres in the Knight Brook area. More than 100 acres in this area have been identified as appropriate for preservation. These parcels lie adjacent to the recently-preserved Frink Farm and would provide additional expansion of a large contiguous area of preserved land extending to Fox Point.	01/05/09			✓	12/28/11	The NHDOT completed the collaboration and acquisition the mitigation parcels as noted below: Tuttle Farm (Tendercrop Farms): The Department assisted with funding for the City of Dover acquiring a conservation easement for this 120 acre parcel. The Department holds a Executory Interest in the easement on the property, that was sold in 2014 and is now managed Tendercrop Farms. Blackwater Brook Preserve: The Department could not come to an agreement on the Tsimekles property. The Department acquired a conservation easement on the 40 acre Day property. Watson Property: The Department entered into discussion on this property but could not reach an agreement with the owner. Knights Brook Riparian Corridor: The Department entered into discussions with property owners in this corridor as a result of not reaching an agreement on the Watson Property. Baseline Documentation reports were compiled for the Saba and Hislop parcels; Reports were submitted to ACOE and NHDES, June 2010. The Department acquired conservation easements on behalf of the Town of Newington Conservation Commission with the Department holding Executory Interest for 43.24 acres on the Saba property and 25.96 acres on the Hislop property. These were recorded at the Rockingham County Registry on December 28, 2011.
C 3.	NHDOT and FHWA will work with the affected communities and the state and federal resource agencies to determine the conditions of the conservation easement and easement interest holders for the Watson Property, as well as any parcel protected in the Blackwater Brook area or Knights Brook area.	01/01/10			✓	03/23/12	The Department has completed negotiations with and recording of the mitigation easements with the Dover and Newington Conservation Commissions with the conservation commissions holding the easements and the Department holding Executory Interest Rights.

LEGEND	
A - Transportation and Highway Design	L - Cultural Resources
B - Socio-Economic Resources	M - Petroleum, Hazardous Materials and Solid Waste
C - Wetland Resources	N - Construction Impacts
D - Drainage and Water Quality	O - Utility Impacts
E - Navigation	ROD - ROD
F - Marine Resources	
G - Floodplains	
H - Groundwater	
I - Noise	
J - Recreational Resources	
K - Visual Resources	

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

	FEIS Project Commitments		No Action Taken	Action Underway	Completed		Remarks
		Target Start Date	(✓)	(✓)	(✓)	Date	
C 4.	NHDOT and FHWA will collaborate with the Town of Newington, the Pease Development Authority and the state and federal resource agencies to restore approximately 3,100 linear feet of Railway Brook (Restoration Alternative A), a portion of a heavily impacted perennial stream on the property of the Pease International Tradeport. This mitigation measure will include restoration and expansion of floodplain wetlands adjacent to the stream within an approximately 300-foot wide corridor. The restored riparian corridor, including adjacent upland buffer, would be preserved by establishment of a permanent conservation easement.	06/01/09			✓	06/01/15	The design and construction of the restoration site was completed as part of Contract M. The Bureau's of Environment and ROW are collaborating on the final easement language, which will be recorded with the Rockingham County Registry of Deeds. First year monitoring report was submitted to NHDES in November 2015. Natural Resource Agencies have acknowledged that although the site had not accomplished all the desired mitigation functions and values goals, it would still be considered as part of the mitigation for the wetland impacts incurred by the project with no further action or compensation required.
	D. Drainage and Water Quality						
D 1.	In Newington, at least five extended-detention basins or other appropriate BMPs will be designed for stormwater treatment, with three of the basins in the lower Pickering Brook watershed	01/05/09			✓		Contract L included one BMP, Contract M included five BMP's and Contract Q include 5 BMP's. Contracts L and M are completed and their BMPs have been constructed. The BMPs in the Contract Q are in construction.
D 2.	Numerous grassed swales will also be used to treat runoff from various roadway sections especially around the proposed Woodbury Avenue Interchange area.	01/05/09			✓	05/16/12	Contract M included grass swales for treatment and/or conveyance to the BMP as necessary.
D 3.	As part of the project's final design, NHDOT will closely review and evaluate the existing drainage conditions on Dover Point. Careful attention will be exercised to identify drainage-related issues along the Turnpike on Dover Point and not exacerbate the deficient conditions. This will include properly graded and constructed ditches and other drainage appurtenances to prevent the ponding of water adjacent to private property to the degree practicable.	01/05/09			✓	06/23/16	The design evaluated this commitment and included appropriate drainage design as part of Contract Q.
D 4.	In Dover, at least three extended-detention basins or other appropriate BMPs will be constructed to receive and treat runoff from much of both the existing and new roadway areas. Numerous grass swales will also be included to treat smaller sections of roadway that cannot be directed to the extended-detention basins	01/05/09			✓	06/23/16	Design advancement included this commitment within Contracts L and Q. Overall there are 5 BMP's in Dover.
D 5.	A pollutant loading analysis using Schueler's Simple Method (Schueler 1987), or another method approved by the NHDES, will be completed during the preliminary stage of the final design. If needed, additional or revised BMPs, such as gravel wetlands, will be included to ensure to the maximum extent practicable that the project results in no net increase in estimated pollutant loading relative to existing conditions.	01/05/09			✓		Design advancement included this commitment for Contracts L, M, O, and Q with the pollutant loading results being provided to NHDES and approved for construction. Contract S analysis will be provided as appropriate during final design.
D 6.	NHDOT will evaluate the feasibility of constructing a closed drainage system on the widened LBB to minimize direct stormwater discharge to the Little Bay and Piscataqua River.	01/05/09			✓	01/26/09	Design advancement included this commitment and it has been determined that although it is feasible to include a closed drainage system on the bridge, the 12' wide shoulders will convey all stormwater from the crest of the bridge to the proposed closed drainage system off the bridge.
D 7.	NHDOT will continue to investigate various measures and technologies as a means of reducing overall salt use in the project corridor.	04/01/09			✓	06/01/19	This commitment was addressed with the development and establishment by NHDOT of a Statewide Salt Management Plan in 2019 that strives to minimize the amount of applied salt entering the environment by establishing Best Management Practices. The Plan demonstrates compliance with EPA National Pollutant Elimination Permits (NPDES), specifically the Small Municipal Separate Storm Sewer System Permit (MS4), and the NHDES Alteration of Terrain (AOT) rule Env-Wq 1503.11(g).

