Nuttall, Genevieve

From:	Fuller, Clarissa N <Clarissa.Fuller@amtrak.com>
Sent:	Wednesday, March 1, 2023 4:04 PM
To:	Steven Harlacker; Benjamin Hawthorne; Vonderweidt, Christopher
Cc:	Apanovitch, Ryan; Nuttall, Genevieve; Hamilton, Blake E; Davies, Johnette; Travaglino, Joseph A; Asimenios, George S; Brun, John; grahamr@amtrak.com
Subject:	FW: Connecticut River Bridge Replacement Project Request for EFH Consultation - CR
Attachments:	FRA to NMFS EFH CRs_signed 03012023.pdf

Good Afternoon,

Great News, kindly find FRA responses to the EFH Consultation comments and recommendations (CR) directly followed NOAA response of acceptance for your review and record.

If you have any questions or need further assistance, please feel free to contact.

Clarissa N. Fuller
Senior Principal Project Manager – Major Capital Delivery
400 West 31st Street, 5th Floor
New York, NY 10001
Email: Clarissa.Fuller@amtrak.com |Cell:917-886-0495

From: Sabrina Pereira - NOAA Federal <sabrina.pereira@noaa.gov>
Sent: Wednesday, March 1, 2023 3:44 PM
To: Nadjkovic, Amanda (FRA) <amanda.nadjkovic@dot.gov>
Cc: Roosevelt Mesa - NOAA Affiliate <roosevelt.mesa@noaa.gov>; Fuller, Clarissa N <Clarissa.Fuller@amtrak.com>; Hamilton, Blake E <Blake.Hamilton@amtrak.com>; Kullberg, Paula G CIV USARMY CENAE (USA) <paula.g.kullberg@usace.army.mil>
Subject: Re: Connecticut River Bridge Replacement Project Request for Reinitiation of Section 7 Informal Consultation

ATTENTION: This email originated outside of Amtrak. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi Amanda,

Thank you for the thorough response. We accept FRA's response to our CRs and look forward to receiving the USACE permit once furnished. We also will stay engaged on any mitigation project discussions as we are able to.

Thank you again for coordinating with us.

Sabrina Pereira
Marine Resources Management Specialist
Habitat and Ecosystem Services Division
NOAA/ National Marine Fisheries Service
Gloucester, MA
Pronouns: she/her/hers
(978)-675-2178
Sabrina.pereira@noaa.gov

On Wed, Mar 1, 2023 at 3:39 PM Nadjkovic, Amanda (FRA) <amanda.nadjkovic@dot.gov> wrote:

Good afternoon Sabrina,

Please find attached FRA’s response to NMFS’s EFH Conservation Recommendations for the Connecticut River Bridge Replacement Project.

Please contact me if you have any questions or if you would like to discuss the response further.

Thank you,

Amanda Nadjkovic

Environmental Protection Specialist

Environmental Review Division

Office of Environmental Program Management

Federal Railroad Administration

984.422.7127 (Mobile)

Amanda.Nadjkovic@dot.gov

From: Sabrina Pereira - NOAA Federal <sabrina.pereira@noaa.gov>
Sent: Friday, January 27, 2023 12:30 PM
To: Nadjkovic, Amanda (FRA) <amanda.nadjkovic@dot.gov>
Cc: Roosevelt Mesa - NOAA Affiliate <roosevelt.mesa@noaa.gov>
Subject: Re: Connecticut River Bridge Replacement Project Request for Reinitiation of Section 7 Informal Consultation

Good afternoon Amanda,

Please find attached our conservation recommendations for the Amtrak bridge replacement project over the CT River in Old Lyme and Old Saybrook, CT. Please let me know if you have any questions on our conservation recommendations, and we look forward to the FRA's response to our CRs within the next 30 days.

Thank you for coordinating with us, and I hope you have a great weekend!

Best wishes,

Sabrina Pereira
Marine Resources Management Specialist
Habitat and Ecosystem Services Division
NOAA/ National Marine Fisheries Service
Gloucester, MA
Pronouns: she/her/hers
(978)-675-2178
Sabrina.pereira@noaa.gov

On Wed, Jan 4, 2023 at 1:10 PM Nadjkovic, Amanda (FRA) <amanda.nadjkovic@dot.gov> wrote:

Hi Sabrina,

Thank you for your confirmation of receipt of the consultation documents as well as the staffing update. As always, please feel free to reach out if you have any questions. I welcome phone calls and emails.

Happy New Year!

Amanda Nadjkovic

Environmental Protection Specialist

Federal Railroad Administration

984.422.7127 (Mobile)

Amanda.Nadjkovic@dot.gov

From: Sabrina Pereira - NOAA Federal <sabrina.pereira@noaa.gov>
Sent: Thursday, December 29, 2022 11:12 AM
To: Nadjkovic, Amanda (FRA) <amanda.nadjkovic@dot.gov>
Cc: nmfs.gar.esa.section7@noaa.gov; clarissa.fuller@amtrak.com; caldwec@amtrak.com; margason.nathan@epa.gov; paula.g.kullberg@usace.army.mil; leslie@calladiumgroup.com; blake.hamilton@amtrak.com; jennifer.anderson@noaa.gov; bhawthorne@hardestyhanover.com; Roosevelt Mesa - NOAA Affiliate <roosevelt.mesa@noaa.gov>
Subject: Re: Connecticut River Bridge Replacement Project Request for Reinitiation of Section 7 Informal Consultation

Hi Amanda,

Thank you for sending the EFH and ESA Section 7 consultation materials. Just an FYI that my colleague Roosevelt Mesa, copied, in GARFO's Protected Resources Division will be your point of contact for the Section 7 consultation.

Zach Jylkka is no longer with NMFS. I will review the EFH materials and reach out with any questions in the next couple of weeks.

Thanks again, and happy new year!

Sabrina Pereira
Marine Resources Management Specialist
Habitat and Ecosystem Services Division
NOAA/ National Marine Fisheries Service
Gloucester, MA
Pronouns: she/her/hers
(978)-675-2178
Sabrina.pereira@noaa.gov

On Thu, Dec 29, 2022 at 7:40 AM <amanda.nadjkovic@dot.gov> wrote:

amanda.nadjkovic@dot.gov sent you a secure message

Access message

NOAA Project Review Team, Attached please find the following consultation documents for the Connecticut River Bridge Replacement Project (Pr..

Attachments expire on Jan 28, 2023

2 PDFs

20221229-CTRBR Section 7 Reinitiation Request.pdf, 20221209-CTRBR Section 7 Reinitiation Attachments.pdf

This message requires that you sign in to access the message and any file attachments.

U.S. Department
of Transportation

**Federal Railroad
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

March 1, 2023

Sabrina Pereira
Marine Resources Management Specialist
NOAA National Marine Fisheries Service
Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
Gloucester, Massachusetts 01930-2276
Via email: sabrina.pereira@noaa.gov

**Re: Magnuson-Stevens Fishery Conservation Management Act Essential Fish Habitat Consultation
Amtrak Connecticut River Bridge Replacement Project
Old Lyme and Old Saybrook, Connecticut**

Dear Ms. Pereira:

Thank you for your letter dated January 27, 2023, in which the National Marine Fisheries Service (NMFS) provided Magnuson-Stevens Fishery Conservation and Management Act (Act) Essential Fish Habitat Consultation Conservation Recommendations (CRs) for Amtrak's Connecticut River Bridge Replacement Project (Project) located in Old Lyme and Old Saybrook, Connecticut. The Federal Railroad Administration (FRA) is providing funding to Amtrak for design and construction of the Project. By way of this letter and as required by the Act, FRA is providing NMFS with its response to the CRs. FRA has coordinated these responses with Amtrak, who is responsible for designing and implementing the Project.

The CRs and FRA's responses are listed below:

1. *Appropriate soil erosion, sediment and turbidity controls (e.g. turbidity curtains, cofferdams) should be used and maintained in effective operating condition during construction. Activities capable of producing greater than minimal turbidity or sedimentation should be done during periods of low-flow or no-flow, when the stream or tide is waterward of the work, or when controls are used to obtain dry work conditions. Work that produces greater than minimal turbidity or sedimentation should not be done from February 1 to June 30 to protect sensitive life stages of winter flounder, and migrating diadromous species.*

   Response: FRA accepts this CR as long as the use of turbidity controls such as a turbidity curtain or cofferdam could be considered in determining whether an activity would produce greater than minimal turbidity or sedimentation. If use of a turbidity control cannot be considered in determining whether an activity would produce greater than minimal turbidity or sedimentation, and thus whether the activity could occur between February 1 and June 30, please contact Amanda Nadjkovic, FRA Environmental Protection Specialist, at Amanda.Nadjkovic@dot.gov or at (984) 422-7127 to facilitate further coordination. A revised response from FRA and Amtrak may be warranted based on this additional clarification.

   Amtrak's Engineer of Record has reviewed the anticipated turbidity-causing contractor operations and provided a summary of which activities may cause turbidity as well as the anticipated effect on those operations if restricted to working outside of the February 1st to June 30th window. Amtrak has previously agreed to the CTDEEP Fisheries mitigation approach with respect to river turbidity and time of year (TOY) restrictions. The NOAA/NMFS/GARFO/HESD conservation recommendation increases the duration of TOY restrictions by 2 months, with a beginning date of February 1 instead of April 1. The end date of June 30 remains the same.

Specific to contractor operations, Amtrak offers the following:

1. Existing Bridge Pier Demolition will be performed in the dry (inside cofferdam).
2. Barge docking area dredging will be prohibited during the window 2/1 to 6/30. This is an extension over the CTDEEP prohibited period of 4/1 to 6/30.
3. Pulling or cutting of piles (including temporary trestle piles and turbidity curtain support piles) will be prohibited during the window 2/1 to 6/30. This is an extension over the CTDEEP prohibited period of 4/1 to 6/30.
4. Trestle and cofferdam construction will be done within turbidity curtains and will be prohibited during the window 2/1 to 6/30.
5. Submarine cable installation and removal will be prohibited during the window 2/1 to 6/30. This is an extension over the CTDEEP prohibited period of 4/1 to 6/30.
6. Shafts will be drilled inside steel casing and within turbidity curtains and it is expected that this measure, being adequate to meet CTDEEP requirements, would also satisfy NOAA/NMFS/GARFO/HESD.

In order to comply with CTDEEP Fisheries restrictions, deployment of full-length turbidity curtains will be required of the Contractor prior to driving any sheet pile or shaft casings. Amtrak expects that the turbidity curtains, along with use of permanent steel casing when drilling of shafts, will be sufficient to avoid the Contractor creating ‘greater than minimal turbidity’ and the work can be performed during the window, subject to other TOY restrictions.

2. *Compensatory mitigation should be provided for the permanent loss of 69,500 SF of tidal wetlands. Please send a copy of the final mitigation plan (including ILF payment and ratio information) to NOAA Fisheries for our review.*

Response: FRA accepts this CR; however, the reference to ILF payment and ratio information is not applicable.

The Federal Interagency Comment Form indicates that Amtrak will be paying an In Lieu Fee (ILF) for compensatory mitigation. However, at this time, Amtrak does not intend to utilize the ILF program and assumes the mitigation elements proposed for CTDEEP requirements will also satisfy the U.S. Army Corps of Engineers and other agency mitigation requirements. These elements include restoration of degraded brackish intertidal habitat within a 15-acre parcel (17 Shore Road), restoration of degraded brackish intertidal habitat at a 3.25 acre site (Amtrak owned parcel), and 200 + acres of invasive species control with the CTDEEP owned Ragged Rock Creek Wildlife Management Area. Amtrak will continue to involve NOAA Fisheries in discussions surrounding the final permitting design of these elements and will provide the final mitigation plan to NOAA for review.

Thank you for working with FRA to address compliance with the Magnuson-Stevens Fishery Conservation Management Act for the Project. If NMFS has any questions or concerns, please contact Amanda Nadjkovic, FRA Environmental Protection Specialist, at Amanda.Nadjkovic@dot.gov or at (984) 422-7127.

Sincerely,

Laura A. Shick
Supervisory Environmental Protection Specialist
Environmental Review Division
Office of Environmental Program Management
Office of Railroad Development

Cc: Amanda Nadjkovic, FRA
Clarissa Fuller, Amtrak (clarissa.fuller@amtrak.com)
Blake Hamilton, Amtrak (blake.hamilton@amtrak.com)

Federal Interagency Comment Form

Date: 1/27/2023
Project: CT River Bridge Replacement (Old Lyme & Old Saybrook, CT)
Appl No.:
Commenting Agency: NOAA/NMFS/GARFO/HESD
Action Agency Project Manager: Amanda Nadjkovic, FRA
Waterway: Connecticut River, Old Lyme & Old Saybrook, CT
Activity: Construction of a new bascule railroad bridge over the Connecticut River and involves in-water activities such as excavation, dredging, and filling. The existing bridge would be removed following completion of construction of the new bridge. Approximately 69,500 SF (1.6 acres) of tidal wetlands will be permanently lost from construction activities. Compensatory mitigation is proposed through various saltmarsh restoration activities (increasing tidal flows, cleaning ditches, and increasing the proportion of the low marsh zone with regular tidal inundation and high marsh zone with periodic tidal inundation) at an adjacent Amtrak-owned property (17 Shore Rd.), and a payment to the USACE In Lieu Fee program for the state of CT.

ESSENTIAL FISH HABITAT (EFH)
Project may adversely affect EFH. Area is designated EFH for 16 federally-managed species, including winter flounder. The area is also HAPC for summer flounder and habitat for diadromous prey species, including river herring.
ESSENTIAL FISH HABITAT CONSERVATION RECOMMENDATIONS: (Note: EFH CRs require a response from the federal action agency within 30 days of receipt or 10 days before a permit is issued if CRs are not included as a special condition of the permit. In addition, a distinct and further EFH consultation must be reinitiated pursuant to 50 CFR 600.920 (j) if new information becomes available, or if the project is revised in such a manner that affects the basis for the above EFH determination or EFH conservation recommendations.)

1. Appropriate soil erosion, sediment and turbidity controls (e.g. turbidity curtains, cofferdams) should be used and maintained in effective operating condition during construction. Activities capable of producing greater than minimal turbidity or sedimentation should be done during periods of low-flow or no-flow, when the stream or tide is waterward of the work, or when controls are used to obtain dry work conditions. Work that produces greater than minimal turbidity or sedimentation should *not* be done from **February 1 to June 30** to protect sensitive life stages of winter flounder, and migrating diadromous species.
2. Compensatory mitigation should be provided for the permanent loss of 69,500 SF of tidal wetlands. Please send a copy of the final mitigation plan (including ILF payment and ratio information) to NOAA Fisheries for our review.

FISH AND WILDLIFE COORDINATION ACT COMMENTS
ENDANGERED SPECIES
Threatened or endangered species under the jurisdiction of NMFS may be present in the project area. The federal action agency will be responsible for determining whether the proposed action may affect listed species. If they determine that the proposed action may affect a listed species, they should submit their determination of effects, along with justification and a request for concurrence to the attention of the Section 7 Coordinator, NMFS, Greater Atlantic Regional Fisheries Office, Protected Resources Division, 55 Great Republic Drive, Gloucester, MA 01930 or nmfs.gar.esa.section7@noaa.gov. If you have any questions regarding these comments, please contact Roosevelt Mesa at Roosevelt.mesa@noaa.gov.
OTHER:
Provide a copy of the permit when issued.

Prepared by: _***Sabrina Pereira***___________________________________ **date:** __1/27/2023_______

U.S. Department
of Transportation

Federal Railroad Administration

1200 New Jersey Avenue, SE
Washington, DC 20590

December 29, 2022

Ms. Sabrina Pereira
Marine Resources Management Specialist
Habitat and Ecosystem Services Division
NOAA/National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA, 01930-2276
Via email: nmfs.gar.esa.section7@noaa.gov

Re: Request for Essential Fish Habitat Consultation
Amtrak Connecticut River Bridge Replacement Project
Old Saybrook & Old Lyme, CT

Dear Ms. Pereira:

The Federal Railroad Administration (FRA) is providing financial assistance to the National Railroad Passenger Corporation (Amtrak) to replace the Connecticut River Bridge, which became operational in 1907 and is nearing the end of its useful life. The existing bridge is located along Amtrak's Northeast Corridor (NEC) at Milepost 106.89 between Old Saybrook and Old Lyme, Connecticut (Latitude: 41°18'39.32"N, Longitude: 72°20'54.96"W).

Pursuant to the National Environmental Policy Act of 1969 (42 USC &4321 et seq.) (NEPA) and FRA's NEPA procedures, FRA and Amtrak prepared an Environmental Assessment (EA) in May 2014 for the Project. FRA issued a Finding of No Significant Impact (FONSI) in 2017. An Essential Fish Habitat (EFH) Assessment was included in the EA and FRA determined that the project would not adversely affect EFH. Amtrak has advanced the design for the channel specifications and the bridge clearances since FRA's issuance of the FONSI in 2017. FRA has determined there will be effects of the action that may affect EFH in a manner or to an extent not previously considered.

Enclosed please find a completed *NOAA Fisheries Greater Atlantic Regional Fisheries Office EFH Assessment & Fish and Wildlife Coordination Act (FWCA) Consultation Worksheet* for the subject project along with the following supporting documentation:

Attachment A – Essential Fish Habitat Worksheet Supplemental Information
Attachment B – Previous NOAA Correspondence
Attachment C – Temporary and Permanent Wetland Impacts Plan
Attachment D – SAV Survey Results
Attachment E – Bathymetry within the Proposed Dredge Area
Attachment F – Original 2014 Essential Fish Habitat Assessment

With this letter, FRA requests EFH consultation and seeks concurrence with our determination that the Project's adverse effect on EFH is not substantial.

If you have any questions about the Project or the attached documentation, please contact Amanda Nadjkovic, FRA Environmental Protection Specialist, at (984) 422-7127 or at amanda.nadjkovic@dot.gov.

Thank you for working with FRA and Amtrak on this important rail improvement project.

Sincerely,

Laura A. Shick
Supervisory Environmental Protection Specialist
Office of Environmental Review
Office of Environmental Program Management
Office of Railroad Development

Enclosures

Cc: Jennifer Anderson, Assistant Regional Administrator for Protected Resources, NOAA Fisheries
Sabrina Pereira, NMFS Habitat and Ecosystem Services Division
Zach Jylkka, Protected Resources Division, Greater Atlantic Regional Fisheries, NOAA Fisheries
Paula Kullberg, USACE
Nathan Margason, US EPA
Amanda Nadjkovic, FRA
Clarissa Fuller, Project Manager, Amtrak
Craig Caldwell, Director of Environmental Projects, Amtrak
Blake Hamilton, Lead NEPA Specialist, Amtrak
Benjamin Hawthorne, Project Manager, Hardesty & Hanover
Leslie Mesnick, Environmental Task Coordinator, The Calladium Group

NOAA Fisheries Greater Atlantic Regional Fisheries Office Essential Fish Habitat (EFH) Assessment & Fish and Wildlife Coordination Act (FWCA) Consultation Worksheet

August 2021 rev.

Authorities

The Magnuson Stevens Fishery Conservation and Management Act (MSA) requires federal agencies to consult with NOAA Fisheries on any action or proposed action authorized, funded, or undertaken by such agency that may adversely affect essential fish habitat (EFH) identified under the MSA. This process is guided by the requirements of our EFH regulation at 50 CFR 600.905, which mandates the preparation of EFH assessments and generally outlines each agency's obligations in the consultation process.

The Fish and Wildlife Coordination Act (FWCA) requires that all federal agencies consult with NOAA Fisheries when proposed actions might result in modifications to a natural stream or body of water. The FWCA also requires that federal agencies consider the effects that these projects would have on fish and wildlife and must also provide for improvement of these resources. Under the FWCA, we work to protect, conserve and enhance species and habitats for a wide range of aquatic resources such as shellfish, diadromous species, and other commercially and recreationally important species that are not federally managed and do not have designated EFH.

It is important to note that these consultations take place between NOAA Fisheries and federal action agencies. **As a result, EFH assessments, including this worksheet, must be provided to us by the federal agency, not by permit applicants or consultants.**

Use of the Worksheet

This worksheet can serve as an EFH assessment for **Abbreviated EFH Consultations**, and as a means to provide information on potential effects to other NOAA trust resources considered under the FWCA. An abbreviated consultation allows us to determine quickly whether, and to what degree, a federal action may adversely affect EFH. Abbreviated consultation procedures can be used when federal actions do not have the potential to cause substantial adverse effects on EFH and when adverse effects could be alleviated through minor modifications.

The intent of the EFH worksheet is to provide a guide for determining the information needed to fully assess the effects of a proposed action on EFH. In addition, the worksheet may be used as a tool to assist you in developing a more comprehensive EFH assessment for larger projects that may have more substantial adverse effects to EFH. However, for large, complex projects that have the potential for significant adverse effects, an **Expanded EFH Consultation** may be warranted and the use of this worksheet alone is not appropriate as your EFH assessment.

An **adverse effect** is any impact that reduces the quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Consultation under the MSA is not required if there is no adverse effect on EFH or if no EFH has been designated in the project area. However, because the definition of "adverse effect" is very broad, most in-water work will result in some level of adverse effect requiring consultation with us, even if the impact is temporary or the overall result of the project is habitat restoration or enhancement. It is important to remember that an adverse effect determination is a trigger to consult with us. It does not mean that a project cannot proceed as proposed, or that project modifications are necessary. An adverse effect determination under the EFH provisions of the MSA simply means that the effects of the proposed action on EFH must be evaluated to determine if there are ways to avoid, minimize, or offset adverse effects. Additional details on EFH consultations, tools, and resources, including frequently asked questions can be found on our website.

Instructions

This worksheet should be used as your EFH assessment for **Abbreviated EFH Consultations** or as a guide to develop your EFH assessment. It is not appropriate to use this worksheet as your EFH assessment for large, complex projects, or those requiring an Expanded EFH Consultation.

When completed fully and with sufficient information to clearly describe the activities proposed, habitats affected, and project impacts, as well as the measures taken to avoid, minimize or offset any unavoidable adverse effects, this worksheet provides us with required components of an EFH assessment including:

1. A description of the proposed action.
2. An analysis of the potential adverse effects on EFH and the federally managed species.
3. The federal agency's conclusions regarding the effects of the action on EFH.
4. Proposed mitigation, if applicable.

When completing this worksheet and submitting information to us, it is important to ensure that sufficient information is provided to clearly describe the proposed project and the activities proposed. At a minimum, this should include the public notice (if applicable) or project application and project plans showing:

- location map of the project site with area of impact.
- existing and proposed conditions.
- all in-water work and the location of all proposed structures and/or fill.
- all waters of the U.S. on the project site with mean low water (MLW), mean high water (MHW), high tide line (HTL), and water depths clearly marked.
- Habitat Areas of Particular Concern (HAPCs).
- sensitive habitats mapped, including special aquatic sites (submerged aquatic vegetation, saltmarsh, mudflats, riffles and pools, coral reefs, and sanctuaries and refuges), hard bottom or natural rocky habitat areas, and shellfish beds.
- site photographs, if available.

Your analysis of effects **should focus on impacts that reduce the quality and/or quantity of the habitat or result in conversion to a different habitat type** for all life stages of species with designated EFH within the action area. Simply stating that fish will move away or that the project will only affect a small percentage of the overall population is not a sufficient analysis of the effects of an action on EFH. Also, since the intent of the EFH consultation is to evaluate the direct, indirect, individual and cumulative effects of a particular federal action on EFH and to identify options to avoid, minimize or offset the adverse effects of that action, is it not appropriate to conclude that an impact is minimal just because the area affected is a small percentage of the total area of EFH designated. The focus of the consultation is to reduce impacts resulting from the activities evaluated in the assessment. Similarly, a large area of distribution or range of the fish species is also not appropriate rationale for concluding the impacts of a particular project are minimal.

Use the information on the our EFH consultation website and NOAA's EFH Mapper to complete this worksheet. The mapper is a useful tool for viewing the spatial distribution of designated EFH and HAPCs. Because summer flounder HAPC (defined as: " all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH") does not have region-wide mapping, local sources and on-site surveys may be needed to identify submerged aquatic vegetation beds within the project area. The full designations for each species may be viewed as PDF links provided for each species within the Mapper, or via our website links to the New England Fishery Management Councils Omnibus Habitat Amendment 2 (Omnibus EFH Amendment), the Mid-Atlantic Fishery Management Councils FMPs (MAMFC - Fish Habitat), or the Highly Migratory Species website. Additional information on species specific life histories can be found in the EFH source documents accessible through the Habitat and Ecosystem Services Division website. This information can be useful in evaluating the effects of a proposed action. Habitat and Ecosystem Services Division (HESD) staff have also developed a technical memorandum *Impacts to Marine Fisheries Habitat from Non-fishing Activities in the Northeastern United States,* NOAA Technical Memorandum NMFS-NE-209 to assist in evaluating the effects of non-fishing activities on EFH. If you have questions, please contact the HESD staff member in your area to assist you.

Federal agencies or their non-federal designated lead agency should email the completed worksheet and necessary attachments to the HESD New England (ME, NH, MA, CT, RI) or Mid- Atlantic (NY, NJ, PA, DE, MD, VA) Branch Chief and the regional biologist listed on the Contact Regional Office Staff section on our EFH consultation website and listed below.

We will provide our EFH conservation recommendations under the MSA, and recommendations under the FWCA, as appropriate, within 30 days of receipt of a **complete** EFH assessment for an abbreviated consultation. Please ensure that the EFH worksheet is completed in full and includes detail to minimize delays in completing the consultation. If we are unable to assess potential impacts based on the information provided, we may request additional information necessary to assess the effects of the proposed action on our trust resources before we can begin a consultation. If the worksheet is not completely filled out, it may be returned to you for completion. **The EFH consultation and our response clock does not begin until we have sufficient information upon which to consult**.

If this worksheet is not used, you should include all the information required to complete this worksheet in your EFH assessment. The level of detail that you provide should be commensurate with the magnitude of impacts associated with the proposed project. You may need to prepare a more detailed EFH assessment for more substantial or complex projects to fully characterize the effects of the project and the avoidance and minimization of impacts to EFH. The format of the EFH worksheet may not be sufficient to incorporate the extent of detail required for large-scale projects, and a separate EFH assessment may be required.

Regardless of the format, you should include an analysis as outlined in this worksheet for an expanded EFH assessment, along with any additional necessary information including:

- the results of on-site inspections to evaluate habitat and site-specific effects.
- the views of recognized experts on habitat or the species that may be affected.
- a review of pertinent literature and related information.
- an analysis of alternatives that could avoid or minimize adverse effects on EFH.

For these larger scale projects, interagency coordination meetings should be scheduled to discuss the contents of the EFH consultation and the site-specific information that may be needed in order to initiate the consultation.

Please contact our Greater Atlantic Regional Fisheries Office, Protected Resources Division regarding potential impacts to marine mammals or threatened and endangered species and the appropriate consultation procedures.

HESD Contacts*

New England - ME, NH, MA, RI, CT	
Chris Boelke, Branch Chief	christopher.boelke@noaa.gov
Mike Johnson - ME, NH	mike.r.johnson@noaa.gov
Kaitlyn Shaw - ME, NH, MA	kaitlyn.shaw@noaa.gov
Sabrina Pereira -RI, CT	sabrina.pereira@noaa
Mid-Atlantic - NY, NJ, PA, MD, VA	
Karen Greene, Branch Chief	karen.greene@noaa.gov
Jessie Murray - NY, Northern NJ (Monmouth Co. and north)	jessie.murray@noaa.gov
Keith Hanson - NJ (Ocean Co. and south), DE and PA, Mid-Altantic wind	keith.hanson@noaa.gov
Maggie Sager - NJ (Ocean Co. and south), DE and PA	lauren.m.sager@noaa.gov
Jonathan Watson - MD, DC	jonathan.watson@noaa.gov
David O'Brien - VA	david.l.obrien@noaa.gov
Ecosystem Management (Wind/Aquaculture)	
Peter Burns, Branch Chief	peter.burns@noaa.gov
Alison Verkade (NE Wind)	alison.verkade@noaa.gov
Susan Tuxbury (wind coordinator)	susan.tuxbury@noaa.gov

***Please check for the most current staffing list on our contact us page prior to submitting your assessment.**

EFH Assessment Worksheet rev. August 2021

Please read and follow all of the directions provided when filling out this form.

1. General Project Information

Date Submitted:

Project/Application Number:

Project Name: Connecticut River Bridge Replacement Project

Project Sponsor/Applicant: Amtrak

Federal Action Agency (or state agency if the federal agency has provided written notice delegating the authority[1]): Federal Railroad Administration (FRA)

Fast-41: Yes ☐ No ☑

Action Agency Contact Name: Amanda Nadjkovic

Contact Phone: 984-422-7127 Contact Email: amanda.nadjkovic@dot.gov

Address, City/Town, State:

USDOT Federal Railroad Administration
Office of Railroad Policy and Development
1200 New Jersey Avenue, SE
Washington, DC 20590

2. Project Description

[2]Latitude: 41°18 ′ 39 ″ N Longitude: 72°20 ′ 57 ″ W

Body of Water (e.g., HUC 6 name): Connecticut River, HUC 6: 011000, HUC12: 010802050905

Project Purpose:

The National Railroad Passenger Corporation (Amtrak) is proposing the replacement of the Connecticut River Bridge, which became operational in 1907 and is nearing the end of its useful life. The existing bridge is located along Amtrak's Northeast Corridor (Milepost 106.89) between Old Saybrook and Old Lyme in Connecticut. The new bridge would be located south of the existing bridge.

Project Description:

The proposed Project includes construction of a new bascule railroad bridge over the Connecticut River and involves in-water activities such as excavation, dredging, and filling. Construction would require installation of nine new piers: seven approach piers comprising drilled shafts supporting a reinforced concrete pier cap and two moveable span piers comprising drilled shafts supporting a large concrete cap. The existing bridge would be removed following completion of construction of the new bridge.

The National Environmental Policy Act (NEPA) Environmental Assessment (EA) for the proposed Project was prepared in 2014 and included an EFH Assessment. The FRA issued a Finding of No Significant Impact for the EA in 2017. Since then there have been Project design changes that are described in the supplemental information attachment (Attachment A). Project updates were also described in a letter to Mark Murray-Brown (NMFS) from Laura A. Shick (FRA) submitted via email by Michael Ciappi (Amtrak) on December 27, 2021 (included herein as Attachment B). Other recent correspondence between Amtrak and NOAA is also included in Attachment B. Updated design plans showing the anticipated temporary and permanent wetland impacts are included herein as Attachment C.

Anticipated Duration of In-Water Work including planned Start/End Dates and any seasonal restrictions proposed to be included in the schedule:

The anticipated start date for construction is January 2024 and the anticipated end date is April 2028. In-water work would be performed intermittently, estimated at between 3 and 3.5 years of the total anticipated 4.75 years of Project construction. Seasonal restrictions are being determined in coordination with CT DEEP and USACE through the permitting process (see Attachment A for anticipated seasonal restrictions).

[1] A federal agency may designate a non-Federal representative to conduct an EFH consultation by giving written notice of such designation to NMFS. If a non-federal representative is used, the Federal action agency remains ultimately responsible for compliance with sections 305(b)(2) and 305(b)(4)(B) of the Magnuson-Stevens Act. [2] Provide the decimal, or the degrees, minutes, seconds values for latitude and longitude using the World Geodetic System 1984 (WGS84) and negative degree values where applicable.

3. Site Description

EFH includes the biological, chemical, and physical components of the habitat. This includes the substrate and associated biological resources (e.g., benthic organisms, submerged aquatic vegetation, shellfish beds, salt marsh wetlands), the water column, and prey species.

Is the project in designated EFH[3]?	☑ Yes	☐ No
Is the project in designated HAPC?	☑ Yes	☐ No
Does the project contain any Special Aquatic Sites[4]?	☑ Yes	☐ No
Is this coordination under FWCA only?	☐ Yes	☑ No

Total area of impact to EFH (indicate sq ft or acres): 17.59 acres*

Total area of impact to HAPC (indicate sq ft or acres): 0.35 acre

Current range of water depths at MLW	Salinity range (PPT):	Water temperature range (°F):
0-25'	~ 3-10	34-75

[3]Use the tables in Sections 5 and 6 to list species within designated EFH or the type of designated HAPC present. See the worksheet instructions to find out where EFH and HAPC designations can be found. [4] Special aquatic sites (SAS) are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region. They include sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes (40 CFR Subpart E). If the project area contains SAS (i.e. sanctuaries and refuges, wetlands, mudflats, vegetated shallows/SAV, coral reefs, and/or riffle and pool complexes, describe the SAS, species or habitat present, and area of impact.

***Includes temporary impacts during construction of the mitigation sites**

4. Habitat Types

In the table below, select the location and type(s) for each habitat your project overlaps. For each habitat type selected, indicate the total area of expected impacts, then what portion of the total is expected to be temporary (less than 12 months) and what portion is expected to be permanent (habitat conversion), and if the portion of temporary impacts will be actively restored to pre- construction conditions by the project proponent or not. A project may overlap with multiple habitat types.

Habitat Location	Habitat Type	Total impacts ($lf/ft^2/ft^3$) **	Temporary impacts ($lf/ft^2/ft^3$)***	Permanent impacts ($lf/ft^2/ft^3$)	Restored to pre-existing conditions?*
Estuarine	Wetland (emergent)*	575,350 sq ft	505,850 sq ft	69,500 sq ft	Yes
Estuarine	Shore (unconsolidated)	15,330 sq ft	3,180 sq ft	12,150 sq ft	Yes
Estuarine	Substrate (silt/mud)	111,380 sq ft	65,990 sq ft	45,390 sq ft	Yes
Estuarine	Substrate (sand/shell)	64,340 sq ft	62,050 sq ft	2,300 sq ft	Yes
Estuarine	Water column	175,730 sq ft	128,040 sq ft	47,690 sq ft	Yes
Estuarine	Select One				Select one
Select one	Select One				Select one
Select one	Select One				Select one

* Restored to pre-existing conditions means that as part of the project, the temporary impacts will be actively restored,such as restoring the project elevations to pre-existing conditions and replanting. It does not include natural restoration or compensatory mitigation.

**Note that when considering the total impacts, the Essential Fish Habitat (EFH) assessment uses field delineated wetland boundaries as the limit of disturbance, whereas the Section 7 Endangered Species Act (ESA) consultation uses CJL+1 ft as the upper limit of disturbance.

***Impacts during approximately 3 - 3.5 years of construction that will be restored to pre-construction conditions as part of the project; includes temporary impacts during construction of the mitigation sites.

Submerged Aquatic Vegetation (SAV) Present?:

Yes: ☐ No: ☑

If the project area contains SAV, or has historically contained SAV, list SAV species and provide survey results including plans showing its location, years present and densities if available. Refer to Section 12 below to determine if local SAV mapping resources are available for your project area.

During field surveys conducted in August/September 2021, an approximately 0.35 acre area containing eelgrass (Zostera marina), a species of SAV, was mapped within the Project area on the Old Saybrook side of the river, along the south side of the railroad embankment, just southwest of the railroad bridge. The area was characterized by a limited amount (+/- 2% coverage) of eelgrass within an area dominated by gutweed (Ulva intestinalis), a macroalgae. A subsequent field survey of the same area conducted on October 1, 2022 found the area occupied by gutweed, but no eelgrass was present. The survey identified one approximately 0.06 acre area with sparse eelgrass approximately 15-20 feet south of the Project disturbance limits. Attachment D contains a report documenting the October 1, 2022 SAV survey conducted by New England Environmental Services as well as relevant information, photos, and figures documenting the August/September 2021 SAV surveys extracted from the Wetland Delineation and Characterization Report previously submitted to Ms. Sabrina Pereira (NMFS) via email from Michael Ciappi (Amtrak) on January 7, 2022. As described in Attachment A, annual monitoring of the SAV observed near the Project limits will be conducted to ensure that there is no encroachment of eelgrass into the Project disturbance limits over the duration of Project construction.

Sediment Characteristics:

The level of detail required is dependent on your project – e.g., a grain size analysis may be necessary for dredging. In addition, if the project area contains rocky/hard bottom habitat [6](pebble, cobble, boulder, bedrock outcrop/ledge) identified as Rocky (coral/rock), Substrate (cobble/gravel), or Substrate (rock) above, describe the composition of the habitat using the following table.

Substrate Type* (grain size)	Present at Site? (Y/N)	Approximate Percentage of Total Substrate on Site
Silt/Mud (<0.063mm)	Select one	
Sand (0.063-2mm)	Select one	
Rocky: Pebble/Gravel /Cobble(2-256mm)**	Select one	
Rocky: Boulder (256-4096mm)**	Select one	
Rocky: Coral	Select one	
Bedrock**	Select one	

[6]The type(s) of rocky habitat will help you determine if the area is cod HAPC.

* Grain sizes are based on Wentworth grain size classification scale for granules, pebbles, cobbles, and boulders.

** Sediment samples with a content of 10% or more of pebble-gravel-cobble and/or boulder in the top layer (6-12 inches) should be delineated and material with epifauna/macroalgae should be differentiated from bare pebble-gravel-cobble and boulder.

If no grain size analysis has been conducted, please provide a general description of the composition of the sediment. If available please attach images of the substrate.

In general, sediments are course grained sand overlain with a silt/sand surficial layer. Silt/sand is more predominant in the shallows on the nearshore portions of the river, while coarser sediments mixed with shell hash appear to be more predominant in the deeper channel areas. This grain-size distribution is consistent with that of other southern New England rivers and is similar to grain sizes reported from EMAP stations in Long Island Sound near the mouth of the Connecticut River. Attachment D contains photos of the Project Area that were presented in the Wetland Delineation and Characterization Report that show the substrate in the intertidal area along the shoreline.

During the geotechnical boring program, the layer of estuarine sediments varied in thickness from approximately 5 to 40 feet. According to the Burmister soil classification system, the estuarine sediments varied from very loose to loose fine sand with variable amounts of silt, to very soft to soft organic silty clay with some peat layers.

Diadromous Fish (migratory or spawning habitat- identify species under Section 10 below):

Yes: ☑ No: ☐

5. EFH and HAPC Designations

Within the Greater Atlantic Region, EFH has been designated by the New England, Mid-Atlantic, and South Atlantic Fisheries Management Councils and NOAA Fisheries. Use the EFH mapper to determine if EFH may be present in the project area and enter all species and life stages that have designated EFH. Optionally, you may review the EFH text descriptions linked to each species in the EFH mapper and use them to determine if the described habitat is present at your project site. If the habitat characteristics described in the text descriptions do not exist at your site, you may be able to exclude some species or life stages from additional consideration. For example, the water depths at your site are shallower that those described in the text description for a particular species or life stage. We recommend this for larger projects to help you determine what your impacts are.

Species Present	EFH is designated/mapped for:				What is the source of the EFH information included?
	EFH: eggs	EFH: larvae	EFH: juvenile	EFH: adults/ spawning adults	
Atlantic salmon	✔	✔	✔	✔	EFH Mapper c
winter flounder	✔	✔	✔	✔	EFH Mapper c
little skate	☐	☐	✔	✔	EFH Mapper c
Atlantic herring	☐	☐	✔	✔	EFH Mapper c
pollock	☐	☐	✔	✔	EFH Mapper c
red hake	✔	✔	✔	✔	EFH Mapper c
yellowtale flounder	☐	☐	✔	☐	EFH Mapper c
windowpane flounder	✔	✔	✔	✔	EFH Mapper c
winter skate	☐	✔	✔	✔	EFH Mapper c
smoothhound shark (Atlantic stock)	✔	✔	✔	✔	EFH Mapper c
scup	✔	✔	✔	✔	EFH Mapper c
long-finned squid	☐	☐	✔	✔	EFH Mapper c
Atlantic mackerel	✔	✔	✔	✔	EFH Mapper c
bluefish	☐	☐	✔	✔	EFH Mapper c
Atlantic butterfish	✔	✔	✔	✔	EFH Mapper c
summer flounder	☐	☐	✔	✔	EFH Mapper c
Black sea bass	✔	✔	✔	✔	EFH Mapper c

6. Habitat Areas of Particular Concern (HAPCs)

HAPCs are subsets of EFH that are important for long-term productivity of federally managed species. HAPCs merit special consideration based their ecological function (current or historic), sensitivity to human-induced degradation, stresses from development, and/or rarity of the habitat.While many HAPC designations have geographic boundaries, there are also habitat specific HAPC designations for certain species, see note below. Use the EFH mapper to identify HAPCs within your project area. Select all that apply.

☑	Summer flounder: SAV[7] (macroalgae only)	☐	Alvin & Atlantis Canyons
☐	Sandbar shark	☐	Baltimore Canyon
☐	Sand Tiger Shark (Delaware Bay)	☐	Bear Seamount
☐	Sand Tiger Shark (Plymouth-Duxbury-Kingston Bay)	☐	Heezen Canyon
☐	Inshore 20m Juvenile Cod[8]	☐	Hudson Canyon
☐	Great South Channel Juvenile Cod	☐	Hydrographer Canyon
☐	Northern Edge Juvenile Cod	☐	Jeffreys & Stellwagen
☐	Lydonia Canyon	☐	Lydonia, Gilbert & Oceanographer Canyons
☐	Norfolk Canyon (Mid-Atlantic)	☐	Norfolk Canyon (New England)
☐	Oceanographer Canyon	☐	Retriever Seamount
☐	Veatch Canyon (Mid-Atlantic)	☐	Toms, Middle Toms & Hendrickson Canyons
☐	Veatch Canyon (New England)	☐	Washington Canyon
☐	Cashes Ledge	☐	Wilmington Canyon
☐	Atlantic Salmon		

[7] Summer flounder HAPC is defined as all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH. In locations where native species have been eliminated from an area, then exotic species are included. Use local information to determine the locations of HAPC.

[8] The purpose of this HAPC is to recognize the importance of inshore areas to juvenile Atlantic cod. The coastal areas of the Gulf of Maine and Southern New England contain structurally complex rocky-bottom habitat that supports a wide variety of emergent epifauna and benthic invertebrates. Although this habitat type is not rare in the coastal Gulf of Maine, it provides two key ecological functions for juvenile cod: protection from predation, and readily available prey. See EFH mapper for links to text descriptions for HAPCs.

7. Activity Details

Select all that apply	Project Type/Category
☐	Agriculture
☐	Aquaculture - List species here:
☐	Bank/shoreline stabilization (e.g., living shoreline, groin, breakwater, bulkhead)
☐	Beach renourishment
☑	Dredging/excavation
☐	Energy development/use e.g., hydropower, oil and gas, pipeline, transmission line, tidal or wave power, wind
☑	Fill
☐	Forestry
☑	Infrastructure/transportation (e.g., culvert construction, bridge repair, highway, port, railroad)
☐	Intake/outfall
☐	Military (e.g., acoustic testing, training exercises)
☐	Mining (e.g., sand, gravel)
☐	Overboard dredged material placement
☐	Piers, ramps, floats, and other structures
☑	Restoration or fish/wildlife enhancement (e.g., fish passage, wetlands, mitigation bank/ILF creation)
☐	Survey (e.g., geotechnical, geophysical, habitat, fisheries)
☐	Water quality (e.g., storm water drainage, NPDES, TMDL, wastewater, sediment remediation)
☐	Other:

8. Effects Evaluation

Select all that apply	Potential Stressors Caused by the Activity
☑	Underwater noise
☑	Water quality/turbidity/ contaminant release
☑	Vessel traffic/barge grounding
☑	Impingement/entrainment
☐	Prevent fish passage/spawning
☑	Benthic community disturbance
☑	Impacts to prey species

Select all that apply and if temporary[9] or permanent		Habitat alterations caused by the activity
Temp	Perm	
☑	☑	Water depth change Increased depth at barge mooring areas as a result of dredging
☐	☑	Tidal flow change Mitigation Site - new culvert will increase tidal flow
☑	☑	Fill
☐	☑	Habitat type conversion Mitigation Site - restored emergent marsh
☐	☐	Other:
☐	☐	Other:

[9] Temporary in this instance means during construction. [10] Entrainment is the voluntary or involuntary movement of aquatic organisms from a water body into a surface diversion or through, under, or around screens and results in the loss of the organisms from the population. Impingement is the involuntary contact and entrapment of aquatic organisms on the surface of intake screens caused when the approach velocity exceeds the swimming capability of the organism.