LEGEND

A - Transportation and Highway Design
B - Socio-Economic Resources
C - Wetland Resources
D - Drainage and Water Quality
E - Navigation
F - Marine Resources
G - Floodplains
H - Groundwater
I - Noise
J - Recreational Resources
K - Visual Resources
L - Cultural Resources
M - Petroleum, Hazardous Materials and Solid Waste
N - Construction Impacts
O - Utility Impacts
ROD - ROD

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

	FEIS Project Commitments		No Action Taken	Action Underway	Completed		Remarks
		Target Start Date	(✓)	(✓)	(✓)	Date	
D 8.	To minimize the potential for water quality impacts during construction, the NHDOT will require construction contractors to provide detailed erosion control plans including contingency measures and periodic turbidity monitoring of the site discharge during wet weather events	07/01/09		✓			Specific erosion control and turbidity monitoring contract language has been included in Contracts L, M, O, and Q. Similar language will be included in Contract S.
D 9.	Contractors will also be required to develop a SWPPP, which requires NHDOT approval. Frequent inspections of construction sites will be required to maintain compliance with permit conditions	07/01/09		✓			As part of Contracts L, M, O, and Q the contract language includes a contractor developed SWPPP with contract items for inspection. Similar language will be included in Contract S.
	E. Navigation						
E 1.	Reconstruction of the LBB will maintain the existing limiting vertical clearances for the 100 ft and 200 ft navigation corridors (horizontal clearance) and the extension of bridge piers will maintain existing alignments to eliminate potential impacts to navigation	01/05/09			✓	09/15/14	The design of the new SB LBB maintains the existing vertical and horizontal clearances with the proposed piers being in alignment with the existing LBB piers. The reconstruction of the existing LBB also maintained the existing horizontal and vertical clearances.
E 2.	The plans for the reconstruction of the Little Bay and General Sullivan Bridges will be submitted to the USCG to address the reasonable needs of navigation, as well as the reasonable needs of land traffic (i.e., highway users), and to procure the necessary USCG permit.	01/05/09		✓	✓	04/06/09	The USCG Permit was applied for with all required plans and correspondence being supplied for review. The permit was received prior to the Contract L advertising date. If replacement of the GSB is identified as the Selected Alternative in the Final SEIS, then a new USCG permit application would be developed and submitted to permit the replacement bridge.
	F. Marine Resources						
F 1.	A sediment sampling and analysis program will be conducted prior to construction in order to properly plan and mitigate potential impacts from suspension of contaminated sediments	01/05/09			✓	01/06/09	The Sampling and Analysis Program was completed in 2008; results were reported to NHDES.
F 2.	Additional measures will be developed in consultation with state and federal resource agencies and other experts as needed if contaminants in the marine sediments exceed NOAA thresholds for ecological or human health risk	01/05/09			✓	01/06/09	A sediment management plan was developed and submitted to NHDES.
F 3.	Stringent requirements will be incorporated into the final design plans to require the selected contractor to minimize any movement of sediment beyond the work area, even if sediments are determined to be free from contamination	07/01/09			✓		Contract language was implemented into Contracts L and O regarding the movement of sediment. Similar language will be included in Contract S.
F 4.	It is anticipated that all work on the bridge piers will be conducted behind sealed cofferdams, which will substantially limit the movement of suspended sediments. The NHDOT will conduct regular inspections of the measures designed to minimize this risk	07/01/09			✓	06/17/10	The development of the pier design for Contract L, lead the consultant design team to advance the pier design with drilled shafts which substantially limit the movement of suspended sediments. This design decision eliminates the need for cofferdams to contain sediment. There is contract language that required the contractor to submit for approval a sediment management plan for his operations in the river.
F 5.	The NHDOT will coordinate the design, methods and anticipated schedule of the pier construction during the project's final design with the NHF&GD as well as with the USACOE, the USFWS, and the NMFS to reduce, to the extent practicable, the potential temporary effects that construction activities may have on anadromous fish	08/01/09		✓			The Department has coordinated the pier construction in regards to anadromous fish and included contract language in Contracts L and O that identifies critical times to avoid construction if possible. Similar language may need to be refined and included in Contract S.
F 6.	NHDOT will coordinate with the NH Estuaries Project to locate and avoid impacts to the existing shellfish monitoring station located between Pier 8 of the Little Bay Bridges and the Dover shoreline	08/01/09		✓			The Department coordinated the impacts to the existing shellfish beds with NHDES and included details in the plans and contract language explaining the contract limits of allowed disturbances. Similar language may need to be refined and included in Contract S.