Details - project impacts and mitigation

Briefly describe how the project would impact each of the habitat types selected above and the amount (i.e., acreage or sf) of each habitat impacted. Include temporary and permanent impact descriptions and direct and indirect impacts. For example, dredging has a direct impact on bottom sediments and associated benthic communities. The turbidity generated can result in a temporary impact to water quality which may have an indirect effect on some species and habitats such as winter flounder eggs, SAV or rocky habitats. The level of detail that you provide should be commensurate with the magnitude of impacts associated with the proposed project. Attach supplemental information if necessary.

A total of approximately 766,410 square feet (17.59 acres) of EFH (see Table in Section 4 for affected habitat types) would be disturbed during construction of the Proposed project, including the mitigation sites. Total impacts to EFH are comprised of 179,670 sq. ft. (4.10 acres) of temporary impact at the Project site, 129,340 sq. ft. (2.91 acres) of permanent impact at the Project site, and 457,400 sq. ft. (10.5 acres) of temporary impact at the mitigation sites. Approximately 1,488,645 cubic feet (55,135 cubic yards) would be permanently removed from the riverbed during dredge and excavation activities. Demolition of the existing bridge would result in 0.27 acre of restored EFH. The current proposed mitigation plan would result in restoration of approximately 11-acres of brackish wetlands, preservation of freshwater wetlands and upland buffer along the Lieutenant River, and an in-lieu fee/mitigation bank payment for other in-water disturbance.

See Attachment F (2014 EFH Assessment) for descriptions of the proposed Project activities, the aquatic habitat within the Project area, and potential impacts to EFH from the proposed Project. Attachment A contains supplemental information to this worksheet regarding updates to the proposed Project since the 2014 EFH Assessment, including impacts from dredging and direct and indirect impacts to SAV, summer flounder, winter flounder, and the proposed mitigation plan. Updated design plans showing the anticipated temporary and permanent wetland impacts are included as Attachment C and graphics depicting the bathymetry in the proposed dredge area are included as Attachment E.

Based on the localized nature of the Project-related impacts, the adherence to seasonal in-water work restrictions and conservation measures, and the implementation of the proposed compensatory mitigation plan, adverse impacts to EFH are not expected to be substantial.

What specific measures will be used to avoid and minimize impacts, including project design, turbidity controls, acoustic controls, and time of year restrictions? If impacts cannot be avoided or minimized, why not?

New bridge piers, except Pier 9, would be installed using drilled shafts rather than pile driving to reduce underwater noise impacts. Cofferdams would be installed to minimize underwater noise and suspended sediment concentrations during construction of retaining walls, Pier 9, and bridge abutments, as well as during the demolition of existing piers. Pile driving would occur for construction of the west retaining wall, the temporary trestle work platforms on the east and west abutments of the Connecticut River, the installation of a temporary trestle bridge over the Lieutenant River during construction of the mitigation site, and the installation of cofferdams. Turbidity curtains would be used during construction of the new bridge and demolition of the existing bridge to contain and minimize the extent of sediment resuspension. Seasonal in-water construction restrictions and conservation measures (see Table 2 in Attachment A) would be strictly adhered to.

Is compensatory mitigation proposed? Yes ☑ No ☐

If compensatory mitigation is not proposed, why not? If yes, describe plans for compensatory mitigation (e.g. permittee responsible, mitigation bank, in-lieu fee) and how this will offset impacts to EFH and other aquatic resources. Include a proposed compensatory mitigation and monitoring plan as applicable.

Mitigation measures to offset the permanent loss of wetland and open water habitats are being coordinated with CTDEEP, USACE, USCG, and other relevant agencies as part of the permitting process. Details about the conceptual mitigation plan, which would result in the restoration of approximately 11-acres of tidal wetlands and upland buffer along the Lieutenant River, and an in-lieu fee/mitigation bank payment, are included in the attached supplement (Attachment A).

9. Effects of Climate Change

Effects of climate change should be included in the EFH assessment if the effects of climate change may amplify or exacerbate the adverse effects of the proposed action on EFH. Use the Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathways (RCP) 8.5/high greenhouse gas emission scenario (IPCC 2014), at a minimum, to evaluate the future effects of climate change on the proposed projections. For sea level rise effects, use the intermediate-high and extreme scenario projections as defined in Sweet et al. (2017). For more information on climate change effects to species and habitats relative to NMFS trust resources, see Guidance for Integrating Climate Change Information in Greater Atlantic Region Habitat Conservation Division Consultation Processes.

1. Could species or habitats be adversely affected by the proposed action due to projected changes in the climate?If yes, please describe how:

   No. Species and habitats would not be adversely affected by the proposed action due to projected changes in climate.

2. Is the expected lifespan of the action greater than 10 years? If yes, please describe project lifespan:

   The expected lifespan of construction activity is less than five years; the lifespan of the new bridge is greater than 10 years.

3. Is climate change currently affecting vulnerable species or habitats, and would the effects of a proposed action be amplified by climate change? If yes, please describe how:

   Climate change may be affecting vulnerable species/habitats in the survey area, but the potential effects of the proposed action would not be amplified by climate change.

4. Do the results of the assessment indicate the effects of the action on habitats and species will be amplified by climate change? If yes, please describe how:

   The results of the assessment do not indicate that the potential effects of the proposed action would be amplified by climate change.

5. Can adaptive management strategies (AMS) be integrated into the action to avoid or minimize adverse effects of the proposed action as a result of climate? If yes, please describe how:

   Not applicable. There are no anticipated adverse effects of the proposed action that would result from climate change.

10. Federal Agency Determination

Federal Action Agency's EFH determination (select one)	
☐	There is no adverse effect[7] on EFH or EFH is not designated at the project site. EFH Consultation is not required. This is a FWCA only request.
✔	The adverse effect[7] on EFH is not substantial. This means that the adverse effects are no more than minimal, temporary, or can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
☐	The adverse effect[7] on EFH is substantial. This is a request for an expanded EFH consultation. We will provide more detailed information, including an alternatives analysis and NEPA documents, if applicable.

[7] An adverse effect is any impact that reduces the quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

11. Fish and Wildlife Coordination Act

Under the FWCA, federal agencies are required to consult with us if actions that the authorize, fund, or undertake will result in modifications to a natural stream or body of water. Federal agencies are required to consider the effects these modifications may have on fish and wildlife resources, as well as provide for the improvement of those resources. Under this authority, we consider the effects of actions on NOAA-trust resources, such as anadromous fish, shellfish, crustaceans, or their habitats, that are not managed under a federal fisheries management plan. Some examples of other NOAA-trust resources are listed below. Some of these species, including diadromous fishes, serve as prey for a number of federally-managed species and are therefore considered a component of EFH pursuant to the MSA. We will be considering the effects of your project on these species and their habitats as part of the EFH/FWCA consultation process and may make recommendations to avoid, minimize or offset and adverse effects concurrently with our EFH conservation recommendations.

Please contact our Greater Atlantic Regional Fisheries Office, Protected Resources Division regarding potential impacts to marine mammals or species listed under the Endangered Species Act and the appropriate consultation procedures.

Fish and Wildlife Coordination Act Resources

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	The action would not physically impede alewife migration. In-water activities such as dredging and impact pile driving would be prohibited during the April 1 - June 30 migratory period. All in-water work in the Lieutenant River is prohibited from March 1 to June 1, inclusive. Minor, temporary, localized noise disturbance would not significantly affect migration or behavior.
American eel	The action would not physically impede eel migration. In-water activities such as dredging and impact pile driving would be prohibited during the April 1 - June 30 migratory period. All in-water work in the Lieutenant River is prohibited from March 1 to June 1, inclusive. Minor, temporary, localized noise disturbance would not significantly affect migration or behavior.
American shad	The action would not physically impede migration. Minor, temporary, localized noise disturbance would not significantly affect migration or behavior. All loud construction related activities, including drilling pipes and driving sheet pile or shaft casings would be prohibited from sunset to sunrise during the commercial shad fishing season from April 1 to June 15.
Atlantic menhaden	No spawning or nursery habitat within the Project area. Juvenile and adults are highly mobile and would avoid disturbance. Minor, temporary, localized noise disturbance would not significantly affect behavior.
blue crab	Blue crabs are motile and would likely avoid an area during construction. They are expected to return to disturbed areas following completion of in-water activity.
blue mussel	Not likely present in the soft substrates where construction would occur. Temporary and localized increases in suspended sediment would not affect nearby blue mussel habitat.
blueback herring	Juvenile and adults may occur August-September, but are highly mobile and would avoid disturbance. The action would not physically impede migration. Minor, temporary, localized noise disturbance would not significantly affect migration.
Eastern oyster	There are no known natural or man-made oyster beds in Project area. Localized and temporary increases in suspended sediment would not affect any potential nearby oyster habitat.
horseshoe crab	May occur along beach and in shallow intertidal areas; habitat and individuals not abundant in the area; crabs in the vicinity of the Project area not an important food source for migratory shorebirds.
quahog	Quahogs within the footprint of disturbance would be lost. Proposed mitigation and removal of existing bridge will replace permanent habitat lost. Temporary increases in suspended sediments and localized turbidity would quickly dissipate and quahogs are expected to recolonize temporarily disturbed areas.
soft-shell clams	Soft-shell clams within the footprint of disturbance would be lost. Proposed mitigation and removal of existing bridge will replace permanent habitat loss. Temporary increases in suspended sediments and localized turbidity would quickly dissipate and clams are expected to recolonize temporarily disturbed areas.
striped bass	The action would not physically impede striped bass migration. In-water activities such as dredging and impact pile driving would be prohibited during the April 1 - June 30 migratory period. Minor, temporary, localized noise disturbance would not significantly affect migration or behavior.
other species:	Potential impacts to Atlantic and shortnose sturgeon are being coordinated with GARFO Protected Resources Division through a Section 7 ESA consultation.
other species:	
other species:	

12. Useful Links

National Wetland Inventory Maps
EPA's National Estuary Program (NEP)
Northeast Regional Ocean Council (NROC) Data Portal
Mid-Atlantic Regional Council on the Ocean (MARCO) Data Portal

Resources by State

Maine

Maine Office of GIS Data Catalog
Town shellfish information including shellfish conservation area maps
State of Maine Shellfish Sanitation and Management
Eelgrass maps
Casco Bay Estuary Partnership
Maine GIS Stream Habitat Viewer

New Hampshire

NH Statewide GIS Clearinghouse, NH GRANIT
NH Coastal Viewer
State of NH Shellfish Program

Massachusetts

MA DMF Shellfish Sanitation and Management Program
MassGIS Data (Including Eelgrass Maps)
MA DMF Recommended TOY Restrictions Document Massachusetts
Bays National Estuary Program
Buzzards Bay National Estuary Program
Massachusetts Division of Marine Fisheries
Massachusetts Office of Coastal Zone Management

Rhode Island

RI Shellfish and Aquaculture
RI Shellfish Management Plan
RI Eelgrass Maps
Narragansett Bay Estuary Program
Rhode Island Division of Marine Fisheries
Rhode Island Coastal Resources Management Council

Connecticut

CT Bureau of Aquaculture

Natural Shellfish Beds in CT

Eelgrass Maps

Long Island Sound Study

CT GIS Resources

CT DEEP Office of Long Island Sound Programs and Fisheries

CT River Watershed Council

New York

Eelgrass Report

Peconic Estuary Program

NY/NJ Harbor Estuary Program

New York GIS Clearinghouse

New Jersey

Submerged Aquatic Vegetation Mapping

Barnegat Bay Partnership

NJ GeoWeb

NJ DEP Shellfish Maps

Pennsylvania

Delaware River Management Plan

PA DEP Coastal Resources Management Program

PA DEP GIS Mapping Tools

Delaware

Partnership for the Delaware Estuary

Center for Delaware Inland Bays

Delaware FirstMap

Maryland

Submerged Aquatic Vegetation Mapping

MERLIN (Maryland's Environmental Resources and Land Information Network)

Maryland Coastal Atlas

Maryland Coastal Bays Program

Virginia

VMRC Habitat Management Division

Submerged Aquatic Vegetation mapping

ATTACHMENTS

ATTACHMENT A
Supplemental Information

Essential Fish Habitat Worksheet Supplemental Information

AMTRAK Connecticut River Bridge Replacement Project

December 2022

2. Project Description

Project Design Updates

Amtrak has advanced the design for the channel specifications and the bridge clearances since FRA's issuance of the FONSI in 2017. The proposed new bascule bridge would slightly increase the width of the existing channel from 148 feet to 150 feet and slightly shift the east edge of the channel 16.5 feet west towards the center of the Connecticut River. Because of the off-center nature of the existing channel and its location close to the eastern shoreline, the ebb tide current tends to pull marine vessels into Pier 5 (the west channel pier). Widening the horizontal clearance of the channel by two feet and relocating it westward towards the center of the river by 16.5 feet is expected to improve the safety for vessels passing beneath the bridge and reduce the risk of vessel-bridge pier collisions.

The new bridge would also provide a vertical clearance of 24 feet in the closed position—an increase of six vertical feet compared to the existing bridge. During the Project planning phase, several maritime stakeholders (including the Connecticut Marine Trades Association) requested an increase in the vertical clearance when the bridge is in the closed position, which Amtrak has accommodated in the new design plans. In the open position, the vertical clearance would be unlimited for a 90-foot-wide portion of the channel. The full channel width would have at least 74 feet of vertical clearance.

At the time of the 2014 EA, dredging activity was not foreseen. However, upon further design, Amtrak determined that incidental dredging would be required for the removal and installation of submarine cables in the Connecticut River; removal of unsuitable/unstable material under the proposed embankments, at the retaining walls, abutments, piers, and riprap scour protection; and removal of material for additional water depth adjacent to the temporary trestle work platforms at each abutment for construction barge access. An excavator or clamshell bucket would be used for removal of sediment and unsuitable material. Dredging would occur within approximately 1.098 acres of subtidal and deepwater habitats of the Connecticut River. Dredging activities will be performed intermittently during the permissible work windows over a period of approximately two years. Unconfined underwater excavation and dredging is restricted between March 1 and September 30, and no dredging activity of any kind would occur from April through June to minimize disturbance to diadromous fish.

Table 1 presents the anticipated approximate dredged/excavated material volumes, including one foot of over-dredge depth, for each activity below the mean high water (MHW) elevation of 1.71'. As shown in Table 1, a total of approximately 55,135 cubic yards of material would be removed below MHW. Dredged material would primarily consist of silt/sand sediments, while the excavation/dredging for the retaining walls, abutments, and riprap would also remove rocks, cobbles/gravel and sand. Prior to performing excavation or dredging, the Contractor responsible for the work will be required to collect sediment samples and perform chemical contaminant and physical analysis to determine the suitability of dredged materials for reuse. Dredged/excavated material not anticipated to be suitable for reuse due to structural concerns would be transported to an appropriate off-site upland facility to be determined by the contractor for final disposition, pending the outcome of sediment testing. Material removed during dredging for submarine cable installation, if determined to be suitable for reuse, would be stored on a barge within a turbidity curtain and replaced in situ to backfill the trench after the installation of the cable. Material that is unsuitable for reuse as backfill for the submarine cable trench will be replaced with a suitable granular fill material to match the material removed during exploratory sampling. The approximate duration of the dredging and backfilling operation for submarine cables is one month. The unsuitable/unstable material under the proposed embankments would be replaced with free-draining material fill. The material dredged from the areas of the proposed retaining walls, abutments, and piers would be replaced with the proposed retaining walls, abutments, and piers. Dredged material from the base of the proposed embankments and at the base of the retaining walls and abutments would be replaced with riprap. The approximate amount of riprap to be installed remains unchanged from the previous design.

Table 1: Anticipated Volumes of Dredged and Excavated Material Below Mean High Water*

Excavation/ Dredging Adjacent to Embankment (cubic yards)	**Excavation/ Dredging for Retaining Wall, Abutment, and Riprap (cubic yards)**	**Dredging for Temporary Trestle Structure for Barge Access (cubic yards)**	**Dredging for DrilledPiers (cubic yards)**	**Dredging for Submarine Cables (cubic yards)**	**Total (cubic yards)**
± 25,000	± 15,570	± 6,820	± 4,590	± 3,155	**±55,135**

*Includes one foot overdredge

During the engineering design, Amtrak minimized the impacts to tidal wetlands and open water of the Connecticut River to the extent possible through the use of retaining walls, riprap slopes, and other design measures that reduced the footprint of permanent impact and temporary disturbance, while improving the navigation benefits of the proposed Project. For state permitting and mitigation calculation purposes, impacts were calculated using the Connecticut Coastal Jurisdiction Line +1 ft. (CJL+1), which is beyond the actual field located tidal wetland limits, as the upper limit of disturbance. Based on the CJL+1, the current proposed Project would result in permanent impact to approximately 3.7 acres of wetlands and open water and temporary impact to approximately 4.5 acres of wetlands and open water, not including temporary impacts during construction of the mitigation sites. Permanent and temporary impacts calculated using the field delineated wetland boundary as the limit of disturbance (not CJL+1) are specified in Section 4 of the EFH worksheet. Total impacts in Section 4 of the EFH worksheet include anticipated permanent and temporary impacts for construction of the proposed mitigation sites along the Lieutenant River, described below in *Section 8.d Compensatory Mitigation*.

Removal of the existing Connecticut River Bridge structures would result in approximately 0.27 acre of restored benthic and open water habitat. Additionally, the proposed compensatory mitigation plan (see *Section 8.d* below) would result in restoration and enhancement of approximately 11 acres of brackish wetland to mitigate for 3.7 acres of permanent impact to intertidal wetlands and unconsolidated shore.

Seasonal restrictions proposed:

Table 2 summarizes the recommended seasonal restrictions and conservations measures for in-water work based on agency review of previous NEPA documentation for the proposed Project. Seasonal restrictions for the proposed Project are being determined in coordination with the Connecticut Department of Energy and Environmental Protection (CTDEEP) and United States Army Corps of Engineers (USACE) through the permitting process. Project construction would adhere to all seasonal restrictions and conservation measures for in-water work that are included in issued regulatory permits.

Table 2. Recommended In-Water Work Seasonal Restrictions and Conservations Measures

Agency/Correspondence	Species Consideration	Recommendations
Design Specifications	Fish/Diadromous fish	The time of year restriction on unconfined underwater excavation and dredging is between March 1st and September 30th of any year.
NOAA NMFS Northeast Region, NEPA Correspondence, 7/2/2008	Shortnose sturgeon	Avoid turbidity causing activities and driving of large piles and blasting from late April through late July.
NOAA NMFS Northeast Region, NEPA Correspondence, 10/24/2011	Atlantic sturgeon	Avoid turbidity causing activities and driving of large piles and blasting from late April through late July.
CTDEEP Fisheries Correspondence, 5/8/2020 and 3/21/2022	Diadromous fish	To protect the spawning migrations of alewife and blueback herring, all in-water work in the Lieutenant River, including the installation and removal of the temporary trestle bridge over the Lieutenant River, should be prohibited from March 1 to June 1, inclusive. These dates correspond to the period in which diadromous fish are observed migrating upstream at the Lower Millpond fishway.
		To reduce noise impacts from driving sheet pile and shaft casings, only vibratory hammers should be used during the diadromous fish migratory period from April 1 to June 30, inclusive. The use of impact hammers is acceptable outside of this time frame.
		To minimize construction related turbidity, full depth turbidity curtains should be deployed prior to driving any sheet pile or shaft casings. Due to strong tides and currents, the fabric for the curtains should be composed of a heavy woven pervious material to create a flow-through medium, which will reduce the pressure on the curtains and keep them in the same relative shape and location at all tides and river flows.
		To ensure the middle of the river is relatively undisturbed during the spring diadromous fish migration, construction or demolition of piers should be limited to either the western-most three (piers #1,

		2, and 3) or eastern-most three (piers #7, 8, and 9) during the spring migration period from April 1 to June 30. At no time during this period should in-water construction or demolition occur in the middle of the river or simultaneously at more than three piers.
		During the spring migration period from April 1 to June 30, artificial lighting over the water should be limited to navigation light and any lighting typically required for the operation of the railroad bridge.
		The pulling or cutting of timber piles should be prohibited from April to June 30, inclusive.
		All timber piles and stone piers should be removed to at least two feet below the mud line.
		All dredging should be prohibited from April 1 to June 30, inclusive.
		Due to noise concerns, the use of hoe rams should be prohibited from April 1 to June 30, inclusive.
	Benthic Community	To prevent damage to benthic aquatic organisms, any work done from barges should only occur when there is sufficient tide to prevent vessels from grounding.
	Commercial American Shad Fishery	All loud construction related activities, including drilling pipes and driving sheet pile or shaft casings (even by vibratory means), should be prohibited from sunset to sunrise during the commercial shad fishing season from April 1 to June 15, inclusive.
		Minimize interference to shad fishing to the greatest extent practical; establish a plan of communications with fishermen.
	Northern diamondback terrapin	Exclusionary practices required to prevent Northern diamondback terrapin access to construction areas between 4/1 and 10/31 (exclusionary fencing at least 20" tall at the perimeter of construction, safety boats or barges maintain slow speeds).
		During terrapin's dormant period (11/1 to 5/31), work is not allowed in wetland/watercourse and sandy border areas unless these areas were in active construction prior to 11/1 and additionally do not contain any areas of terrapin habitat.
	Spotted turtle	Exclusionary practices required to prevent Spotted turtle access to construction areas between 4/1 and 9/30 (exclusionary fencing at least 20" tall at the perimeter of construction, safety boats or barges maintain slow speeds).