LEGEND

A - Transportation and Highway Design
B - Socio-Economic Resources
C - Wetland Resources
D - Drainage and Water Quality
E - Navigation
F - Marine Resources
G - Floodplains
H - Groundwater
I - Noise
J - Recreational Resources
K - Visual Resources
L - Cultural Resources
M - Petroleum, Hazardous Materials and Solid Waste
N - Construction Impacts
O - Utility Impacts
ROD - ROD

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

	FEIS Project Commitments		No Action Taken	Action Underway	Completed		Remarks
		Target Start Date	(✓)	(✓)	(✓)	Date	
	G. Floodplains						
G 1.	Measures to minimize or eliminate direct impacts to the 100-year floodplain will continue to be considered during final design by steepening highway embankments and/or utilizing retaining walls, where appropriate	01/05/09			✓	10/01/20	The slope lines adjacent to the river were steepened to reduce impacts and the Pomeroy Cove pathway was designed to minimize impacts to the floodplain. Completed in Contract Q.
G 2.	NHDOT has and will continue to coordinate the project with both Dover and Newington and will seek to further minimize floodplain impacts during the project's final design, to the extent practicable	08/01/09		✓			The Department has reviewed Contracts L, M, O, and Q with Dover and Newington through staff meetings and public informational meetings. Similar coordination efforts will occur for the remainder of the project under Contract S.
	H. Groundwater						
H 1.	To help reduce potential impacts to groundwater recharge, NHDOT will examine the use of infiltration technology during final design of the reconstructed drainage system. Such measures would be incorporated into the drainage design to allow stormwater to infiltrate back into the ground following treatment	04/01/09			✓	06/23/16	Design advancement included this commitment during the slope and drainage phase of the project development. The existing soils in Newington are not conducive to infiltration. The existing soils and extremely limited available land within the ROW in Dover prevented infiltration to be considered in Dover.
	I. Noise						
I 1.	The Selected Alternative will generally maintain the existing vertical alignment to minimize noise impacts	04/01/09			✓	06/23/16	The line and grade along the Spaulding Turnpike was established and approved by the Department to match the existing profile.
I 2.	If desired by a 75% majority of the benefited first row property owners, four large noise barriers will be constructed in Dover in the following locations: ➢ Dover Point Road area (Noise Barrier #1, 4,100 feet long, 14 feet high). ➢ Wentworth Terrace and Cote Drive areas (Noise Barrier #2, 4,200 feet long, 14 feet high). ➢ Spur Road and Clearwater Drive areas (Noise Barrier #3, 3,600 feet long, 12 feet high). ➢ Homestead Lane and Pearson Drive areas (Noise Barrier #4, 3,700 feet long, 14 feet high). Additional meetings with the benefited property owners will be held to discuss the noise barriers and ascertain whether the barriers are desired or not. In accordance with NHDOT's Policy and Procedural Guidelines, a minimum of 75% of the first row property owners will need to support the installation of the barrier in order for it to be constructed.	07/01/09			✓	06/23/16	The Department held a Public Informational Meeting on 3/3/10 to discuss the soundwalls south of Exit 6. The Department requested a response in support of or opposition to the soundwalls to determine if the 75% criteria was reached. The results were favorable in support of the soundwalls. The Department held a Public Informational Meeting on 5/16/13 to discuss the project and the soundwalls. Soundwalls have been constructed as described in the 2007 FEIS.
I 3.	The Spur Road/Clearwater Drive barrier and the Homestead Lane/Pearson Drive barrier will extend north of the toll plaza to provide abatement to an additional 25 residences	05/01/10			✓	06/23/16	Design advancement included this commitment. The soundwall has been constructed as described in the 2007 FEIS.
I 4.	In an effort to minimize construction noise, proposed noise barriers will be built as soon as practicable so that they may provide a reduction in subsequent construction noise to the residences	06/01/09			✓	06/23/16	The Department considered construction of the noise barriers early during construction and included appropriate contract language with Contract The soundwall has been constructed as described in the 2007 FEIS.
I 5.	During neighborhood meetings, more detailed information on the type, height, special features, and length of the noise barriers will be discussed and input gathered for consideration in the final design of the barriers where determined feasible.	06/01/09			✓	06/23/16	The detailed information prepared within the Type Study on noise barriers was presented at the 3/3/10 informational meeting. Additional Public Informational Meetings have also discussed the details of the noise walls.
I 6.	NHDOT will strive to design the noise barriers to be as low as possible while still achieving the necessary noise reductions, and will consider various architectural treatments and landscaping during the final design phase to mitigate the visual impact of the barriers.	06/01/09			✓	06/23/16	The Department designs noise barriers to be as high as necessary to achieve the required noise abatement. The use of a translucent barrier was considered along Pomeroy Cove and the use of ivy along both sides of the barriers was evaluated. Due to engineering and maintenance concerns, these design elements were not incorporated into the constructed soundwall.