		Where possible, avoid installing sedimentation and erosion control materials from March through mid-May and from late August through September. These periods are when amphibians and reptiles are most active, moving to and from wetlands to breed.

8. Effects Evaluation
Details: project impacts and mitigation
The original 2014 EFH Assessment (included as Attachment F to the EFH Worksheet) provides descriptions of the proposed Project activities, the existing aquatic habitat within the Project area, the potential impacts to EFH from disturbance to physical habitat (water quality and benthos), shading, noise, and obstruction of migration during Project construction, and potential cumulative impacts. This section supplements information provided in the 2014 EFH Assessment and on the EFH Worksheet to address Project design refinements and changes in EFH and HAPC designations subsequent to the 2014 EFH Assessment, including: a) updates to EFH and HAPC designations within the proposed Project area; b) the potential for impacts from dredging; c) the potential for impacts to submerged aquatic vegetation (SAV); potential impacts to summer flounder (*Paralichthys dentatus*); e) potential impacts to winter flounder (*Pseudopleuronectes americanus*), and f) information about the proposed compensatory mitigation plan. These EFH-related aspects were identified based, in part, on input from NOAA Fisheries Greater Atlantic Regional Fisheries Office (GARFO) staff (S. Pereira) during email correspondence with M. Ciappi (Amtrak) between December 2021 and January 2022.

a) Updated EFH and HAPC Designations
EFH designations within the proposed Project area were updated subsequent to the 2014 EFH Assessment. Section 5 of the EFH worksheet identifies the species and life stages that currently have designated EFH within the proposed Project area. The following four species listed in the 2014 EFH Assessment no longer have designated EFH within the proposed Project area: king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*Scomberomorus maculatus*), cobia (*Rachycentron canadum*), and sand tiger shark (*Carcharias taurus*). The following nine species listed in the 2014 EFH Assessment still currently have designated EFH within the proposed Project area: Atlantic salmon (*Salmo salar*), pollock (*Pollachius virens*), red hake (*Urophycis chuss*), winter flounder, windowpane flounder (*Scophthalmus aquosus*), Atlantic sea herring (*Clupea harengus*), bluefish (*Pomatomus saltatrix*), little skate (*Leucoraja erinacea*), and winter skate (*Leucoraja ocellata*). Potential impacts to Atlantic salmon, pollock, red hake, winter flounder, windowpane flounder, Atlantic sea herring, bluefish, little skate, and winter skate are discussed in the 2014 EFH Assessment. Potential impacts to winter flounder are also addressed below under *Winter Flounder*.

The following eight species were not listed in the 2014 EFH Assessment but now have designated EFH within the proposed Project area for various life stages: juvenile yellowtail flounder (*Limanda ferruginea*), juvenile and adult longfin inshore squid (*Doryteuthis pealeii*), juvenile and adult summer flounder (*Paralichthys dentatus*), and all life stages of smoothhound shark complex – Atlantic stock (*Mustelus canis*), scup (*Stenotomus chrysops*), Atlantic mackerel (*Scomber scombrus*), Atlantic butterfish (*Peprilus triacanthus*), and black sea bass (*Centropristis striata*). The proposed Project area is also now within a designated Habitat Area of Particular Concern (HAPC) for summer flounder.

According to the EFH Text Descriptions (NOAA 2021a), EFH for juvenile yellowtail flounder occurs on sand and muddy sand between 20 and 80 meters. In the Mid Atlantic, young-of-the-year juveniles settle to the bottom on the continental shelf, primarily at depths of 40-70 meters, on sandy substrates. Based on the depths where construction would occur, juvenile yellowtail flounder are not expected to occur within the proposed Project area. Various life stages of longfin inshore squid, summer flounder, smooth dogfish, scup, Atlantic mackerel, Atlantic butterfish, and black sea bass are expected to occur within the proposed Project area. Atlantic butterfish, Atlantic mackerel, and longfin inshore squid are pelagic species that are highly mobile and would likely move to adjacent undisturbed areas during construction activities. Larval scup are pelagic while juvenile and adult scup are demersal; this species is also highly mobile and would likely move to undisturbed areas during construction disturbance. Smooth dogfish are also demersal but highly mobile. Adult black sea bass tend to prefer deeper bays and coastal waters and are not likely to be abundant within the immediate vicinity of the Project area, however, other life stages of black sea bass are expected to be present but are highly mobile and expected to move to avoid disturbance. Juvenile and adult summer flounder and summer flounder HAPC are discussed below under *Summer Flounder HAPC*. Potential impacts from dredging activities are discussed below under *Dredging*. Information to supplement the 2014 EFH Assessment analysis of Project-related temporary and permanent impacts to habitat and prey availability are discussed below.

AMTRAK assumes 100% mortality for any sessile and infaunal benthic organisms within the direct area of disturbance for installation of new bridge support structures or areas impacted by dredging/excavation activities during construction of the proposed Project. The direct loss of these organisms would have a highly localized effect and would not be expected to result in significant adverse impacts to the benthic community. The impacted benthic and water column habitat is a fraction of the similar available estuarine habitat in the Connecticut River and Long Island Sound. No commercial shellfish harvest zones are within the Project area and lands in the Project area are classified as prohibited from taking shellfish for marketing or consumption (CTDOA 2019).

Temporarily disturbed sediments (e.g., depressions from barge footings, cofferdam sheets) would be left to backfill naturally with surrounding sediment. Sediment would be expected to quickly fill in depressions to restore natural gradients and predominant grain size. Estuarine benthic invertebrates typically have evolved short times to maturity, high fecundities, and widely dispersed juvenile stages in response to the variable nature of their environment (Brey 2001). The benthic communities surrounding the disturbed areas are expected to recolonize the temporarily affected areas quickly (i.e., days to weeks).

As previously mentioned, the removal of the existing Connecticut River Bridge structures would result in approximately 0.27 acre of restored benthic and open water habitat. The loss of water column due to installation of the new bridge support structures would be offset by the removal of the existing bridge support structures. Similarly, the benthic habitat recovered by the removal of existing bridge structures would be rapidly colonized by the surrounding benthic fauna, thereby offsetting the loss of habitat associated with the new bridge construction. The new bridge support piers would provide new attachment substrate and foraging opportunities for the estuarine fouling community (including barnacles, mussels, algae, etc.) and those consumers that feed on attached biota, replacing the habitat currently provided by the existing bridge's in-water structures. Additionally, the proposed compensatory mitigation plan (see *Compensatory Mitigation* below) would result in the restoration of approximately 11 acres of brackish wetlands hydrologically connected and in close proximity to the impacted area. The proposed restoration of brackish creeks, creation of brackish pools, and enhancement of existing emergent brackish wetlands compared to ambient conditions provide new and/or enhanced habitat for EFH-designated species that may occur within the vicinity of the proposed Project area.

Based on the localized nature of the Project-related impacts, the adherence to seasonal in-water work restrictions and conservation measures, the habitat gained by removal of the existing bridge, and the implementation of the proposed compensatory mitigation plan, adverse impacts to EFH are not expected to be substantial.

b) Dredging

Water Column

Sediment re-suspended during dredging is expected to settle out of the water column within a few hours. Total suspended solids (TSS) from conventional mechanical clamshell bucket dredging operations have been shown to range from 105 mg/L in the middle of the water column to 445 mg/L near the bottom (210 mg/L, depth-averaged) (USACE 2001). Furthermore, a study by Burton (1993) measured turbidity levels 500, 1,000, 2,000 and 3,300 feet from dredge sites in the Delaware River and were able to detect turbidity levels between 15 mg/L and 191 mg/L up to 2,000 feet from the dredge site. Based on these analyses, elevated suspended sediment levels of up to 445 mg/L may be present in the immediate vicinity of the clamshell bucket, and suspended sediment levels of up to 191 mg/L could be present within a 2,000-foot radius from the location of the clamshell dredge. Studies of the effects of turbid water on fish suggest that concentrations of suspended sediment can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton 1993). TSS levels expected for mechanical dredging are below those shown to have adverse effect on fish (580 mg/L for the most sensitive species, with 1,000 mg/L more typical; see summary of scientific literature in Burton 1993). TSS is most likely to affect fish if a plume causes a barrier to normal behaviors. However, the species with designated EFH within the Project area are frequently found in turbid water and are expected to be capable of swimming through the plume without adverse effects or avoiding the plume by swimming further up in the water column or around the turbid area. Additionally, turbidity curtains would be utilized to prevent the loosened sediment from entering the surrounding waters of the Connecticut River. The curtains would also prevent fish from entering the area and thus, would prevent them from being exposed to the turbid water. Dredging activities would be localized and temporary and be performed outside of migratory time periods consistent with anticipated permit conditions and with recommended minimization and avoidance measures. While the increase in suspended sediments may cause fish to alter their normal movements, any change in behavior is likely to be insignificant. Therefore, effects to water quality from dredging activities would be too small to be meaningfully measured or detected and therefore not substantial.

Entrapment/Collision

Aquatic species can be captured in dredge buckets and may be injured or killed from entrapment in the bucket or burial in sediment during dredging and/or when sediment is deposited into the dredge scow. Fish captured and emptied out of the bucket could suffer severe stress or injury, which could also lead to mortality. However, based on the localized area to be dredged at one time, there is a low probability of a fish being captured in a slow-moving dredge bucket. Turbidity curtains would also prevent fish from encountering dredge equipment. Additionally, no dredging would not occur from April through June to minimize adverse effects to migrating diadromous fish.

It is not anticipated that vessel traffic associated with dredging would result in a meaningful increase in the number of vessels above background levels, nor is it anticipated that the dredge scow would be meaningfully different in speed, draft, or noise as compared with existing vessel traffic. Overall, the use of construction vessels during the construction of the proposed Project would not meaningfully increase the risk of interactions between fish and vessels in the Project area when added to baseline conditions.

c) Submerged Aquatic Vegetation

SAV provides nursery habitat for juvenile fish as well as foraging habitat for fish, invertebrates, and waterfowl, and is also an important contributor of oxygen to the water. The Long Island Sound Blue Plan mapping database does not indicate the presence of submerged aquatic vegetation (SAV) within the Project area (CTDEEP 2019). The nearest mapped SAV is an isolated bed approximately three miles from the Project area and located near the mouth of the Connecticut River, while the nearest concentration of mapped SAV beds is over six miles away near the mouths of the Threemile and Fourmile Rivers (CTDEEP 2019). As described in Section 4 of the EFH worksheet, Amtrak performed field surveys in August/September 2020 and on October 1, 2022 to confirm the presence or absence of SAV within the limits of Project disturbance (see Attachment D for survey reports). In August/September 2021, a 0.35-acre area containing SAV was mapped within the proposed Project area. The area was characterized by a limited amount (i.e., +/- 2% coverage) of eelgrass (*Zostera marina*) within an area dominated by gutweed (*Ulva intestinalis*), a macroalgae. A recent survey conducted in October 2022 found gutweed in this area, but there was no SAV present within the project disturbance limits. One approximately 0.06 acre area of sparse eelgrass was observed approximately 15-20 feet to the south of the Project disturbance limits.

Based on the recent SAV survey, construction of the proposed Project would not result in any direct impact to SAV. Potential indirect impacts would be minimized to the extent feasible by utilizing turbidity curtains to prevent the sediment loosened during construction activities from entering the surrounding waters where eelgrass may occur. Sediment resuspended during construction would be localized and dissipate quickly and have negligible impact on any sparse patches of SAV that may be present within the vicinity of the project area when considering the temporal and spatial scale of the activity relative to ambient conditions. FRA acknowledges that SAV beds are dynamic and their extent and location could change over the duration of the Project. Therefore, annual monitoring of the existing SAV observed near the Project limits will be conducted to ensure that there is no encroachment of eelgrass into the Project disturbance limits over the duration of Project construction.

d) Summer Flounder HAPC

The proposed Project area is designated as EFH for summer flounder juvenile and adult life stages. Based on the EFH text description for summer flounder, adults normally inhabit shallow coastal and estuarine waters during the warmer months of the year, and remain offshore on the outer continental shelf during colder months (NOAA 2021a). Adults usually return inshore to coastal waters of the New York Bight in April and reach their peak abundance during the warm summer months of July and August. Adults are often found in the high salinity portions of estuaries, and have been reported as preferring sandy habitats, but can be found in a variety of habitats with both mud and sand substrates, including marsh creeks, seagrass beds, and sand flats (Packer et al., 1999). Juvenile summer flounder use estuarine habitats as nursery areas in water temperatures greater than 37 °F and salinities ranging from 10 to 30 ppt (NOAA 2021a). Offshore-migrating juveniles return to coastal waters and bays in the spring and generally stay for the entire summer. Juveniles can be found on mud and sand substrates in flats, channels, salt marsh creeks, and eelgrass beds (Packer et al., 1999).

Macroalgal beds comprised of gutweed within the proposed Project area are considered a Habitat Area of Particular Concern (HAPC) for summer flounder. Summer flounder HAPC is defined as all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH (NOAA 2021). Construction of the proposed Project would result in the permanent impact to approximately 5,900 sq. ft. (0.135 acre) of summer flounder HAPC and temporary impact to 9,400 sq. ft. (0.216 acre) of summer flounder HAPC. Gutweed is a common species of macroalgae and field surveys noted it was widespread in the intertidal and subtidal zones in the vicinity of the Project area. Gutweed is expected to reestablish temporarily disturbed areas following construction.

If present in the Project area, juvenile and adult summer flounder are highly mobile and would likely move to undisturbed areas during construction activities. Minimization and avoidance measures would be implemented, including the use of cofferdams and turbidity barriers. Additionally, the proposed compensatory mitigation plan (see *Compensatory Mitigation* below) would result in the restoration of approximately 11 acres of brackish wetlands hydrologically connected and in close proximity to the impacted area. The proposed restoration of brackish creeks, creation of brackish pools, and enhancement of existing emergent brackish wetlands compared to existing conditions provide new and/or enhanced habitat for summer flounder. Based on the localized impacts, minimization and avoidance measures, and proposed mitigation, no substantial adverse impacts to summer flounder or summer flounder HAPC are expected due to the proposed Project.

e) Winter Flounder

The Project area is designated as EFH for all life stages of winter flounder, as discussed in detail in the 2014 EFH Assessment (Attachment F). Juveniles and adults that may be present in the Project area would likely temporarily avoid the immediate areas where disturbance is occurring, opting for other suitable habitat within the river. However, larvae are initially planktonic but become increasingly bottom-oriented as metamorphosis approaches. Demersal eggs and less mobile larvae would not be able to relocate to avoid Project-related disturbances.

Winter flounder eggs are generally present in very shallow waters, i.e., less than about 5 meters (16 feet), at water temperatures of 10°C (50°F) or less, and salinities ranging from 10 to 30 parts per thousand (ppt) (Pereira et al. 1998). The types of substrate where eggs are found include sand, muddy sand, mud, and gravel, although sand seems to be the most common. Winter flounder larvae are most abundant at temperatures of 2 to 15°C (36 to 64°F) and at salinities of 3.2 to 30 parts per thousand (Pereira et al. 1998). Preferred larval habitat consists of fine sand or gravel bottoms in inshore waters shallower than 5 meters (16 feet). Attachment E provides graphics depicting the bathymetry in the proposed dredge area. Proposed dredging will not increase water depths to greater than 3.66 meters (12 feet); therefore, dredging will not result in water depths too deep for winter flounder spawning. However, an approximately 10,180 square feet (0.23 acre) area currently below mean low water would be permanently filled as part of the Project. Additionally, riprap scour protection would be installed over an approximately 6,000 square feet (0.14 acres) area, creating unsuitable spawning substrate. Overall, construction may result in a loss of 16,180 square feet (0.37 acre) of potential winter flounder spawning habitat. The proposed compensatory mitigation plan, described below, would result in the restoration of approximately 11 acres of brackish wetlands hydrologically connected and in close proximity to the impacted area. The proposed restoration of brackish creeks, creation of brackish pools, and enhancement of existing emergent brackish wetlands compared to existing conditions provide new and/or enhanced habitat for winter flounder.

Amtrak assumes 100% mortality for any eggs present within the direct area of riverbed disturbance. Immobile eggs and less mobile larvae in the immediate area of disturbance may be subject to impacts from sediment disturbance; however, any increase in turbidity would be localized and temporary. Any short-term burial of demersal eggs or larvae, where sediment deposits are quickly removed by river currents, would have minimal effects on survival. Based on the localized impacts, minimization and avoidance measures, and proposed mitigation, the proposed Project is not expected to have substantial adverse effects on EFH for eggs, larvae, or any other life stage of winter flounder.

f) Compensatory Mitigation

Amtrak has identified two mitigation sites, the 17 Shore Road property and an Amtrak-owned property, that could provide approximately 11 acres of mitigation through enhancement and restoration of degraded brackish wetlands. These two sites are located near the proposed project and fall within the larger coastal wetland system that is ecologically connected to the areas of Project-related impacts. The 17 Shore Road property is a 15-acre parcel, of which 12.22 acres are mixed wetlands, located along the Lieutenant River approximately 0.5 mile east of the bridge replacement site, and abuts the Amtrak right-of-way to the south. The parcel contains a mixture of uplands, palustrine forested wetlands, and estuarine emergent brackish wetlands. The mitigation plan includes restoration of approximately 6.7-acres of brackish wetlands at this site by increasing tidal flows, cleaning ditches, and excavating tidal pools and tidal flow paths to increase the proportion of the low marsh zone with regular tidal inundation and high marsh zone with periodic tidal inundation. Natural flow patterns would be recreated through widened, interconnected channels. Increased flow would result from clearing out accumulated sediment and marsh growth from existing channels, repairing, opening, and lining an existing four-foot culvert, and installing a new culvert under the access road to restore hydraulic connectivity that was previously impacted by construction of the railroad and access road. Additionally, invasive vegetation within uplands bordering the marsh would be removed and replaced with native shrubs, and the remainder of the site would be preserved as a vegetated wetland buffer. For additional benefits at this site, abutting wetland properties are to be utilized. The restoration plan would achieve a mitigation credit of 0.5-acre due to the preservation of 8.0 acres of vegetated wetland buffer; a mitigation credit of 0.1-acre for enhancement of a portion of the wetland within Amtrak's right-of-way that is located adjacent to the mitigation area; and a mitigation credit of 0.4 acre for enhancement of Nature Conservancy property wetlands adjacent to the improved area; bringing the total mitigation at this site to 7.7-acres.

The Amtrak-owned property is a 3.25-acre parcel located between the Lieutenant River and Marvins Creek, on the south side of the tracks. Approximately 3.3 acres of brackish wetland would be enhanced/restored by creating tidal channels that allow the daily high tide to reach a larger portion of the wetland and increase soil salinity.

In addition, an in-lieu fee/mitigation bank payment may be made at a rate to be determined in coordination with the USACE. The current conceptual compensatory mitigation plan for the proposed Project may be modified based on agency input as the permitting process advances.

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ATTACHMENT B
NOAA Correspondence

Gmail **Leslie Mesnick <leslie@calladiumgroup.com>**

Re: Amtrak Connecticut River Bridge Replacement: Request for Section 7 and EFH Concurrence

1 message

Sabrina Pereira - NOAA Federal <sabrina.pereira@noaa.gov> Mon, Jan 10, 2022 at 11:54 AM
To: "Ciappi, Michael" <Michael.Ciappi@amtrak.com>
Cc: Leslie Mesnick <leslie@calladiumgroup.com>, "Caldwell, Craig" <CaldweC@amtrak.com>, "Murray, Mary (FRA)" <mary.murray@dot.gov>, "Fuller, Clarissa N" <Clarissa.Fuller@amtrak.com>, Craig Rolwood <crolwood@hardestyhanover.com>, Rima Laukaitis <rlauk@martinezcouch.com>

Hi Michael,

Thank you for sending the report and the plans, and I look forward to receiving the EFH worksheet from your team.

Please make sure to identify the exact areas (e.g. acres or square feet) of impacts to eelgrass, any areas to be permanently filled, dredged or that will be impacted by construction (e.g. pile installation) in sections 4 and 8 of the worksheet. I anticipate we may recommend compensatory mitigation for impacts to eelgrass and intertidal areas, so I would like to make sure the impact thresholds are clearly identified for my review. Once we receive the completed worksheet, we can "start the clock" on the 30 day consultation.

Thank you again, and best of luck in your future pursuits!

Sabrina Pereira
Marine Resources Management Specialist
Habitat and Ecosystem Services Division
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Gloucester, MA
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(978)-675-2178
Sabrina.pereira@noaa.gov

On Fri, Jan 7, 2022 at 5:31 PM Ciappi, Michael <Michael.Ciappi@amtrak.com> wrote:

> Hello Sabrina,
>
> Thanks for the information. We will reach out if we have any issues or questions with the EFH Worksheet. I've attached a link below containing the Wetland Delineation & Characterization report. Please refer to pdf page 10 of the report and the figures for additional information regarding SAV. As noted within the report, only one area located on the Old Saybrook side of the bridge was characterized by a limited amount (i.e. +/- 2% coverage) of eelgrass, within an area dominated by gutweed, an alga (i.e. seaweed). This seaweed was encountered both in the intertidal and subtidal zones throughout the study area. Please note that the project disturbance line displayed in the delineation report had had a few changes since 2020, but the display of the delineated resources is still correct.
>
> The link also contains the 90% permitting plans that display the proposed design and different wetland areas disturbance, including SAV.
>
> Please use the following link:
>
> https://amtrak-my.sharepoint.com/:f:/p/michael_ciappi/EpYrVJWNzqJCnIOVsNdx7QoBetUDIfK6nd4oY9OR6oeXyg

As mentioned in my previous email, my last day at Amtrak is 1/12/2022. As such, please ensure that the documents located at the link are downloaded before then since the connection will most likely be lost after 1/12/2022. I would normally send the documents in an email but they are a large file size. Please let me know if you have any issues with downloading or viewing the files.