LEGEND	
A - Transportation and Highway Design	L - Cultural Resources
B - Socio-Economic Resources	M - Petroleum, Hazardous Materials and Solid Waste
C - Wetland Resources	N - Construction Impacts
D - Drainage and Water Quality	O - Utility Impacts
E - Navigation	ROD - ROD
F - Marine Resources	
G - Floodplains	
H - Groundwater	
I - Noise	
J - Recreational Resources	
K - Visual Resources	

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

	FEIS Project Commitments		No Action Taken	Action Underway	Completed		Remarks
		Target Start Date	(✓)	(✓)	(✓)	Date	
	J. Recreational Resources						
	Hilton Park						
J 1.	Continued access from the park to the rehabilitated General Sullivan Bridge will be provided by an ADA-compliant ramp located in the western portion of Hilton Park.	01/05/09			✓	05/11/10	An ADA compliant ramp is included in the Contract L design.
J 2.	Safer access to the Park and to the eastern and western sides of Dover Point will be provided by the widening of the existing single-lane loop road	01/05/09			✓	05/11/10	Safer access to Hilton Park is provided by including and increasing sidewalks along Hilton Drive as well as widening Hilton Drive to a two-way roadway with increased shoulder widths.
J 3.	NHDOT will work with NHDHR to develop and erect an informational sign that explains the history and significance of the park and the General Sullivan Bridge	10/01/10		✓			NHDOT's Bureau of Environment will work through their statewide contract to develop appropriate mitigation measures in coordination with NHDHR and FHWA, including on-site interpretive signs, that will be stipulated in the MOA in the Final SEIS. Separate contracts will be developed to design and comply with these stipulations. Some of these measures may be incorporated into Contract S as appropriate.
J 4.	Reasonable efforts will be made to minimize impacts to the park during construction, including preventing unnecessary disturbance of areas outside the existing right-of-way and maintaining safe access to the park	01/05/09		✓			The Contract L, O, and Q impacts to the park have been minimized to the extent practicable. Due to identified archaeological resources within the park, NHDOT will prohibit the Contract S contractor from staging in these sensitive areas.
J 5.	NHDOT will continue to coordinate with the NHF&GD and NHDRED to determine whether improvements to the boating infrastructure at Hilton Park could be accomplished concurrently with the Little Bay Bridge and Turnpike Expansion project.	01/01/10		✓			The Department had discussions regarding the boat launch during the development of Contract L. At that time, NHF&G didn't have money for the project and the N-D project doesn't need to impact the boat launch and will keep Hilton Park open during construction. Additional follow-up will occur for Contract S.
	Bayview Park						
J 6.	NHDOT will provide improved access to Bayview Park. Pedestrians and bicyclists will benefit from improved access as NHDOT intends to construct a sidewalk connecting the park to the Scammell Bridge and to Boston Harbor Road.	01/05/09			✓	06/23/16	Design advancement included this commitment in Contract Q.
J 7.	The existing parking lot will be expanded from six to ten spaces by extending the parking area to the southwest to benefit users of the park, as well as anglers using the Scammell Bridge and adjacent shoreline to fish.	01/05/09			✓	06/23/16	Design advancement included this commitment in Contract Q.
J 8.	Reasonable efforts will be made to minimize impacts to the park during construction, including preventing unnecessary disturbance of areas outside the authorized right-of-way, and maintaining safe access to the park for vehicles, pedestrians and bicyclists	01/05/09			✓	06/23/16	Design advancement included this commitment in Contract Q

LEGEND	
A - Transportation and Highway Design	L - Cultural Resources
B - Socio-Economic Resources	M - Petroleum, Hazardous Materials and Solid Waste
C - Wetland Resources	N - Construction Impacts
D - Drainage and Water Quality	O - Utility Impacts
E - Navigation	ROD - ROD
F - Marine Resources	
G - Floodplains	
H - Groundwater	
I - Noise	
J - Recreational Resources	
K - Visual Resources	

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

	FEIS Project Commitments		No Action Taken	Action Underway	Completed		Remarks
		Target Start Date	(✓)	(✓)	(✓)	Date	
	K. Visual Resources						
K 1.	Landscaping and design treatments will be developed at the final design stage to minimize the aesthetic impact of the proposed action. Measures to be studied will include: ➢ Minimization of tree clearing and setback areas to the extent practicable. ➢ Planting of new trees in select locations to mitigate for the mature trees that will be lost due to construction. ➢ Landscape planting and natural revegetation of the cut and fill slopes for the mainline and at all interchanges and, as appropriate, at off-site park-and-ride facilities. ➢ Structural design and aesthetic considerations for drainage structures, bridges, noise barriers, etc. to enhance their visual appearance. ➢ Highway lighting at interchanges and park-and-ride facilities will be designed with “cut offs”(shields) or similar features to limit unwanted light where appropriate. ➢ Landscaping amenities will be considered in conjunction with the noise barriers, wherever practicable. ➢ Landscape screenings or privacy fences to minimize the visual impact of the highway and mitigate for the loss of existing vegetative screening will be considered and evaluated as part of the discussions with affected property owners during the project final design. ➢ Potential use of transparent materials in noise barriers at Pomeroy Cove to enable continued viewing of this aquatic resource.	12/01/10			✓	06/23/16	Design advancement evaluated this commitment. Due to engineering and maintenance concerns NHDOT determined that the soundwalls will not include an ivy landscape planting. The project considered incorporating a translucent soundwall adjacent to Pomeroy Cove, but determined that the wood soundwall would be constructed along Pomeroy Cove based on comments received from the adjacent neighborhood and the cost differential.
K 2.	NHDOT proposes to plant evergreen trees alongside US 4 to shield the pocket neighborhood on Boston Harbor Road from headlight glare and the increased elevation of US 4. The evergreen trees will over time help to obscure the highway	12/01/10			✓	06/23/16	The inclusion of the roundabout and soundwall on the back side of the neighborhood will minimize headlight glare and help obscure the view of the highway.
	L. Cultural Resources						
	Historical Structures						
L 1.	A reduced cross-section for Woodbury Avenue will be constructed in front of the Isaac Dow house (NWN0205) and Beane Farm (NWN0204) property to minimize impacts to these two historic resources.	01/05/09			✓	05/16/12	The cross section on Woodbury Avenue was reduced in front of these houses and included in Contract M.
L 2.	Mitigation for impacts to the Beane Farm will include planting of new silver maples and lilacs on the property in consultation with the owner and their placement in relation to the power lines to avoid the need for future trimming	12/01/10			✓	05/16/12	The Department met with the property owners in the spring of 2011 on the proposed landscaping. Landscaping was included in Contract M along the Beane Farm.
L 3.	Mitigation for the Isaac Dow House will include replacement of the granite slab wall in-kind and appropriate landscaping with shrubs in consultation with the owner	12/01/10			✓	05/16/12	The Department met with the property owners in the spring of 2011 on the proposed landscaping. Landscaping was included in Contract M along the Dow House property along with the replacement of the granite slab retaining wall.
L 4.	Mitigation for the adverse effect to the Portsmouth Water Booster Station (NWN0228) will be accomplished by leaving a tree buffer between the Turnpike and the historic structures and by its documentation within its Determination of Eligibility	12/01/10			✓	05/16/12	The final design has coordinated this commitment with the City of Portsmouth who requested no tree buffer for security reasons. A Cultural Resource meeting was held to inform NHDHR and the SHPO of the City's request. No landscaping/tree buffer was included in Contract M construction plans. A memorandum to NHDHR dated March 20, 2012 documents the issue and resolution.

LEGEND

A - Transportation and Highway Design
B - Socio-Economic Resources
C - Wetland Resources
D - Drainage and Water Quality
E - Navigation
F - Marine Resources
G - Floodplains
H - Groundwater
I - Noise
J - Recreational Resources
K - Visual Resources
L - Cultural Resources
M - Petroleum, Hazardous Materials and Solid Waste
N - Construction Impacts
O - Utility Impacts
ROD - ROD

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

FEIS Project Commitments			No Action Taken	Action Underway	Completed		Remarks
		Target Start Date	(✓)	(✓)	(✓)	Date	
L 5.	Mitigation for impacts to the General Sullivan Bridge (DOV0158) will include its rehabilitation for use by pedestrians and bicyclists and its continued use for fishing	01/05/09		✓			Design advancement had included this commitment; however, the rehabilitation of the GSB is under reconsideration through the Draft SEIS and Section 106 process. Based on the DSEIS's Preferred Alternative, the GSB would be replaced with a new bridge dedicated to pedestrian, non-motorized transportation and recreational uses.
L 6.	Work on the bridges will be accomplished in a manner that will not impact the adjacent Hilton Park Picnic Shelter.	01/05/09		✓			The Department included language in Contract L prohibiting impacts to the Picnic Shelter. However, the picnic shelter was modified as part of separate park maintenance activities. The Picnic Shelter was determined by NHDHR to not be an individually eligible historic resource. Through discussion in the development for Contract S, the picnic shelter is currently planned to be removed to provide staging necessary for GSB construction access. Options for replacement or relocation of the Picnic Shelter will be evaluated in coordination with the NHDOT Bureau of Turnpike.
L 7.	Mitigation for the property taking at the Ira Pinkham House (DOV0093) will involve producing a state-level Historic American Building Survey for the dwelling, documentation of the barn's structure in the same document, preparation of preservation covenants for the house and barn, marketing the barn for relocation if structurally feasible, and marketing the dwelling if the property is acquired in total.	01/05/09			✓	07/16/12	The entire property has been acquired by the Department through negotiations for Contract L. The house and property will be marketed for sale in the future after the Contract S construction is completed. The marketing of the barn for sale found no buyer and was demolished within Contract L. Documentation has been completed and accepted by NHDHR, (NH State Property Documentation No. 626, RPR1853.
L 8.	NHDOT will continue to work with the Town of Newington to develop an agreement to transfer the historic former railroad station on Bloody Point and the land immediately surrounding the building to the Town.	12/01/10		✓			Formal agreement has not been obtained with the Town. The parcel would have to be subdivided to obtain either the building or the parcel. Prior informal discussion with the Board of Selectmen revealed concern with liability and long-term tax impact for property management. NHDOT supports expansion of commitments for this property through dedicated funding for property rehabilitation and expanded historic use as mitigation for the loss of the GSB and historic transportation corridor. Mitigation commitments regarding this property may be stipulated in the MOA in the Final SEIS, which will be signed by the Town as a Consulting Party to the Section 106 process.
	Archaeological Resources						
L 9.	NHDOT will initiate Phase I-B archaeological investigations in the sensitivity areas that are impacted by the Selected Alternative, as discussed in Section 4.17, in compliance with May 2004 Phase I-B guidelines for fieldwork and report writing defined by the Bureau of Environment, NHDOT Guidelines.	04/01/09			✓	06/23/16	Phase I-B investigations were completed for all contracts.