Thanks for your help during this process and I hope you have a nice weekend!

Michael Ciappi (he/him/his)

Lead NEPA Specialist

Amtrak | 2955 Market Street | Box 13 | Philadelphia, PA 19104

Email: Michael.Ciappi@Amtrak.com | Mobile: 302-647-2344

From: Sabrina Pereira - NOAA Federal <sabrina.pereira@noaa.gov>
Sent: Friday, January 7, 2022 10:58 AM
To: Ciappi, Michael <Michael.Ciappi@amtrak.com>
Cc: Leslie Mesnick <leslie@calladiumgroup.com>; Caldwell, Craig <CaldweC@amtrak.com>; Murray, Mary (FRA) <mary.murray@dot.gov>; Fuller, Clarissa N <Clarissa.Fuller@amtrak.com>; Craig Rolwood <crolwood@hardestyhanover.com>; Rima Laukaitis <rlauk@martinezcouch.com>
Subject: Re: Amtrak Connecticut River Bridge Replacement: Request for Section 7 and EFH Concurrence

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Thanks, Michael. Given that our EFH designations have changed since 2014, we may reach out for more updated information as we review the project. For instance, your EFH assessment discusses impacts to some fish that no longer have mapped EFH in the project area (e.g. spanish mackerel, atlantic salmon, cobia), and is missing discussion of impacts to species that currently have mapped EFH (particularly summer flounder and summer flounder HAPC). When you fill out the EFH worksheet, please include discussion of impacts to summer flounder HAPC (this includes SAV). I will let your team know within the next week if we need any more updated information.

Additionally, if there is SAV (eelgrass) onsite then we would appreciate receipt of any SAV surveys that were conducted. Your letter mentions that an SAV survey was conducted from August - September 2020 - please send us the results of that survey. What kinds of vegetation were found onsite? We also need clarification of impacts to SAV. Your letter indicates .17 acres (~7,405 square feet) of SAV will be impacted. We consider this very significant, and would like you to elaborate on these impacts in the EFH worksheet.

Finally, please send us project design plans. It would be very helpful if important resource areas (e.g. wetlands, SAV, etc.) were delineated or overlayed on the plans.

Thank you so much, and please let me know if you have any questions.

Sabrina Pereira

Marine Resources Management Specialist
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Sabrina.pereira@noaa.gov

On Wed, Jan 5, 2022 at 10:15 AM Ciappi, Michael <Michael.Ciappi@amtrak.com> wrote:

Hello Sabrina,

Happy New Year to you as well! The National Environmental Policy Act (NEPA) Environmental Assessment (EA) document was prepared in 2014 and an Essential Fish Habitat (EFH) Assessment was prepared with it for the Connecticut River Bridge Replacement Project. The Federal Railroad Administration (FRA) issued a Finding of No Significant Impact for the EA (with the EFH Assessment included) in 2017. Since then there have been project changes that are illustrated in the December 27, 2021 letter that we sent to NOAA-NMFS. However, we believe the conclusions of the 2014 EFH Assessment are still correct/relevant today and are hoping that the NOAA-NMFS can concur with the 2014 EFH assessment and additional information sent over on December 27, 2021. We will include the concurrence in the NEPA EA re-examination that is currently being prepared.

We will fill out the EFH Worksheet and submit it to you as soon as it is prepared. Additionally, I wanted to let you know that I will no longer be working at Amtrak after January 12, 2022. All additional coordination after that point will be with Leslie Mesnick (primary contact), Mary Murray (FRA), and Craig Caldwell (all cc'd). Thanks for your help.

Michael Ciappi (he/him/his)

Lead NEPA Specialist

Amtrak | 2955 Market Street | Box 13 | Philadelphia, PA 19104

Email: Michael.Ciappi@Amtrak.com | Mobile: 302-647-2344

From: Sabrina Pereira - NOAA Federal <sabrina.pereira@noaa.gov>
Sent: Monday, January 3, 2022 11:04 AM
To: Ciappi, Michael <Michael.Ciappi@amtrak.com>
Subject: Re: Amtrak Connecticut River Bridge Replacement: Request for Section 7 and EFH Concurrence

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Hi Michael,

I hope you enjoyed your weekend and had a happy new year! I'm beginning to dig through the EFH assessment you sent, and am wondering why the most recent version is from 2014? Any context you could provide would be helpful.

Additionally, would you mind filling out the EFH worksheet for this project? It's very helpful to expedite our review. Under section 8 "Effects evaluation" in the "project impacts and mitigation" boxes you could provide a quick overview of impacts and write "see attached EFH assessment".

Thank you in advance, and please let me know if you have any questions.

Sabrina Pereira
Marine Resources Management Specialist
Habitat and Ecosystem Services Division
NOAA/ National Marine Fisheries Service
Gloucester, MA
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(978)-675-2178
Sabrina.pereira@noaa.gov

On Wed, Dec 29, 2021 at 3:54 PM Sabrina Pereira - NOAA Federal <sabrina.pereira@noaa.gov> wrote:

> Thanks for sharing these documents, Michael. I will review in the next few weeks and let you know if I have any questions.
>
> Best,
>
> **Sabrina Pereira**
> Marine Resources Management Specialist
> Habitat and Ecosystem Services Division
> NOAA/ National Marine Fisheries Service
> Gloucester, MA
> Pronouns: she/her/hers
> (978)-675-2178
> Sabrina.pereira@noaa.gov
>
> On Wed, Dec 29, 2021 at 3:34 PM Ciappi, Michael <Michael.Ciappi@amtrak.com> wrote:
>
>> Hello Sabrina,
>>
>> The attached continuing consultation letter combined Section 7 and EFH information. We also included the Essential Fish Habitat Assessment that was prepared for the project in 2014 as an enclosure and referenced it in the letter. I've attached the letter we sent and attachments for reference, just in case you have not received it. Let me know if you need any additional information. Thanks.
>>
>> **Michael Ciappi (he/him/his)**
>>
>> Lead NEPA Specialist
>>
>> Amtrak | 2955 Market Street | Box 13 | Philadelphia, PA 19104
>>
>> Email: Michael.Ciappi@Amtrak.com | Mobile: 302-647-2344
>>
>> ---
>>
>> **From:** Sabrina Pereira - NOAA Federal <sabrina.pereira@noaa.gov>
>> **Sent:** Wednesday, December 29, 2021 3:19 PM
>> **To:** Ciappi, Michael <Michael.Ciappi@amtrak.com>

Cc: Meagan Riley - NOAA Federal <meagan.riley@noaa.gov>; Murray, Mary (FRA) <mary.murray@dot.gov>; Caldwell, Craig <CaldweC@amtrak.com>; Fuller, Clarissa N <Clarissa.Fuller@amtrak.com>; Leslie Mesnick <leslie@calladiumgroup.com>
Subject: Re: Amtrak Connecticut River Bridge Replacement: Request for Section 7 and EFH Concurrence

ATTENTION: This email originated outside of Amtrak. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Thank you for sharing, Meagan.

Hi Michael, I will be your point of contact for EFH consultation for this project. To initiate consultation, please send along a completed EFH worksheet, EFH assessment, project plans and any other supporting documentation you feel is relevant to the consultation.

Please let me know if you have any questions, and I look forward to working with you. Hope you're enjoying the holiday season!

Best wishes,

Sabrina Pereira
Marine Resources Management Specialist
Habitat and Ecosystem Services Division
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Sabrina.pereira@noaa.gov

On Wed, Dec 29, 2021 at 2:11 PM Ciappi, Michael <Michael.Ciappi@amtrak.com> wrote:

> Thanks for letting me know Meagan,
>
> I hope you are enjoying the holiday season. We are looking forward to your review.
>
> **Michael Ciappi (he/him/his)**
>
> Lead NEPA Specialist
>
> Amtrak | 2955 Market Street | Box 13 | Philadelphia, PA 19104
>
> Email: Michael.Ciappi@Amtrak.com | Mobile: 302-647-2344

From: Meagan Riley - NOAA Federal <meagan.riley@noaa.gov>
Sent: Wednesday, December 29, 2021 1:38 PM
To: Ciappi, Michael <Michael.Ciappi@amtrak.com>
Cc: Sabrina Pereira - NOAA Federal <sabrina.pereira@noaa.gov>
Subject: Re: Amtrak Connecticut River Bridge Replacement: Request for Section 7 and EFH Concurrence

ATTENTION: This email originated outside of Amtrak. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi, Michael. We have received your consultation request for the Connecticut River Bridge project located in Old Saybrook and Old Lyme, CT. I will review the materials you sent and be in touch shortly with any comments and questions. Please note, consultation has not been initiated until we have determined that we have all the necessary information to start consultation.

Thanks,

Meagan

Meagan Riley
Section 7 Biologist, Greater Atlantic Regional Fisheries Office
NOAA Fisheries | U.S. Department of Commerce
Office: (978) 281-9339

Pronouns: (she, her, hers)

On Wed, Dec 29, 2021 at 11:42 AM NMFS.GAR ESA.Section7 - NOAA Service Account <nmfs.gar.esa.section7@noaa.gov> wrote:

---------- Forwarded message ---------
From: **Ciappi, Michael** <Michael.Ciappi@amtrak.com>
Date: Mon, Dec 27, 2021 at 3:28 PM
Subject: Amtrak Connecticut River Bridge Replacement: Request for Section 7 and EFH Concurrence
To: NMFS.GAR.ESA.Section7@noaa.gov <NMFS.GAR.ESA.Section7@noaa.gov>, mark.murray-brown@noaa.gov <mark.murray-brown@noaa.gov>
Cc: karen.greene@noaa.gov <karen.greene@noaa.gov>, zachary.jylkka@noaa.gov <zachary.jylkka@noaa.gov>, Murray, Mary (FRA) <mary.murray@dot.gov>, Fuller, Clarissa N <Clarissa.Fuller@amtrak.com>, Shick, Laura (FRA) <laura.shick@dot.gov>, Caldwell, Craig

<CaldweC@amtrak.com>, Craig Rolwood <crolwood@hardestyhanover.com>, Leslie Mesnick <leslie@calladiumgroup.com>

Dear Mr. Murray-Brown,

Attached please find a National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Services (NMFS) continuing consultation letter and enclosures (located in the zip file) for the Connecticut River Bridge project located in Old Saybrook and Old Lyme, CT. The National Railroad Passenger Corporation (Amtrak) is proposing the project in coordination with funding from the Federal Railroad Administration (FRA). Pursuant to the National Environmental Policy Act (NEPA) and FRA's NEPA procedures, FRA and Amtrak prepared an Environmental Assessment (EA) in May 2014 for the project. FRA issued a Finding of No Significant Impact (FONSI) in 2017.

The attached letter requests NOAA NMFS concurrence under Section 7 of the Endangered Species Act and also discusses Essential Fish Habitat coordination and concurrence. Previous coordination/concurrence with the NOAA NMFS was received for this project and is referenced/included in the attached letter and enclosures. Please let us know if there are any questions, issues or if additional information is required. Thanks for your help during this process. I hope you are enjoying the holiday season.

Michael Ciappi (he/him/his)

Lead NEPA Specialist

Amtrak | 2955 Market Street | Box 13 | Philadelphia, PA 19104

Email: Michael.Ciappi@Amtrak.com | Mobile: 302-647-2344

AMTRAKSUSTAINS
THE FUTURE RIDES WITH US

U.S. Department
of Transportation

**Federal Railroad
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

December 27, 2021

Mark Murray-Brown
Endangered Species Act Section 7 Coordinator
NOAA National Marine Fisheries Service
Greater Atlantic Region Protected Resources Office
55 Great Republic Drive
Gloucester, MA, 01930-2276
Via email: nmfs.gar.esa.section7@noaa.gov

Re: Amtrak Connecticut River Bridge Replacement Project
Old Saybrook & Old Lyme, CT
Request for Concurrence under Section 7 of the Endangered Species Act

Dear Mr. Murray-Brown:

As you may be aware, the National Railroad Passenger Corporation (Amtrak) is proposing to replace the Connecticut River Bridge, which became operational in 1907 and is nearing the end of its useful life. The existing bridge is located along Amtrak's Northeast Corridor (NEC) at Milepost 106.89 between Old Saybrook and Old Lyme, Connecticut. FRA anticipates providing funding for design and/or construction of the Project. Pursuant to the National Environmental Policy Act of 1969 (42 USC &4321 et seq.) (NEPA) and FRA's NEPA procedures, FRA and Amtrak prepared an Environmental Assessment (EA) in May 2014 for the Connecticut River Bridge Replacement Project (the Project). FRA issued a Finding of No Significant Impact (FONSI) in 2017.

Prior Informal Consultation

As part of the NEPA process, FRA submitted a request to NOAA National Marine Fisheries Service (NMFS) on June 17, 2013 to initiate informal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) (see *Enclosure A*). FRA's letter included relevant excerpts from the EA and concluded that the Project is not likely to adversely affect the following ESA-listed marine species: shortnose sturgeon, Atlantic sturgeon, and blueback herring. In an August 28, 2013 response, NMFS concurred with FRA's determination and stated no further consultation pursuant to Section 7 of the ESA was required for the Project (see *Enclosure B*).

Since that time, Amtrak has advanced the engineering design for the Project and is seeking several federal and state permits. Because of the design advancement, a request from the U.S. Coast Guard, and a new critical habitat designation for Atlantic sturgeon, FRA sent a request to reinitiate Section 7 consultation request by letter to your office on August 31, 2020 (see *Enclosure C*). NMFS's September 15, 2020 response letter highlighted the Atlantic sturgeon, Shortnose sturgeon and four marine turtles (Kemps ridley, loggerhead, green sea turtle and leatherback sea turtle) as having the potential to be present in the general project vicinity (see *Enclosure D*). NMFS also disclosed the designation of a portion of the Connecticut River, where the Project is located, as critical habitat for the New York Bight Distinct Population Segment (DPS) for Atlantic sturgeon.

The project team is preparing a NEPA re-examination to assess any new potential impacts from the advanced engineering design and potential incidental dredging (described below) and to account for the new critical habitat designation and other factors. No changes to the Project's action area from the previous NMFS consultation are anticipated. Below please find the relevant excerpts from the NEPA re-examination, the 2017 FONSI, and the 2014 EA.

Excerpts from In-Process NEPA Re-examination

Design Refinements

Amtrak has advanced the design for the channel specifications and the bridge clearances since FRA's issuance of the FONSI in 2017. The proposed new bascule bridge will provide for a channel that slightly increases the width of the existing channel from 148 feet to 150 feet and slightly shifts the channel 14.5 feet west towards the center of the Connecticut River. Because of the off-center nature of the existing channel and its location close to the eastern shoreline, the ebb tide current tends to pull marine vessels into Pier 5 (the west channel pier). Widening the horizontal clearance of the channel by 2 feet and relocating it westward towards the center of the river by 14.5 feet is expected to improve the safety for vessels passing beneath the bridge and reduce the risk of vessel-bridge pier collisions.

The new bridge will also provide a vertical clearance of 24 feet in the closed position—an increase of 6 feet compared to the existing bridge. During the project planning phase, several maritime stakeholders (including the Connecticut Marine Trades Association) requested an increase in the vertical clearance when the bridge is in the closed position, which Amtrak has accommodated in the new design plans. In the open position, the vertical clearance will be unlimited for a 90-foot-wide portion of the channel. The full channel width will have at least 74 feet of vertical clearance.

Dredging

At the time of the 2014 EA, dredging activity was not foreseen (EA, Page 12-19). However, upon completion of the 60 percent design plans, Amtrak determined that incidental dredging would be required for the removal and installation of submarine cables in the Connecticut River; removal of unsuitable material under the proposed embankments, at the retaining walls, abutments, piers, and riprap scour protection; and removal of material for additional water depth adjacent to the temporary trestle work platforms at each abutment for construction barge access. Approximate dredged material volumes are specified for each activity in **Table 1**. The material to be dredged is not anticipated to be suitable for reuse due to structural concerns. The sediments will be transported to an appropriate off-site upland facility for final disposition, pending the outcome of sediment testing. Material removed as a result of dredging will be replaced in situ after the installation of the submarine cables.

TABLE 1: ANTICIPATED VOLUMES OF DREDGED MATERIAL (CUBIC YARDS [CY])

	Excavation/ Dredging Adjacent to Embankment:	Excavation/Dredging for Retaining Wall, Abutment, and Riprap:	Dredging for Temporary Trestle Structure for Barge Access:	Dredging for Drilled Piers:	Dredging for Submarine Cables:	**Total:**
Volume of Dredged Material	15,100± CY	17,400± CY	5,800± CY	3,500± CY	2,700± CY	**44,500± CY**

Wetlands

In the 2014 EA, the Project was estimated to permanently impact 3.51 acres of wetlands and open water, in addition to temporarily impacting 5.22 acres of wetlands and open water (EA, Page 10-17). Based on the Project's advanced design, permanent wetland impacts (measured below high tide line [HTL] + 1 foot) have increased from 3.51 to 4.35 acres (an addition of 0.84 acres) while temporary wetland impacts below the tidal wetland boundary have decreased from 5.22 to 4.65 acres (a reduction of 0.57 acres).

During the 60 percent engineering design, Amtrak minimized permanent impacts to wetlands and open water to the extent possible through the use of retaining walls and other design measures, while improving the navigation benefits of the Project. This design results in an additional 0.84 acres of permanent wetland impacts, and therefore Amtrak is currently determining compensatory measures for wetland impacts in coordination with CTDEEP and USACE through their respective permitting processes. Temporary wetland impacts have been reduced under the latest design as compared with the 2014 EA, and Amtrak will minimize the effects to wetlands during construction through adherence to in-water work restrictions, implementation of sediment control measures, and strict conformance with permit requirements. As such, it is not anticipated that the design changes would result in significant adverse impacts to wetlands (see *Enclosure E*).

While the Long Island Sound Blue Plan mapping database does not indicate the presence of submerged aquatic vegetation (SAV) in the project area, Amtrak recently performed a field survey (Aug-Sept 2020) to establish the presence or absence of SAV. Amtrak determined that a portion of the wetland area comprises SAV. The construction of the temporary trestle bridge anticipated to be above the HTL and with a minimal footprint using driven wooden piles would temporarily impact approximately 0.17 acres of SAV. An approximately 0.17-acre area of SAV would be permanently impacted by the dredging and filling activities for the project. Amtrak is coordinating mitigation for this impact with USACE and CTDEEP as part of the Joint Permit application process.

Atlantic Sturgeon

As discussed in the EA, although Atlantic sturgeon are expected to occur at least intermittently in the Project's action area (i.e., the area within 0.5 miles of the project site), the species is not found there in exceptionally high abundance based on its distribution within the Connecticut River and Long Island Sound and its association with deep-water areas of the river (Savoy and Pacileo 2003, Savoy and Benway 2004). The majority of Atlantic sturgeon (post-migrant juveniles) collected during trawl surveys in Long Island Sound and the lower portion of coastal rivers have been found in the Central Basin area of Long Island Sound (Savoy and Pacileo 2003, Savoy and Benway 2004). Only a small percentage of those Atlantic sturgeon have been observed in the lower part of the river. Atlantic sturgeon occurring in the action area are subadults (<1,100 mm fork length) primarily from the Hudson River population (Savoy and Pacileo 2003, Savoy and Benway 2004). Once they enter the river during late spring (May), the majority of Atlantic sturgeon are found in discrete, deep-water areas (>9 m in depth) upstream (RM 6-16) of the action area (Savoy and Pacileo 2003). Atlantic sturgeon leave the Connecticut River during early fall (September). There is not a spawning population in the Connecticut River (Kynard et al. 2012); therefore, Atlantic sturgeon eggs, larvae, and early juveniles (age-0 and 1) are not expected to occur in the action area. However, based on recent correspondence with NMFS dated September 15, 2020, adult, subadult and juvenile Atlantic sturgeon are expected to occur in the action area. Based on a study published in 2017, Juvenile Atlantic sturgeon, although a small population, were collected in the lower portion of the river between May and October likely because the Connecticut River hosted successful natural reproduction in 2013[1].

If Atlantic sturgeon are present in the action area, these large and highly mobile fishes would be expected to avoid noise associated with construction activities, which is not expected to reach levels associated with the onset of physiological impacts, recoverable physical injury, or mortality. Therefore, the Project is not expected to cause significant adverse noise impacts on sturgeon. The dredging necessary during construction would cause a temporary impact, although not a significant adverse impact, on this population. The limited duration of dredging coupled with construction windows specified by permit limitations to

[1] https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0175085

avoid migration periods would minimize the Project's impacts to this species. Because of its coarse nature, the Connecticut River sediment, which is composed primarily of coarse-grained sand in deeper channel areas and silt/sand near the shorelines, would not remain suspended for extended periods of time, especially because in-water work would be performed intermittently as various project elements are constructed. While a localized increase in suspended sediment may cause aquatic species to temporarily avoid the area where bottom disturbing activities are occurring, the area affected would be locally confined. Suitable habitats similar to the Connecticut River would be available nearby for use by disturbed fish. Further, increases in suspended sediment concentrations would be minimized through the use of containment measures during dredging and pile drilling. Overall, construction and demolition activities associated with the Project may affect but are not expected to adversely affect Atlantic sturgeon, their habitat, or other aquatic species in the Connecticut River.