LEGEND	
A - Transportation and Highway Design	L - Cultural Resources
B - Socio-Economic Resources	M - Petroleum, Hazardous Materials and Solid Waste
C - Wetland Resources	N - Construction Impacts
D - Drainage and Water Quality	O - Utility Impacts
E - Navigation	ROD - ROD
F - Marine Resources	
G - Floodplains	
H - Groundwater	
I - Noise	
J - Recreational Resources	
K - Visual Resources	

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

FEIS Project Commitments		No Action Taken	Action Underway	Completed		Remarks
	Target Start Date	(✓)	(✓)	(✓)	Date	
L 10. Continued study will be conducted at the impacted verified site on the southern tip of Dover Point (Area 21) to determine its eligibility status for the National Register of Historic Places following a Phase II survey strategy as recommended by NHDOT Guidelines	04/01/09			✓	10/17/12	This area was investigated and based on limited evidence found of a brick yard within the limits of Contracts L, O and Q construction impacts a Phase II survey was determined to not be required. IAC and the Bureau of Environment made this decision in coordination with FHWA and NHDHR. The IAC Report #1049- Phase IB/Phase II was completed dated October 17, 2012. An expanded area of potential impacts, associated with Contract S in the brick yard location within Hilton Park, was investigated by IAC in June 2019. A Phase IB Intensive Archaeological Investigation (IAC Report #1476) confirmed the presence of archeological remnants of the Enoch Pinkham brick yard. This area will be protected and avoided by staging and construction activities during Contract S construction. Avoidance/mitigation measures may be memorialized as a stipulation in the Final SEIS MOA.
L 11. Temporary construction fencing will be installed between all unimpacted verified sites and the work zone, including at Areas 23, 46 and 74 in Newington, and Areas 9 and 13 in Dover. If needed to ensure accurate placement of the fencing, the boundaries of these sites will be defined through Phase I-B testing	09/01/09		✓			This language has been included in Contracts M and Q. This language will be included in Contract S as appropriate.
L 12. Mitigation for all impacted verified sites will be developed in consultation with NHDHR and other interested parties following completion of Phase II studies. Mitigation may include the following, depending on the site: ➢ Preservation in-place may be necessary, requiring a change in design or location, where feasible and prudent, to satisfy Section 4(f). In some cases, the location of the corridor may be moved slightly or work adjacent to the site may be modified so that the site will not be impacted by the Selected Alternative. ➢ If preservation in-place is determined unnecessary, then recovery of the information from the site will be accomplished by implementing a data recovery plan under a Phase III investigation. ➢ In a few cases, excavation using a data recovery plan may be conducted on a previously identified unimpacted archaeological site in the vicinity of the alignment and of a similar age, type, function, and composition. This form of mitigation would be completed prior to the completion of the project. However, its excavation can continue while work commences within the corridor.	04/01/09		✓			Appropriate measures were addressed during design of Contracts M and Q based on the Phase IB/Phase II surveys completed by IAC in October 2012. An expanded area of potential impacts, associated with Contract S in the brick yard location within Hilton Park, was investigated by IAC in June 2019. A Phase IB Intensive Archaeological Investigation (IAC Report #1476) confirmed the presence of archeological remnants of the Enoch Pinkham brick yard. This area will be protected and avoided from staging and construction activities during Contract S construction. Avoidance/mitigation measures may be memorialized as a stipulation in the Final SEIS MOA.
L 13. Where archaeological information is gained through the excavation of sites associated with this project, NHDOT will assist in distributing information to the public through such venues as site reports, public lectures, school programs, interpretive brochures, and, depending on the nature of the site, public visitation during investigations.	09/01/09		✓			An expanded area of potential impacts, associated with Contract S in the brick yard location within Hilton Park, was investigated by IAC in June 2019. A Phase IB Intensive Archaeological Investigation (IAC Report #1476) confirmed the presence of archeological remnants of the Enoch Pinkham brick yard. This area will be protected and avoided from staging and construction activities during Contract S construction. Avoidance/mitigation measures may be memorialized as a stipulation in the Final SEIS MOA.
M. Petroleum, Hazardous Materials and Solid Waste						
M 1. Initial Site Assessments (ISAs) will be performed for those properties that could pose a risk related to potential contamination if encountered along the Selected Alternative.	04/01/09			✓	01/25/11	Corridor screenings were completed to identify parcels that would require additional OHM investigation. Three ISA's where submitted for the Hislop, Saba and Railway Brook parcels on January 25, 2011.

LEGEND

A - Transportation and Highway Design
B - Socio-Economic Resources
C - Wetland Resources
D - Drainage and Water Quality
E - Navigation
F - Marine Resources
G - Floodplains
H - Groundwater
I - Noise
J - Recreational Resources
K - Visual Resources
L - Cultural Resources
M - Petroleum, Hazardous Materials and Solid Waste
N - Construction Impacts
O - Utility Impacts
ROD - ROD

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

FEIS Project Commitments			No Action Taken	Action Underway	Completed		Remarks
		Target Start Date	(✓)	(✓)	(✓)	Date	
M 2.	Following completion of the ISA, and if determined to be warranted, NHDOT will perform a Preliminary Site Investigation (PSI) to determine if contaminant levels require remediation in accordance with NHDES regulations.	07/01/09			✓	01/18/10	Nine geotechnical borings are located in areas of OHM potential and soil samples from all 21 geotechnical borings were collected. The borings were completed between August and September 2009 and a Soil Sampling Completion Report was submitted January 18, 2010. VHB's final recommendation to NHDOT is to contact NHDES to obtain a final decision regarding management of soils/sediments with elevated arsenic levels.
M 3.	If necessary, NHDOT will coordinate with the NHDES to develop an appropriate remedial action plan for any acquired property determined to contain hazardous materials warranting clean up	10/01/09			✓		No such sites yet identified.
M 4.	If contaminated materials are expected to be encountered during construction, appropriate worker health and safety provisions and waste management provisions will be identified. Provisions may include health and safety plans (HASPs) and soil/groundwater management plans for excavation and on/off-site management of waste materials. All work will be performed in accordance with applicable NHDES regulations and NHDES-approved remedial action plans	10/01/09		✓			The appropriate worker health and safety provisions were included in Contracts L,M,O, and Q. It is anticipated that similar language will be added to Contract S.
M 5.	Prior to any scheduled building, utility or bridge demolition or reconstruction, a comprehensive environmental audit will be performed on the structure to identify and quantify all regulated building materials and special wastes. Materials and wastes that will be inventoried include the following: ➢ Asbestos. ➢ Lead-based paint (LBP). ➢ Polychlorinated biphenyls (PCBs) within fluorescent light ballasts. ➢ Electrical transformers that may contain PCB dielectric oil. ➢ Mercury-containing fluorescent light bulbs. ➢ Mercury thermostats. ➢ Miscellaneous containers of oil or hazardous materials. ➢ Refrigerants (air conditioners, refrigerators). ➢ Hydraulic lifts. ➢ Above-ground storage tanks. ➢ Underground storage tanks.	06/01/09		✓			The appropriate language was included in Contract L and O. It is anticipated that similar language will be added to Contract S.
M 6.	Based on the findings of the environmental audits, abatement plans will be prepared to address the removal of all regulated building materials as needed	07/01/09			✓	06/17/10	The abatement plan for the demolition of buildings was included in Contract L.
M 7.	Exposure assessments (air monitoring) will be performed on employees engaged in demolition work that may disturb lead paint or other hazardous substances. Such work will be conducted by properly trained workers using appropriate worker protection and engineering controls.	10/01/09		✓			Contracts L, M, O, and Q addressed Health and Safety measures. Similar plans will be developed for Contract S and will address exposure assessments.
M 8.	Bridge contractors will be required to fully enclose the General Sullivan Bridge during any work involving LBP removal and provide the material and execution requirements for the installation and use of containment systems for the paint removal.	10/01/09		✓			Language will be added for Contract S, similar to Contract L, to include appropriate provisions for Lead Based Paint removal and/or containment.
M 9.	Implementation of an Environmental Protection Plan for the protection of the public and the environment from exposure to harmful levels of dust, paint debris, and lead and other toxic metals that may be present in the paint being removed or repaired will also be required for the reconstruction of the bridges.	10/01/09		✓			The appropriate worker health and safety provisions were included in Contracts L, M, O, and Q. It is anticipated that similar language will be added for Contract S.

LEGEND

A - Transportation and Highway Design
B - Socio-Economic Resources
C - Wetland Resources
D - Drainage and Water Quality
E - Navigation
F - Marine Resources
G - Floodplains
H - Groundwater
I - Noise
J - Recreational Resources
K - Visual Resources
L - Cultural Resources
M - Petroleum, Hazardous Materials and Solid Waste
N - Construction Impacts
O - Utility Impacts
ROD - ROD

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

	FEIS Project Commitments		No Action Taken	Action Underway	Completed		Remarks
		Target Start Date	(✓)	(✓)	(✓)	Date	
	N. Construction Impacts						
N 1.	To mitigate potential sedimentation impacts by construction, a SWPPP containing a well-defined drainage and erosion control program, including BMPs, will be developed and implemented following NHDOT's Standard Specifications for Road and Bridge Construction, Section 699, Temporary Project Water Pollution Control (Soil Erosion).	09/01/09		✓			Contracts L. M, O, and Q contained provisions for a SWPPP and sediment management. The Department coordinated with NHDES on draft language for the Sediment Management Plan. The construction contractor is responsible for the actual Sediment Management Plan utilizing the draft plan as a guide. Contract M included provisions for a SWPPP and appropriate erosion control measure. Similar provisions will be included in Contract S.
N 2.	The drainage and erosion control program will require that areas stripped of vegetation be limited in size and either surfaced or vegetated as quickly as possible after initial exposure. Other measures such as silt fencing, temporary settling basins, temporary erosion check dams and other measures will be installed in appropriate locations.	09/01/09		✓			Contracts L, M, O, and Q included language on exposed vegetation and the installation of temporary erosion control measures. Similar language will be utilized for Contract S.
N 3.	BMPs for fertilizer application during construction be followed to limit potential water quality impacts	06/01/09		✓			The proposed BMP's are designed to capture a majority of stormwater to limit the potential for water quality impacts.
N 4.	Mechanisms and procedures to avoid and control chemical leaks and spills from construction equipment will be instituted	09/01/09		✓			Contracts L, M, O, and Q contain provisions to avoid and control chemical leaks and spills through the EPA NPDES Construction General Permit requirements. Similar language will be included in Contract S.
N 5.	NHDOT will ensure that all erosion control measures are properly installed and maintained throughout construction to ensure their maximum functionality and effectiveness	09/01/09		✓			NHDOT construction and environmental personnel monitor erosion control measures for all construction contracts.
N 6.	In general, construction will be accomplished during daylight hours, although periodic night-time construction should be expected given the traffic volumes during daylight hours and the need to maintain traffic at these times.	09/01/09		✓			Contracts L, M, O, and Q contain language that directs the contractor to limit night-time operations and to maintain traffic at all times. Similar language will be included in Contract S.
N 7.	NHDOT will continue to coordinate with local and state emergency response personnel to develop efficient incident management procedures and protocols during construction. A detailed Traffic Control Plan, to include incident management procedures, will be instituted to reduce traffic-related, short-term disruptions and minimize construction zone delays	07/01/09		✓			The Department revised the Incident Management Plan for each construction contract and developed individual traffic control plans for each contract. Similar plans will be developed for Contract S.
N 8.	The Traffic Control Plan will include the requirement to maintain two lanes of traffic in both directions along the mainline for normal construction activities, and during high volume traffic periods	07/01/09		✓			Contracts L, M, O, and Q include language to maintain two lanes of traffic for normal construction activities and during high volume traffic periods. Similar language will be included in Contract S.
N 9.	Construction activities will be coordinated with property owners to ensure that reasonable access to properties is maintained. Temporary signing and other issues related to the temporary relocation of access points, caused by construction activities, will be appropriately addressed on an individual basis	09/01/09		✓			Contracts L, M, O, and Q include language to coordinate reasonable abutter access and provide for changed conditions accordingly. Similar language will be included in Contract S.
N 10.	Intelligent Transportation Systems, such as Smart Workzone Technologies, will be employed to more efficiently manage traffic/travel demand and enhance incident management. Specific Incident Management procedures and protocols will be incorporated into the contract documents and specifications.	06/01/09		✓			A Smart Workzone was included in Contracts M, O, and Q. Each contract revised the Incident Management Plan for their changing conditions. Adjustments and additions to the Smart workzones will be included in Contract S, as appropriate