Essential Fish Habitat

Within any areas of benthic habitat permanently occupied by new bridge support structures or impacted by dredging/excavation activities during construction of the Project, impacts to sessile and infaunal benthic invertebrates would be expected. The direct loss of these organisms would have a highly localized effect and would not be expected to result in significant adverse impacts to fishes and other aquatic organisms for several reasons. First, the area of impact to benthic habitat would be smaller than the available areas of equivalent habitat adjacent to the action area. Second, estuarine benthic invertebrates typically have evolved short times to maturity, high fecundities, and widely dispersed juvenile stages in response to the variable nature of their environment (Brey 2001). The Connecticut River environment at the action area is highly dynamic and shifts in salinity and habitat type can occur rapidly over time. Third, the new bridge support piers and/or piles would ensure habitat complexity near the action area (which includes the habitats created by existing in-water structures) by providing new attachment substrate and foraging opportunities for the estuarine fouling community (including barnacles, mussels, hydroids, algae, tunicates, etc.) and those consumers that feed on attached biota. Lastly, the benthic habitat recovered by the removal of existing structures would be rapidly colonized by the area's benthic fauna, thereby offsetting the loss of habitat associated with new construction. Therefore, changes to benthic habitat as a result of construction activities would be limited to a localized area within the action area and may affect but are not likely to adversely affect essential fish habitat (EFH) or EFH species at the action area.

The 2014 EA included an EFH Assessment (see *Enclosure F*) that concluded the Project is not likely to adversely affect EFH or EFH species in the Connecticut River. Although dredging is required as part of the latest engineering design, it is not expected that this construction activity would materially change the salinity, temperature, or oxygen values of the Connecticut River, reduce the depth of the river bottom, or hinder the movements of subadults and spawning adults. Dredging activities will be localized and temporary and be performed outside of migratory time periods consistent with permit conditions and limitations. Therefore, this design refinement would not pose a significant adverse impact to the river and the associated aquatic species or to EFH, critical habitats and other natural resources. In its September 15, 2020 correspondence, NMFS confirmed the federal action agency (in this case, FRA), is responsible for determining whether the proposed action may affect listed species but also recommended consideration of measures such as timing restrictions for in-water work, silt curtains, and cushion blocks to minimize the potential for adverse effects.

Consistent with NMFS recommendations, the 2017 FONSI includes a series of impact minimization measures:

> *As appropriate during construction, [the Project will] use sedimentation control measures, such as silt fences, hay bales, sedimentation basins, slope stabilization measures, and sediment booms […] use containment measures during pile drilling to minimize suspended sediment concentrations […] continue coordination with NMFS, CTDEEP Office of Long Island Sound Program, and other*

involved agencies during the permitting phase to determine if seasonal in-water work restrictions are necessary to protect aquatic resources [… and] use turbidity curtains during deconstruction phase of current bridge piers until turbidity levels are consistent with ambient turbidity.

Excerpts from 2014 EA

Shortnose Sturgeon

Shortnose sturgeon spawn in the spring between late April and late May at spawning grounds located well upstream of the project area near Montague, MA (RM 120) (NMFS 2011a). Because of the location of spawning areas well upstream of the salt front and the project area, early life stages of shortnose sturgeon (eggs, larvae, juveniles age-0 and 1) do not occur in the project area (NMFS 2012, Kynard et al. 2012). Older juveniles are also not likely to occur in the project area during the spring and summer months as they typically migrate upstream during this time of the year (NMFS 2011b). Even during the rest of the year, juveniles are more commonly found upstream of the salt front.

Shortnose sturgeon are most likely to occur in the project area between late April and mid-May when river flows are greatest and salinities are low (NMFS 2011a). By mid-June, most shortnose sturgeon migrate to foraging areas upstream of RM 12 where they spend the summer months (August – October) foraging near the Holyoke Dam (RM 87; NMFS 2011a). During the fall months, adult shortnose sturgeon migrate to overwintering habitats near the spawning grounds in the freshwater portion of the river and remain there until spring (Savoy 2004, NMFS 2011b).

Marine Turtles

Four species of marine turtles, Kemps ridley (*Lepidochelys kempii*), loggerhead (*Caretta caretta*), green sea turtle (*Chelonia mydas*) and leatherback sea turtle (*Dermochelys coriacea*), all state and federally listed, occasionally occur in northeastern waters and Long Island Sound (LISS 2009). The Kemps ridley occurs in Long Island Sound and, in New York, has been documented as the most abundant sea turtle (CTDEEP 1999). Although the loggerhead is found in concentrated numbers within New England, it is rarely found in Connecticut Waters (CTDEEP 2011). Green turtles have never been found along Connecticut's shorelines, but they may occasionally migrate through Connecticut's waters (CTDEEP 2011). Leatherback sea turtles are usually restricted to the higher salinity areas (Turtle Expert Working Group 1998). These four species neither nest in the Connecticut River nor reside there year-round. Therefore, these species are not likely to occur within the Connecticut River except as transients. Because state-listed and federally-listed marine turtles neither nest nor reside in the project area year-round, and are only rarely observed in the Connecticut River estuary, they will not be expected to be impacted by the construction or operation of the Project.

Additionally, Amtrak consulted with the CTDEEP Fisheries Division in April 2020. In May 2020, CTDEEP recommended a series of construction related measures including lighting restrictions, work windows, use of vibratory hammers during certain times, and more (*see Enclosure G*). As mitigation, CTDEEP suggested the repurposing of an existing bridge pier for recreational fishing. Amtrak is developing mitigation measures in coordination with CTDEEP and USACE as part of the Joint Permit Application process.

Conclusion

As described above, FRA anticipates the in-process NEPA re-examination will maintain the original conclusions of the EA—specifically, that the Project may affect, but is not likely to adversely affect the Atlantic Sturgeon and Shortnose Sturgeon and that the Project and will have no effect to the following marine turtles: Kemps ridley, loggerhead, green sea turtle, and leatherback sea turtle. Additionally, the Project may affect, but is not likely to adversely affect Atlantic Sturgeon critical habitat or EFH under NMFS's jurisdiction. FRA requests your concurrence with these determinations.

If you have any questions about the Project or this request, please contact Mary Catherine Murray, FRA Environmental Protection Specialist, at 202-306-4903 or at mary.murray@dot.gov. FRA and Amtrak appreciate your continued involvement with this important transportation project.

Sincerely,

Laura A. Shick
Supervisory Environmental Protection Specialist
Office of Railroad Policy and Development

Enclosures

Enclosure A – Request for Informal Consultation
Enclosure B – NMFS Concurrence
Enclosure C – Request for Re-initiation of Informal Consultation
Enclosure D – NMFS Response to Re-initiation
Enclosure E – Temporary and Permanent Wetland Impacts Table and Map
Enclosure F – EFH Assessment
Enclosure G – CTDEEP Fisheries Division Correspondence

Cc: Karen Greene, Mid-Atlantic EFH Coordinator, NMFS Habitat Conservation Division
Zach Jylkka, Protected Resources Division, Greater Atlantic Regional Fisheries, NOAA Fisheries
Mary Catherine Murray, FRA
Clarissa Fuller, Project Manager, Amtrak
Craig Caldwell, Director of Environmental Projects, Amtrak
Michael Ciappi, Lead National Environmental Policy Act Specialist, Amtrak
Craig Rolwood, Project Manager, Hardesty & Hanover
Leslie Mesnick, Environmental Task Coordinator, The Calladium Group

Gmail **Emma Willinger <emma@calladiumgroup.com>**

Amtrak Connecticut River Bridge: Request for Re-initiation of NMFS Informal Consultation under Section 7 of the Endangered Species Act

3 messages

Emma Willinger <emma@calladiumgroup.com> Mon, Aug 31, 2020 at 3:37 PM
To: nmfs.gar.esa.section7@noaa.gov
Cc: laura.shick@dot.gov, Karen.Greene@noaa.gov, zachary.jylkka@noaa.gov, "Brun, John" <BrunJ@amtrak.com>, caldwec@amtrak.com, Craig Rolwood <crolwood@hardestyhanover.com>, Leslie Mesnick <leslie@calladiumgroup.com>

Dear Mr. Murray-Brown,

On behalf of Amtrak and FRA, please find attached the enclosed correspondence for the Amtrak Connecticut River Bridge Replacement Project.

Thank you,

Emma Willinger, Junior Environmental Planner | The Calladium Group
540 President Street, 3rd Floor | Brooklyn NY 11215

914-559-8020 | emma@calladiumgroup.com

Sec7 Reinitiation Package_FRA to NMFS_CT River Bridge_08312020.pdf
1697K

Zachary Jylkka - NOAA Federal <zachary.jylkka@noaa.gov> Fri, Sep 4, 2020 at 1:25 PM
To: Emma Willinger <emma@calladiumgroup.com>
Cc: "Shick, Laura (FRA)" <laura.shick@dot.gov>, "Brun, John" <BrunJ@amtrak.com>, caldwec@amtrak.com, Craig Rolwood <crolwood@hardestyhanover.com>, Leslie Mesnick <leslie@calladiumgroup.com>, Alison Verkade - NOAA Federal <alison.verkade@noaa.gov>, Roosevelt Mesa - NOAA Affiliate <roosevelt.mesa@noaa.gov>

Hi Emma,

Thank you for your email and the attached letter. We will get you a response as soon as possible.

Best,
Zach
[Quoted text hidden]
--
Zach Jylkka
Fisheries Biologist
Protected Resources Division
Greater Atlantic Regional Fisheries Office
NOAA Fisheries
Gloucester, MA 01930
zachary.jylkka@noaa.gov
office: (978) 282-8467
Pronouns: (he/him/his)

For additional ESA Section 7 information and Critical Habitat guidance, please see:
https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-consultation-technical-guidance

50 Years of Science, Service, and Stewardship

Roosevelt Mesa - NOAA Affiliate <roosevelt.mesa@noaa.gov> Tue, Sep 15, 2020 at 11:21 AM
To: Emma Willinger <emma@calladiumgroup.com>
Cc: "Shick, Laura (FRA)" <laura.shick@dot.gov>, "Brun, John" <BrunJ@amtrak.com>, caldwec@amtrak.com, Craig Rolwood <crolwood@hardestyhanover.com>, Leslie Mesnick <leslie@calladiumgroup.com>, Alison Verkade - NOAA Federal <alison.verkade@noaa.gov>, Zachary Jylkka - NOAA Federal <zachary.jylkka@noaa.gov>

Ms. Willinger:

We received your email on August 31, 2020 regarding the Amtrak Connecticut River Bridge Project between Old Saybrook & Old Lyme, CT. In your letter you requested information regarding the presence of all listed species including threatened and endangered species, and critical habitat that may occur in or in the vicinity of the proposed project. Please note that you can also look up species presence in your project area by using our ESA Section 7 Mapper: https://noaa.maps.arcgis.com/apps/webappviewer/ index.html?id= 1bc332edc5204e03b250ac11f9914a27. We offer the following comments.

Endangered Species Act

Atlantic Sturgeon

Atlantic sturgeon are present in the waters of the Connecticut River and its adjacent bays and tributaries. The New York Bight, Chesapeake Bay, Carolina, and South Atlantic Distinct Population Segments (DPSs) of Atlantic sturgeon are endangered; the Gulf of Maine DPS is threatened. Transient adult and subadult Atlantic sturgeon originating from any of these DPSs could occur in the proposed project area to opportunistically forage. Additionally, as detailed in Savoy et al. 2017 (paper attached), researchers collected several juvenile Atlantic sturgeon from the lower portion of the Connecticut River between May and October, evidencing the presence of juvenile individuals in the Connecticut River and a successful natural reproduction event that most likely took place in the river in 2013. Adult, subadult, and juvenile Atlantic sturgeon are expected to occur in the proposed project area.

On August 17, 2017, NOAA Fisheries published a final rule designating critical habitat for the Gulf of Maine, New York Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs of Atlantic sturgeon (82 FR 39160). The effective date of the rule was September 18, 2017. The action you have proposed will occur in an area that is designated as critical habitat for the Atlantic sturgeon New York Bight DPS. The physical or biological features (PBFs) of designated critical habitat for the conservation of Atlantic sturgeon are those habitat components that support successful reproduction and recruitment. These features include:

1) Hard bottom substrate (e.g., rock, cobble, gravel, limestone, boulder, etc.) in low salinity waters (i.e., 0.0-0.5 parts per thousand range) for settlement of fertilized eggs, refuge, growth, and development of early life stages;

2) Aquatic habitat with a gradual downstream salinity gradient of 0.5 up to as high as 30 ppt and soft substrate (e.g., sand, mud) between the river mouth and spawning sites for juvenile foraging and physiological development;

3) Water of appropriate depth and absent physical barriers to passage (e.g., locks, dams, thermal plumes, turbidity, sound, reservoirs, gear, etc.) between the river mouth and spawning sites necessary to support: (1) unimpeded movements of spawning adults to and from spawning sites; (2) seasonal and physiologically dependent movement of juvenile Atlantic sturgeon to appropriate salinity zones within the river estuary, and; (3) staging, resting, or holding of subadults or spawning condition adults. Water depths in main river channels must also be deep enough (e.g., at least 1.2 m) to ensure continuous flow in the main channel at all times when any sturgeon life stage would be in the river, and;

4) Water, between the river mouth and spawning sites, especially in the bottom meter of the water column, with the temperature, salinity, and oxygen values that, combined, support: (1) spawning; (2) annual and

interannual adult, subadult, larval, and juvenile survival; and (3) larval, juvenile, and subadult growth, development, and recruitment (e.g., 13°C to 26°C for spawning habitat and no more than 30°C for juvenile rearing habitat and 6 mg/L or greater dissolved oxygen for juvenile rearing habitat).

PBFs 2 through 4 are present within the action area and we would expect the project's effects on each individual PBF present to be analyzed.

Shortnose Sturgeon

Shortnose sturgeon are present in the waters of the Connecticut River and could occur in their adjacent bays and tributaries. Shortnose sturgeon are listed as endangered throughout their range. Transient juveniles and adult individuals could occur in the proposed project area to opportunistically forage. Also, from mid-November to mid-April juveniles and adult individuals are expected to use the area as overwintering grounds (Buckley & Kynard 1985; Kynard et al. 2012). Due to the habitat and salinity in the lower Connecticut River, spawning and early life stages are not expected to occur.

Sea Turtles

Four species of Endangered Species Act (ESA) listed threatened or endangered sea turtles under our jurisdiction are seasonally present in Long Island Sound and adjacent systems, including the proposed project area: the threatened Northwest Atlantic Ocean distinct population segment (DPS) of loggerhead, North Atlantic DPS of green, and the endangered Kemp's ridley and leatherback sea turtles. Sea turtles could occasionally be found in the waters near the project area between May and November, with the highest concentration of sea turtles present from June through October.

As project details develop, we recommend you consider the following effects of the project on sturgeon and sea turtles:

- For any impacts to habitat or conditions that temporarily render affected water bodies unsuitable for the abovementioned species, consider the use of timing restrictions for in-water work.
- For activities that increase levels of suspended sediment, consider the use of silt management and/or soil erosion best practices (i.e., silt curtains and/or cofferdams).
- For activities that may affect underwater noise levels, consider the use of a soft start, cushion blocks, and other noise attenuating tools to avoid reaching noise levels that will cause injury or behavioral disturbance to sturgeon and sea turtles - see the table below for more information regarding noise criteria for injury/behavioral disturbance in sturgeon and sea turtles.

Behavioral and Physiological (Injury) Thresholds for ESA-Listed Species in NMFS' Greater Atlantic Region

Species	Thresholds	Units
Sturgeon Behavioral	150	dB re 1 µPA RMS
Sturgeon Physiological	206	dB re 1 µPA Peak
Sturgeon Physiological (>2g)	187	dB re 1 µPa2s cSEL
Sea turtle behavioral	175	dB re 1 µPA RMS
Sea Turtle Temporary Threshold Shift (TTS, SEL weighted)	189	dB re 1 µPa2s SEL
Sea Turtle Temporary Threshold Shift (TTS, Peak SPL)	226	dB re 1 µPA Peak
Sea Turtle Permanent Threshold Shift (PTS, SEL weighted)	204	dB re 1 µPa2s SEL
Sea Turtle Permanent Threshold Shift (PTS, Peak SPL)	232	dB re 1 µPA Peak

Depending on the amount and duration of work that takes place in the water, listed species of sturgeon and sea turtles may occur within the vicinity of your proposed project. The federal action agency will be responsible for determining whether the proposed action may affect listed species. If they determine that the proposed action may affect a listed species, they should submit their determination of effects, along with justification and a request for concurrence to the attention of the Section 7 Coordinator, NOAA Fisheries, Greater Atlantic Regional Fisheries Office, Protected Resources Division at nmfs.gar.esa.section7@noaa.gov. Please be aware that we have recently provided on our website guidance and tools to assist action agencies with their description of the action and analysis of effects to support their determination. See - https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-consultations-greater-atlantic-region. After receiving a complete, accurate comprehensive request for consultation, in accordance to the guidance and instructions on our website, we would then be able to conduct a consultation under section 7 of the ESA. Should project plans change or new information become available that changes the basis for this determination, further coordination should be pursued. If you have any questions regarding these comments, please contact me (978-281-9186; roosevelt.mesa@noaa.gov).

Magnuson-Stevens Fishery Conservation and Management Act - Essential Fish Habitat

The MSA requires Federal agencies to consult with the NMFS on any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect essential fish habitat (EFH) identified under the MSA [16 U.S.C. § 1855(b)(2)]. The statute defines EFH as "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity" [16 U.S.C. § 1853(a)(7) and § 1802(10)]. You can access the resources on EFH consultations from: https://www.fisheries.noaa.gov/new-england-mid-atlantic/habitat-conservation/essential-fish-habitat-assessment-consultations.

Thank you,
Roosevelt Mesa

[Quoted text hidden]

--
Roosevelt Mesa
Environmental Specialist
Integrated Statistics, Inc. | In support of NOAA Fisheries
Greater Atlantic Regional Fisheries Office
Protected Resources Division
roosevelt.mesa@noaa.gov | Office: 978-281-9186
Pronouns: (he/him/his)

U.S. Department
of Transportation

**Federal Railroad
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

August 31, 2020

Mark Murray-Brown
Endangered Species Act Section 7 Coordinator
NOAA National Marine Fisheries Service
Greater Atlantic Region Protected Resources Office
55 Great Republic Drive
Gloucester, MA, 01930-2276
Via email: nmfs.gar.esa.section7@noaa.gov

Re: Amtrak Connecticut River Bridge
Old Saybrook & Old Lyme, CT
Request for Re-initiation of Informal Consultation under Section 7 of the Endangered Species Act

Dear Mr. Murray-Brown:

The National Railroad Passenger Corporation (Amtrak) is proposing the replacement of the Connecticut River Bridge, which became operational in 1907 and is nearing the end of its useful life. The existing bridge is located along Amtrak's Northeast Corridor (Milepost106.89) between Old Saybrook and Old Lyme. The U.S. Department of Transportation's Federal Railroad Administration (FRA) has provided funding to Amtrak for project planning and design, and may provide funding for construction of the project. Pursuant to the National Environmental Policy Act of 1969 (42 USC &4321 et seq.) (NEPA) and FRA's NEPA procedures, FRA and Amtrak prepared an Environmental Assessment (EA) in May 2014 for the Connecticut River Bridge Replacement Project (Project). FRA issued a Finding of No Significant Impact (FONSI) in 2017.

As part of the NEPA process, the Project team submitted a request to NOAA National Marine Fisheries Service (NMFS) on June 17, 2013 to initiate informal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) (see *Enclosure A*). Our letter stated that the proposed Project was not likely to adversely affect any listed species under NMFS jurisdiction. In an August 28, 2013 response, NMFS concurred with the determination, and that no further consultation pursuant to Section 7 of the ESA was required (see *Enclosure B*).

Amtrak is advancing the design and permitting for the Project. This includes preparation of a United States Coast Guard (USCG) Bridge Permit Application. USCG recently requested documentation to confirm the validity of the NMFS informal consultation, as it is seven years old. NOAA Fisheries and FRA staff discussed the Project during a teleconference on June 8, 2020, including the NMFS designation of the Connecticut River as critical habitat for the New York Bight distinct population segment (DPS) of Atlantic sturgeon in 2017. At the time of the 2014 EA and previous informal consultation with NMFS, Atlantic sturgeon in Connecticut were designated as "threatened" and the New York Bight DPS was designated as federally endangered, but the Connecticut River was not designated as critical habitat. Because of the recent designation and because several years have passed since FRA's initial consultation, the Project team intends to resubmit for NMFS's consideration an updated assessment of the Project's potential impacts on Essential Fish Habitat (EFH) and threatened and endangered species. Before we proceed, we are requesting your office provide any updated information on threatened and endangered species in the Project area.

If you have any questions about the Project or this consultation request, please contact me at laura.shick@dot.gov or (202) 366-0340. FRA looks forward to continuing consultation with your office to advance this important railroad project.