LEGEND	
A - Transportation and Highway Design	L - Cultural Resources
B - Socio-Economic Resources	M - Petroleum, Hazardous Materials and Solid Waste
C - Wetland Resources	N - Construction Impacts
D - Drainage and Water Quality	O - Utility Impacts
E - Navigation	ROD - ROD
F - Marine Resources	
G - Floodplains	
H - Groundwater	
I - Noise	
J - Recreational Resources	
K - Visual Resources	

Newington-Dover
NHS – 027-1 (037), 11238

PROJECT COMMITMENTS TRACKING SYSTEM
3-Feb-21

	FEIS Project Commitments		No Action Taken	Action Underway	Completed		Remarks
		Target Start Date	(✓)	(✓)	(✓)	Date	
N 11.	NHDOT will require the contractors, involved with the improvements to the Spaulding Turnpike, to include air pollution control devices on heavy diesel construction equipment in accordance with applicable state and federal laws at the time of construction. The merits and practicality of more stringent or voluntary specification measures will be considered through the final design process with input from the contracting community at large. (Similar to ROD commitment)	09/01/09		✓			Contracts L, M, O, and Q include language on air pollution control devices. Similar language will be utilized in Contract S.
N 12.	Mitigation measures for fugitive dust emissions will be used for construction including wetting and stabilization to suppress dust generation, cleaning paved roadways, and scheduling construction to minimize the amount and duration of exposed earth	09/01/09		✓			Contracts L, M, O, and Q included language on mitigation measures for fugitive dust emissions. Similar language will be included in Contract S.
	O. Utility Impacts						
O 1.	During the project's final design, NHDOT will closely coordinate the project with Town Officials concerning municipal utilities and with the private utility companies concerning their facilities in the project area. Efforts will be initiated to verify the location of existing facilities, to identify potential areas of conflict and the utility relocations necessary to accomplish the proposed construction, and to accommodate requests for concurrent municipal or private utility improvements.	01/05/09		✓			Contracts L, M, and Q included modifications to municipal utilities and it is expected that Contract S may have other modifications.
O 2.	Where appropriate, the affected municipalities will be given the option to include utility work, at the municipality's expense, in the construction contract. Any property rights or additional right-of-way required for the utility work would be the responsibility of the Town.	05/01/09		✓			Municipalities are afforded the opportunity to include utility work at their expense for each construction contract. Contracts L and O didn't include any such work. Contracts M and Q included the water and sewer work. There may be additional municipal utility work included in Contract S.
O 3.	NHDOT will work closely with Granite State Gas to limit the extent of relocations to only those that are reasonable and prudent.	01/05/09			✓	09/15/14	The Department has had many discussions with Unitil (Granite State Gas) on the relocation of their line and they have decided to not relocate permanently on the LBB. Unitil designed the final relocation as a directional bore beneath Little Bay and was constructed by Unitil in the summer of 2013.
	ROD						
ROD 1.	The Department and FHWA will require that the contractors involved with the reconstruction of the Spaulding Turnpike to include air pollution control devices on heavy diesel construction equipment in accordance with applicable state and federal laws at the time of construction. However, there are currently no requirements under state and federal law which mandate NHDOT and FHWA to require such air pollution control devices on construction equipment. The merits and practicality of more stringent specification measures will be considered during final design of the project, and will be discussed with the contracting community at large. (pg. 26) (Similar to N11)	09/01/09		✓			Contracts L, M, O, and Q include language on air pollution control devices. Similar language will be utilized in Contract S.