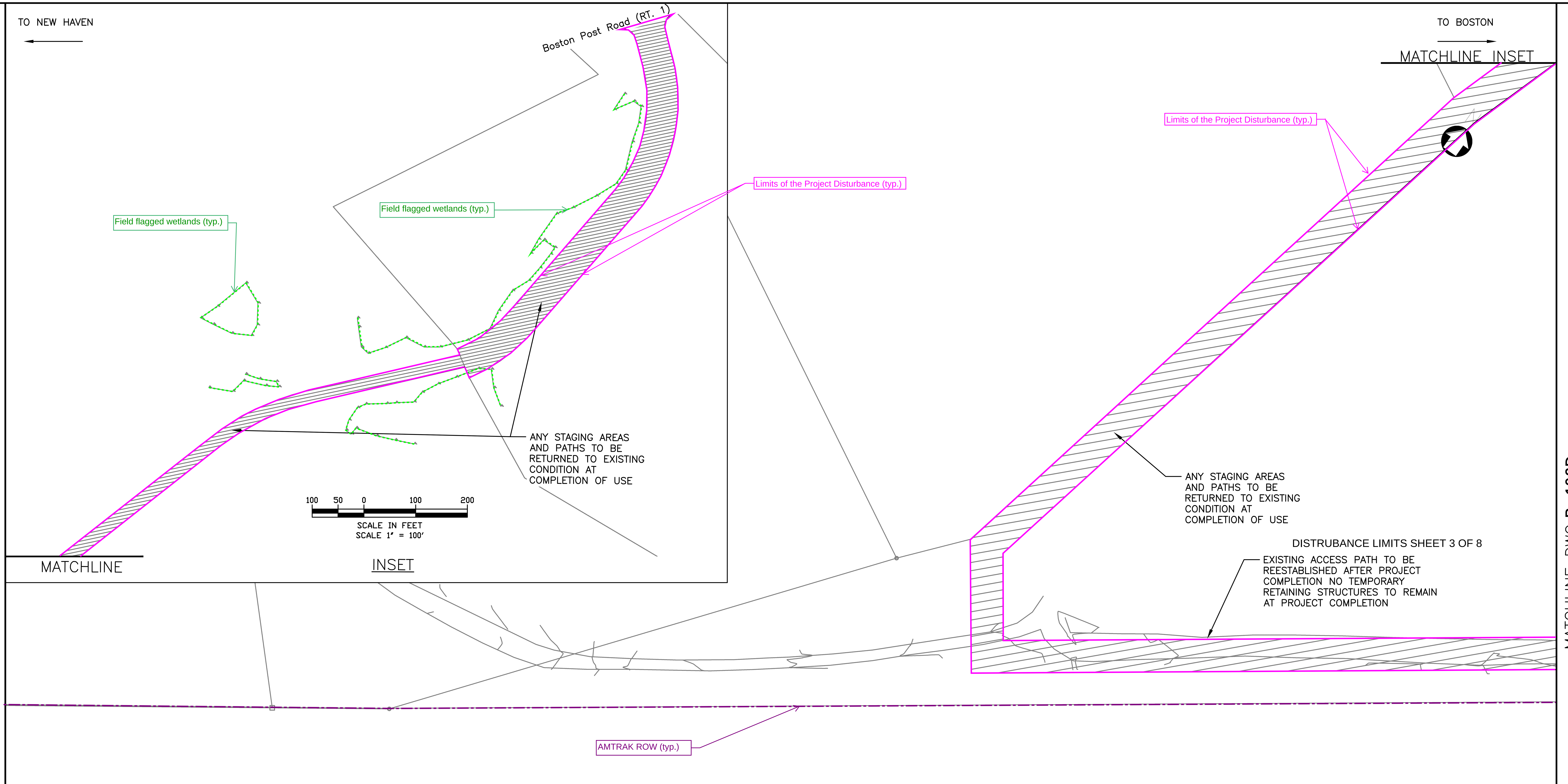
Sincerely,

Laura A. Shick
Supervisory Environmental Protection Specialist
Environment & Project Engineer Division
Office of Railroad Policy & Development

Enclosures

Cc: Karen Greene, Mid-Atlantic EFH Coordinator, NMFS Habitat Conservation Division
Zach Jylkka, Fisheries Biologist, Protected Resources Division, Greater Atlantic Regional Fisheries Office, NOAA Fisheries
John Brun, Technical Project Manager, Amtrak
Craig Caldwell, Director of Environmental Projects, Amtrak
Craig Rolwood, Project Manager, Hardesty & Hanover
Leslie Mesnick, Environmental Task Coordinator, Calladium Group

ATTACHMENT C
Temporary and Permanent Wetland Impacts Plan



Legend

- Vegetated area below CJL+1 ft. and Intertidal wetland permanently filled
- Vegetated area below CJL+1 ft. and Intertidal wetland temporary disturbed
- Intertidal Unconsolidated Shore containing rocks, cobble/gravel, and sand (beach) areas permanently filled
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- Subtidal wetland (area) temporary disturbed
- Deep water temporary disturbed
- Deep water permanent dredge and fill
- Subtidal SAV (submerged aquatic vegetation)

Legend

- Tidal Wetland Boundary - Coastal Jurisdiction Line (CJL=2.9') + 1 foot - elevation 3.9'
- High Tide Line (HTL) - elevation 3.04'
- Mean High Water (MHW) - elevation 1.71'
- Field located Wetland boundary
- Limits of the Project disturbance
- Amtrak ROW

NOTE:
FOR BASE MAP USED WSP SITE PLAN SERIES CV-101 THRU CV108. COLOR ANNOTATIONS HAVE BEEN ADDED TO DEMONSTRATE PERMANENT AND TEMPORARY DISTURBANCE AREAS TIDAL WETLAND AND WATER.

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SCALE 1" = 40'

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STANDARD PEN TABLE: YES

No.	Revisions	Date	By

Amtrak®

Office of Chief Engineer
STRUCTURES
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date

100% SUBMISSION

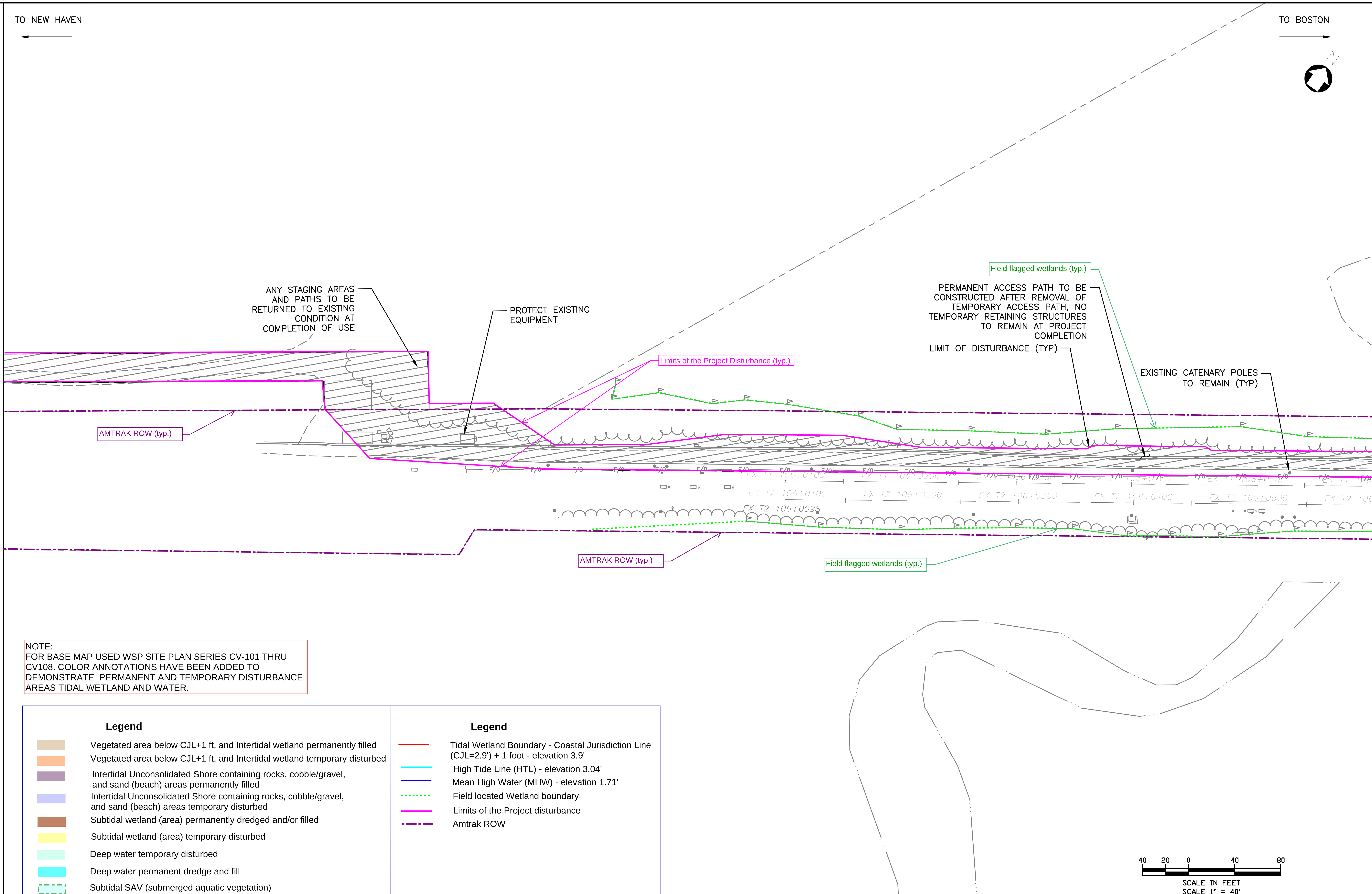
HARDESTY & HANOVER, LLC
ENGINEERING
1501 Broadway New York, NY 10036

WSP
4 Penn Center
1600 JFK Blvd. Suite 510
Philadelphia, PA 19103

OLD SAYBROOK CONNECTICUT
REPLACEMENT OF MB 106.89
OVER CONNECTICUT RIVER
DISTRUBANCE LIMITS SHEET 1 OF 8

Designed CB | Drawn CB/MD | Checked KM | Date 09/30/2021

Project Code: XXX XXX
WBS: 000000
Sheet No. OF 000
Dwg. No. P-101D



NOTE:
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- Limits of the Project disturbance
- Amtrak ROW

No.	Revisions	Date	By

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National Railroad Passenger Corporation
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OLD SAYBROOK — CONNECTICUT

REPLACEMENT OF MB 106.89 OVER CONNECTICUT RIVER

DISTRUBANCE LIMITS SHEET 2 OF 8

Designed CB | Drawn CB/MD | Checked KM | Date 09/30/2021

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- Limits of the Project disturbance
- Amtrak ROW

NOTE:
FOR BASE MAP USED WSP SITE PLAN SERIES CV-101 THRU CV108. COLOR ANNOTATIONS HAVE BEEN ADDED TO DEMONSTRATE PERMANENT AND TEMPORARY DISTURBANCE AREAS TIDAL WETLAND AND WATER.

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SCALE 1" = 40'

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Philadelphia, PA 19103

OLD SAYBROOK CONNECTICUT

REPLACEMENT OF MB 106.89
OVER CONNECTICUT RIVER

DISTRUBANCE LIMITS SHEET 3 OF 8

Designed CB | Drawn CB/MD | Checked KM | Date 09/30/2021

Project Code: XXX XXX
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No.	Revisions	Date	By

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Office of Chief Engineer
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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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Philadelphia, PA 19103

OLD SAYBROOK — CONNECTICUT

REPLACEMENT OF MB 106.89 OVER CONNECTICUT RIVER

DISTRUBANCE LIMITS SHEET 4 OF 8

Designed	CB	Drawn	CB/MD	Checked	KM	Date	09/30/2021

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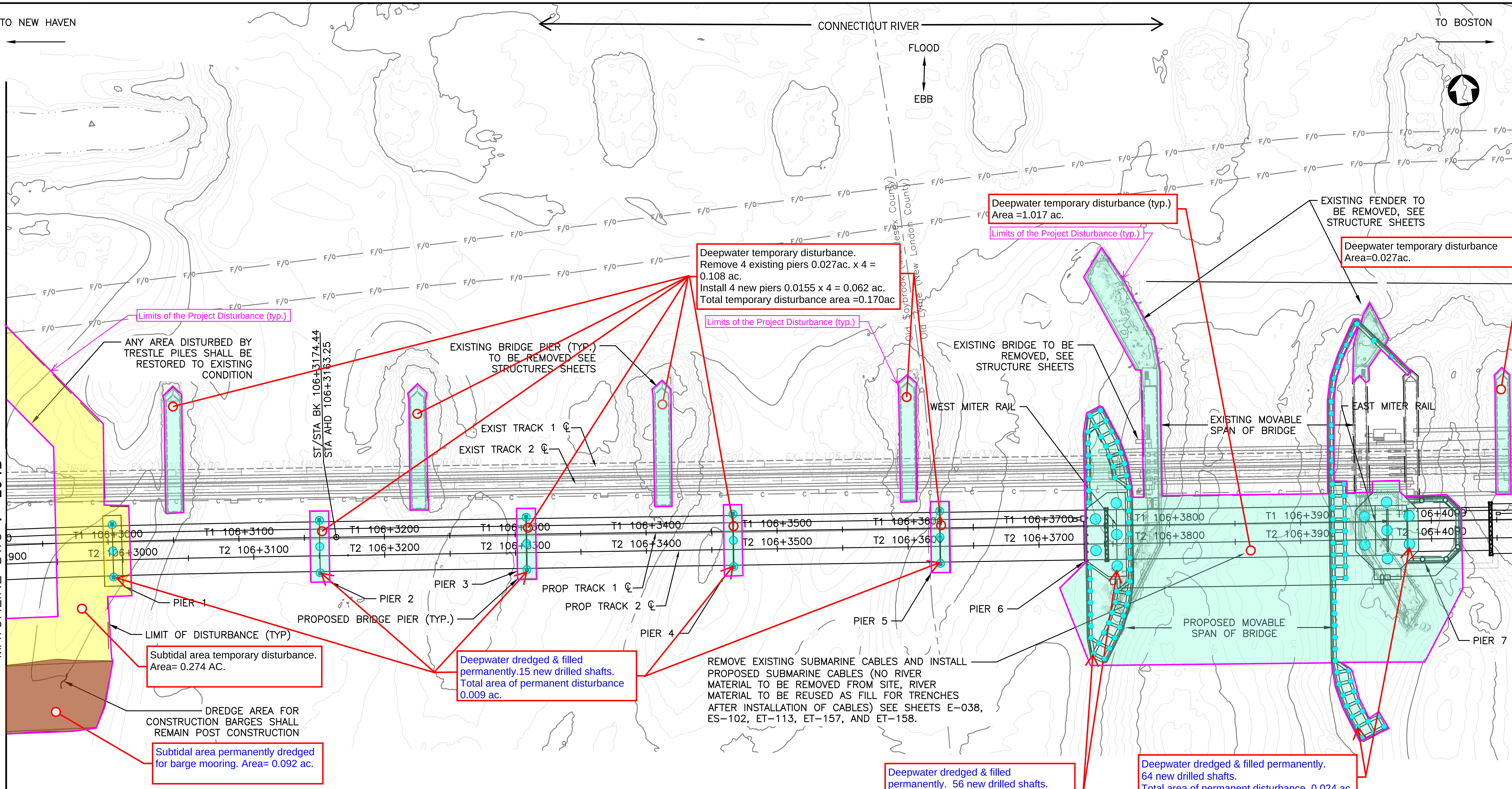

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No.	Revisions	Date	By

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Philadelphia, PA 19103

OLD SAYBROOK CONNECTICUT
REPLACEMENT OF MB 106.89 OVER CONNECTICUT RIVER
DISTRUBANCE LIMITS SHEET 5 OF 8

Designed	CB	Drawn	CB/MD	Checked	KM	Date	09/30/2021

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Dwg. No.	P-105D

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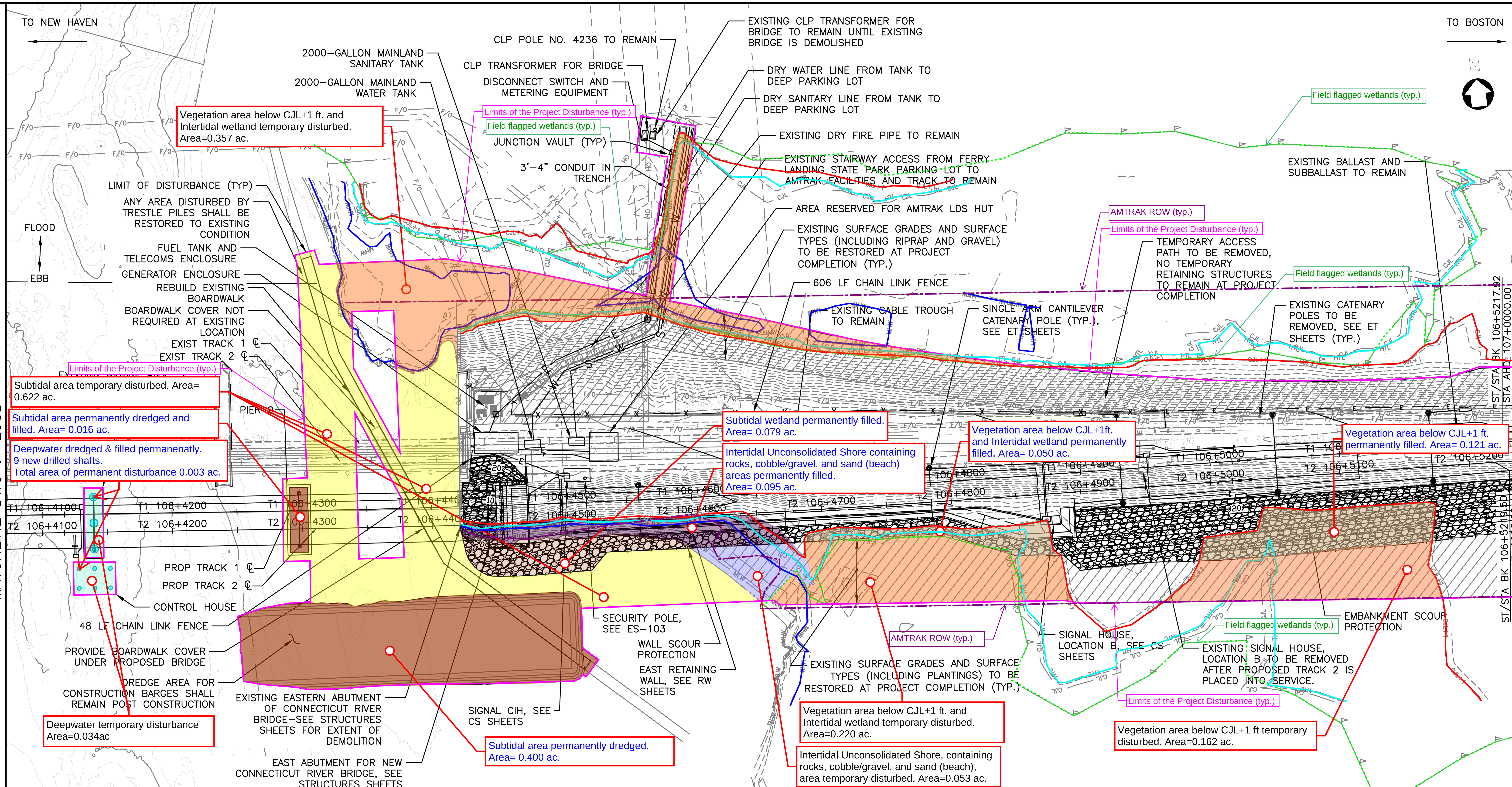

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- Deep water temporary disturbed
- Deep water permanent dredge and fill
- Subtidal SAV (submerged aquatic vegetation)

Legend

- Tidal Wetland Boundary - Coastal Jurisdiction Line (CJL=2.9') + 1 foot - elevation 3.9'
- High Tide Line (HTL) - elevation 3.04'
- Mean High Water (MHW) - elevation 1.71'
- Field located Wetland boundary
- Limits of the Project disturbance
- Amtrak ROW

NOTE:
FOR BASE MAP USED WSP SITE PLAN SERIES CV-101 THRU CV108. COLOR ANNOTATIONS HAVE BEEN ADDED TO DEMONSTRATE PERMANENT AND TEMPORARY DISTURBANCE AREAS TIDAL WETLAND AND WATER.

40 20 0 40 80
SCALE IN FEET
SCALE 1" = 40'

FILE NAME: 21200A-CV-101_106.DWG
PRINT DATE/TIME: 2/14/2022 9:22 AM
PLOT SCALE: AS NOTED
STANDARD PEN TABLE: YES

No.	Revisions	Date	By

Amtrak®

Office of Chief Engineer
STRUCTURES
National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date

100% SUBMISSION

HARDESTY & HANOVER, LLC
ENGINEERING
1501 Broadway New York, NY 10036

WSP
4 Penn Center
1600 JFK Blvd. Suite 510
Philadelphia, PA 19103

OLD SAYBROOK — CONNECTICUT

REPLACEMENT OF MB 106.89 OVER CONNECTICUT RIVER

DISTRUBANCE LIMITS SHEET 6 OF 8

Designed	CB	Drawn	CB/MD	Checked	KM	Date	09/30/2021

Project Code:	XXX XXX
WBS:	000000
Sheet No.	OF 000
Dwg. No.	P-106D

Legend

- Vegetated area below CJL+1 ft. and Intertidal wetland permanently filled
- Vegetated area below CJL+1 ft. and Intertidal wetland temporary disturbed
- Intertidal Unconsolidated Shore containing rocks, cobble/gravel, and sand (beach) areas permanently filled
- Intertidal Unconsolidated Shore containing rocks, cobble/gravel, and sand (beach) areas temporary disturbed
- Subtidal wetland (area) permanently dredged and/or filled
- Subtidal wetland (area) temporary disturbed
- Deep water temporary disturbed
- Deep water permanent dredge and fill
- Subtidal SAV (submerged aquatic vegetation)

Legend

- Tidal Wetland Boundary - Coastal Jurisdiction Line (CJL=2.9') + 1 foot - elevation 3.9'
- High Tide Line (HTL) - elevation 3.04'
- Mean High Water (MHW) - elevation 1.71'
- Field located Wetland boundary
- Limits of the Project disturbance
- Amtrak ROW

NOTE:
FOR BASE MAP USED WSP SITE PLAN SERIES CV-101 THRU CV108. COLOR ANNOTATIONS HAVE BEEN ADDED TO DEMONSTRATE PERMANENT AND TEMPORARY DISTURBANCE AREAS TIDAL WETLAND AND WATER.

40 20 0 40 80
SCALE IN FEET
SCALE 1" = 40'

No.	Revisions	Date	By

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OLD SAYBROOK — CONNECTICUT

REPLACEMENT OF MB 106.89 OVER CONNECTICUT RIVER

DISTRUBANCE LIMITS SHEET 7 OF 8

Designed	CB	Drawn	CB/MD	Checked	KM	Date	09/30/2021

Project Code:	XXX XXX
WBS:	000000
Sheet No.	OF 000
Dwg. No.	P-107D

FILE NAME: 21200A-CV-101_108.DWG
PRINT DATE/TIME: 2/12/2022 5:22 PM
PLOT SCALE: AS NOTED
STANDARD PEN TABLE: YES

NOTE:
FOR BASE MAP USED WSP SITE PLAN SERIES CV-101 THRU CV108. COLOR ANNOTATIONS HAVE BEEN ADDED TO DEMONSTRATE PERMANENT AND TEMPORARY DISTURBANCE AREAS TIDAL WETLAND AND WATER.

40 20 0 40 80
SCALE IN FEET
SCALE 1" = 40'

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

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OLD SAYBROOK CONNECTICUT

REPLACEMENT OF MB 106.89 OVER CONNECTICUT RIVER

DISTRUBANCE LIMITS SHEET 8 OF 8

Designed	CB	Drawn	CB/MD	Checked	KM	Date	09/30/2021

Project Code:	XXX XXX
WBS:	000000
Sheet No.	OF 000
Dwg. No.	P-108D

FILE NAME: 21200A-CV-101_108.DWG
PRINT DATE/TIME: 2/12/2022 7:28 PM
PLOT SCALE: AS NOTED
STANDARD PEN TABLE: YES

ATTACHMENT D

SAV Survey Results

October 1, 2022 SAV Survey

NEW ENGLAND ENVIRONMENTAL SERVICES
Wetland Consulting Specialists Since 1983

November 11, 2022

Ms. Rima Laukaitis
Martinez Couch & Associates, LLC
1084 Cromwell Avenue, Suite 2A
Rocky Hill, CT 06067

Re: Submerged Aquatic Vegetation (SAV) Search
Amtrak Bridge Over Connecticut River
Old Saybrook & Old Lyme, Connecticut

Dear Ms. Laukaitis:

Submerged aquatic vegetation (SAV) is a term used to describe rooted, vascular plants that grow entirely underwater or just up to the water's surface, except for periods of brief exposure at low tides. SAV generally grows in beds. These beds can be densely or sparsely populated and contain one or many species.

The following are the submerged aquatic vegetation species that can be found in the Connecticut River in the vicinity of the Project.

1. *Zostera marina* (Eelgrass)
2. *Rupia marítima* (Widgeon Grass)
3. *Vallisneria americana* (Wild Celery)

New England Environmental Services (NEES) conducted a submerged aquatic vegetation (SAV) survey for the species listed above on October 1, 2022, at the following locations:

1. The area on the west side of the Connecticut River (Old Saybrook) around the existing abutment and south of the Amtrak railroad tracks. See the attached map/ Figure 1 & photograph #1. The survey area shows as a dashed line.

2. The area on the east side of the Connecticut River (Old Lyme) around the existing abutment, Ferry Landing fishing pier, north and south of the Amtrak railroad tracks. See the attached map/ Figure 2 & photograph #2. The survey area shows on the map as a dashed line.

30 GINA LANE, MARLBOROUGH, CONNECTICUT 06447
richsnarski@gmail.com • 860-918-1970 • www.richsnarski.com

The Connecticut River is a navigable river, and it is heavily used for fishing and recreational boating. The water depth at the west abutment, Old Saybrook side of the river, rapidly increases from the elevation of minus 2 ft. (North American Vertical Datum 88 (NAVD 88)) to an elevation of minus 12 ft (NAVD 88) within 25 feet of the abutment retaining wall. At the east abutment and Ferry Landing Fishing Piers, Old Lyme side of the river, the river bed elevation is minus 5 ft. (NAVD 88), which extends to Pier #9 and then rapidly drops to the elevation of minus 12 ft. (NAVD 88). The mean Low Water Elevation at the project site is minus 1.71 ft. of (NAVD 88) using the NOAA benchmark. Across the river, bottom elevations range from elevation minus 12 ft. to minus 50 ft. (NAVD 88) or more. The deep part of the river is not suitable habitat for SAV due to the deep river water being constantly disturbed by boating, lack of light due to river depth, and turbulent water. Therefore, the area with deep water wasn't surveyed for SAV. The survey for SAV was conducted in the areas at the fringes of the river, on both sides in Old Saybrook and Old Lyme, where the bottom elevations were higher than minus 5 feet (NAVD 88). These areas have not been impacted by boat activities and, at the low tide, receive some exposure to light that SAV requires.

NEES used a methodology suggested in the publication *Submerged Aquatic Vegetation Survey Guidance for New England Region, dated August 11, 2016,* for the survey of the SAV. For this site, Tier-1, Method 1 survey methodology was determined to be appropriate.

The submerged aquatic plant survey was conducted at the low tide by walking in the water and viewing the river bed with an underwater viewing box until the bottom of the river could not be seen. During the survey, the water depth was 3 to 3.5 feet. The survey was conducted on ten-foot transects running north to south. Three-inch buoys were placed in the water marking the extent of the survey with the underwater viewing box on each transect. A 12-foot long metal rake with a 2.5-foot wide basket was used from a flat bottom boat starting at the buoys and drifting south within the survey area. Three-inch buoys were placed in the water at the southern end of each 10-foot transect within the submerged aquatic plant survey area.

The area on the west side of the Connecticut River (Old Saybrook), south of the existing Amtrak railroad tracks, where the new abutment is to be constructed, is occupied by algae, aka Gutweed (*Ulva intestinalis*), with a small area of Eelgrass (*Zostera marina*) located about 15-20 feet to the south of the Project disturbance limits (see attached map/ Figure 1). The Gutweed is a conspicuous bright grass-green seaweed, not a vascular plant. No other vascular plants or other vegetation were present within the search area. The Eelgrass occurs in an area approximately 40 x 60 feet in size (see attached map/ Figure 1 & photograph #1). The Eelgrass is sparse in the area, with a 1 to 3 percent coverage. No Eelgrass was found within project disturbance limits.

NEW ENGLAND ENVIRONMENTAL SERVICES
Wetland Consulting Specialists Since 1983

No submerged aquatic vascular plants or any other vegetation, including Gutweed, were present in the area on the east side of the Connecticut River (Old Lyme) north and south of the Amtrak railroad tracks (see attached map/ Figure 2 & photograph #2).

The turbidity of the Connecticut River water in the project area limits the establishment of submerged aquatic vegetation.

Respectively Submitted,

New England Environmental Services

R. Richard Snarski
Professional Wetlands Scientist #1391
Registered Professional Soil Scientist
Consulting Botanist

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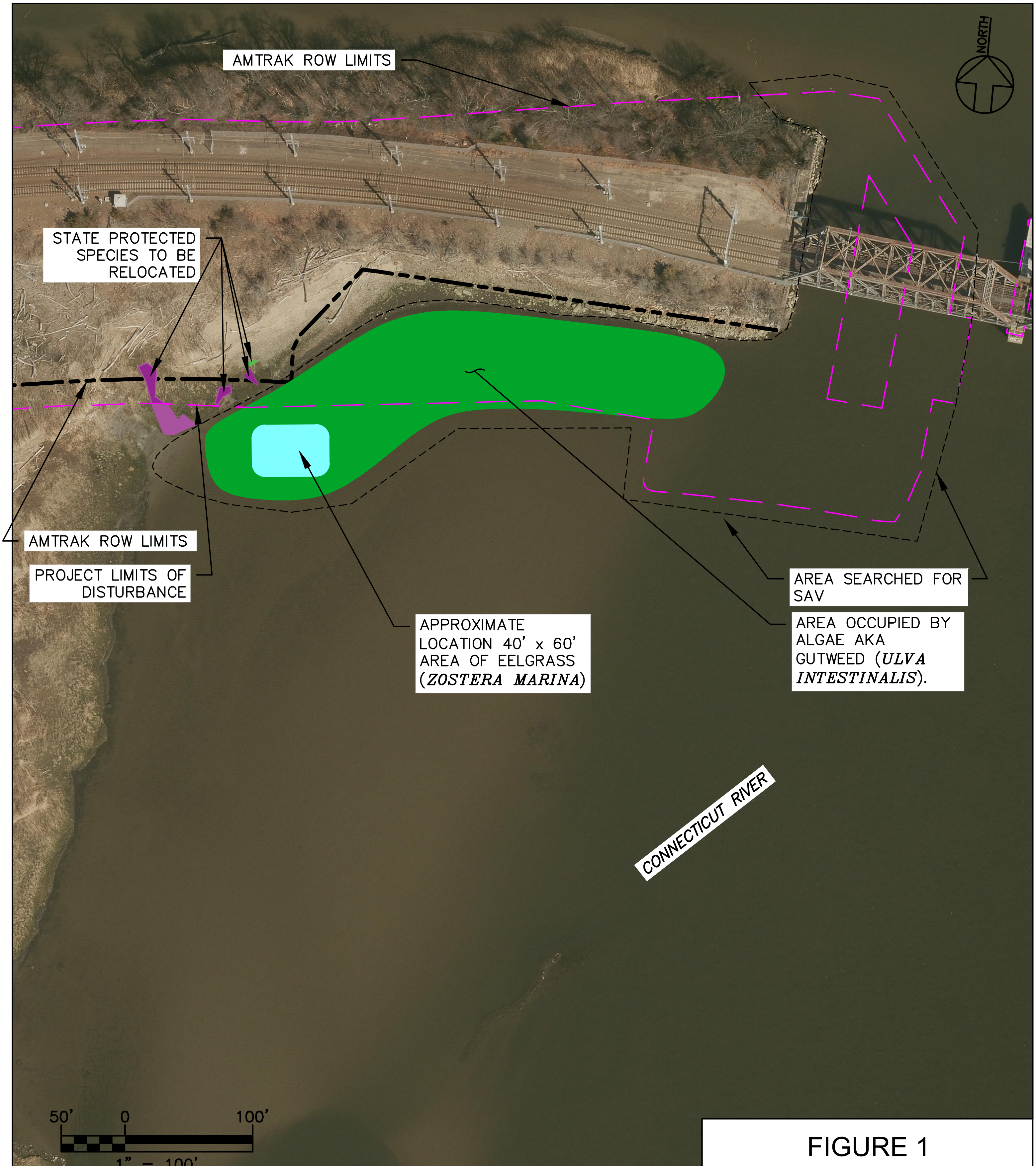
richsnarski@gmail.com • 860-918-1970 • www.richsnarski.com



SUBMERGED AQUATIC VEGETATION (SAV) SEARCH Location Map Old Saybrook	FIGURE 1
	DATE: 11/06/2022
	SCALE: 1"=100'
	1 OF 2

Photo #1. Submerged aquatic plant survey area on the west side of theConnecticut River (Old Saybrook) south of the Amtrak railroad tracks

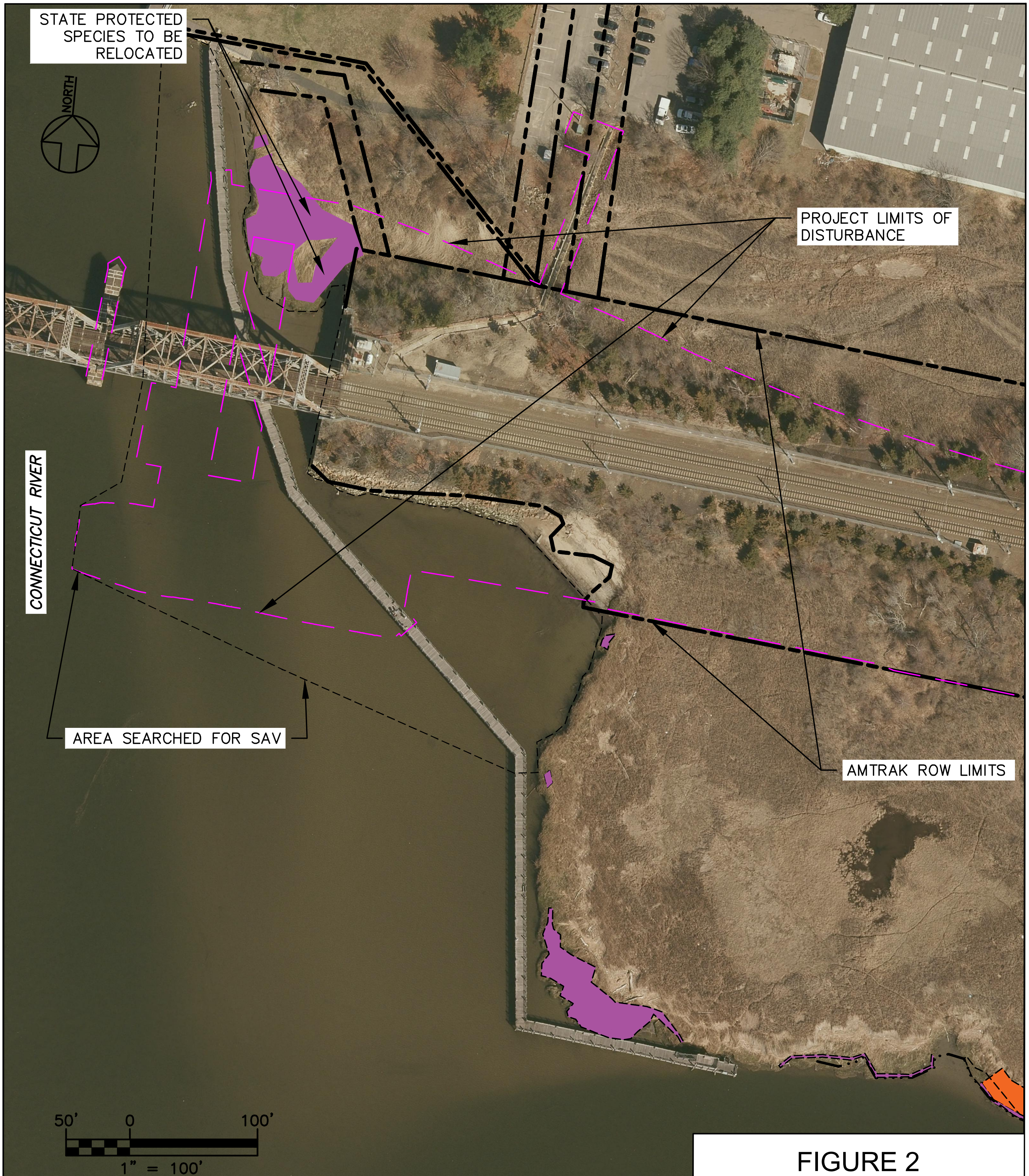


FIGURE 2

DATE: 11/06/2022

SCALE: 1"=100'

2 OF 2

SUBMERGED AQUATIC VEGETATION (SAV) SEARCH
Location Map, Old Lyme

Photo #2. Submerged aquatic plant survey area on the east side of the Connecticut River (Old Lyme) north of the Amtrak bridge

August/September 2021 SAV Survey Excerpts from the Wetland Delineation and Characterization Report

• Ecology
• Soil & Wetland Studies
• Water Quality Monitoring • GPS
• Environmental Planning & Management
• Ecological Restoration & Habitat Mitigation
• Aquatic, Wildlife and Listed Species Surveys
• Application Reviews • Permitting & Compliance

December 18, 2020

VIA EMAIL

Martinez Couch & Associates, LLC
1084 Cromwell Avenue, Suite A-2
Rocky Hill, CT 06067

ATTN: Richard Couch

RE: **WETLAND DELINEATIONS & CHARACTERIZATION - *SUPPLEMENTAL***
Amtrak Bridge over the Connecticut River, Old Saybrook and Old Lyme, CT

REMA Job No.: 18-2078-OLM2

Dear Mr. Couch:

At your request, REMA Ecological Services, LLC (REMA) presents herein our findings during tidal and inland wetland delineations, and resource characterizations associated with the above-referenced site.

1.0 INTRODUCTION

This *Wetlands Delineation & Characterization Report*, represents the effort by REMA, to conduct wetland (tidal and inland) delineations and resource characterizations on the subject site ("the site," "the study area"), during August and September 2020. This effort included the in-field delineation of regulatory and jurisdictional wetlands and watercourses, based on both State Statutes and Federal guidelines.

It should be noted that the work detailed in this report supplements previous work conducted within the study area and detailed in a November 18, 2019 report submitted by REMA. The 2020 season fieldwork expanded to areas adjacent or within areas to be used for access and staging during the construction of the new Amtrak Bridge over the Connecticut River. Moreover, this fieldwork entailed the characterization and classification of intertidal and has resulted in the clearing out of marsh vegetation, and the exposure of the substrate, thus creating, at least temporarily, "mudflat" habitat.

5.3 Submerged Aquatic Vegetation (SAV)

Searches for submerged aquatic vegetation (SAV) was conducted from both the water and in some cases from the shore. Only one area with sufficient density of vegetation and size was mapped on the Old Saybrook side, and on the south side of the railroad embankment just southwesterly of the railroad bridge (see Exhibit 6, Attachment A, and Photos 25 to 28, Attachment C).

This area was characterized by a limited amount (i.e., +/- 2% coverage) of eelgrass (*Zostera marina*), within an area dominated by gutweed (*Uva intestinalis*), an alga (i.e., seaweed). This seaweed was encountered both in the intertidal and subtidal zones throughout the study area, and its dominance is likely attributed to a large degree to the influx of nutrients from the Connecticut River watershed.

Please feel free to contact us with any questions on the above.

Respectfully submitted,

REMA ECOLOGICAL SERVICES, LLC

George T. Logan, MS, PWS, CSE
Registered Soil Scientist/Professional Wetland Scientist
Certified Senior Ecologist

Attachments: A: Exhibits 1 through 11
B: Figures A, B, and C
C: Annotated photographs (1 through 28)
D: Wetland Functions & Values Assessment
E: Jurisdictional Wetland Determination Data Forms & Transect/Plot Locations

Legend

Tidal Wetlands
- Intertidal Wetlands
- Subtidal Area /Deepwater Habitat
- Intertidal /Unconsolidated Shore (Sand) "Mudflat"
- Subtidal Aquatic Bed (Submerged Aquatic Vegetation; SAV)
- Intertidal Rocky Shore

Inland Wetlands & Limits
- Inland Wetlands
- Freshwater/Tidal Wetland (Palustrine)
- Project disturbance limits
- Field located wetlands boundary
- Mapped wetlands boundary

No.	Revisions	Date	By

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National Railroad Passenger Corporation
30th Street Station, Philadelphia, Pennsylvania 19104

Approved	Date

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MCA Martinez Couch & Associates
1084 Cromwell Avenue, Suite A-2 Rocky Hill, CT 06067
Telephone: (860) 436-4364
Fax: (860) 436-4626
www.martinezcouch.com

OLD SAYBROOK — CONNECTICUT

REPLACEMENT OF MB 106.89 OVER CONNECTICUT RIVER

WETLANDS INVENTORY WITHIN PROJECT LIMITS

Designed	Drawn	Checked	Date 11/2020

Project Code:	XXX XXX
WBS:	000000
Sheet No.	6 OF 000
Dwg. No.	EXHIBIT - 6

FILE NAME:
PLOT SCALE:
STANDARD PEN TABLE:

Wetland Resources associated with Amtrak Bridge of the Connecticut River, Old Lyme & Old Saybrook, CT
Photos taken August 17, 18, and 19, and September 28, 2020, by REMA Ecological Services, LLC

Photo 1: Wetland 1C; northern boundary delineated in 2020; facing westerly

Photo 2: Wetland '100'; wetland boundary marker RES-100; facing northeasterly

Photo 3: Wetland '100'; easternmost section; note railroad embankment in background facing southwesterly

Photo 4: Wetland '100'; common reed predominates; facing westerly

Wetland Resources associated with Amtrak Bridge of the Connecticut River, Old Lyme & Old Saybrook, CT
Photos taken August 17, 18, and 19, and September 28, 2020, by REMA Ecological Services, LLC

Photo 5: Wetland 5A; facing northerly

Photo 6: Wetland '600'; transition between emergent, Phragmites dominated, tidal wetland, and forested tidal wetland; facing northeasterly

Photo 7: Wetland '600'; westernmost section; transition between tidal and non-tidal wetland; facing southerly

Photo 8: Wetland '600'; seasonally flooded area, not tidally influenced; facing southeasterly

Wetland Resources associated with Amtrak Bridge of the Connecticut River, Old Lyme & Old Saybrook, CT
Photos taken August 17, 18, and 19, and September 28, 2020, by REMA Ecological Services, LLC

Photo 9: Wetland 1C; northern boundary delineated in 2020; Wetland boundary marker #1 (pink-blue) at rubble wall; note small section of “mudflat;” facing southerly

Photo 10: Wetland ‘600’; at interface with Wetland 3A, previously delineated (2019); Japanese knotweed infestation on man-made berm; facing southwesterly

Photo 11: Wetland ‘600’; westernmost section; facing away from roadway embankment; facing southeasterly

Photo 12: Wetland ‘600’; central section; facing southerly

Wetland Resources associated with Amtrak Bridge of the Connecticut River, Old Lyme & Old Saybrook, CT
Photos taken August 17, 18, and 19, and September 28, 2020, by REMA Ecological Services, LLC

Photo 13: Wetland ‘200’; Ragged Rock Brook culverts under access roadway to earth products recycling facility; facing northwesterly

Photo 14: Wetland ‘200’; facing easterly

Photo 15: Wetland ‘200’; Ragged Rock Brook; facing southeasterly

Photo 16: Wetland ‘400’; isolated, likely dugout, wetland which is a potential vernal pool habitat; facing northerly

Wetland Resources associated with Amtrak Bridge of the Connecticut River, Old Lyme & Old Saybrook, CT
Photos taken August 17, 18, and 19, and September 28, 2020, by REMA Ecological Services, LLC

Photo 17: Wetland '300'; Ragged Rock Brook downstream of access roadway to earth products recycling facility; facing northwesterly

Photo 18: Wetland '300'; Ragged Rock Brook; facing southerly

Photo 19: Wetland '300'; Ragged Rock Brook riparian corridor; facing southeasterly

Photo 20: Amtrak bridge over the Lieutenant River; facing northeaterly

Wetland Resources associated with Amtrak Bridge of the Connecticut River, Old Lyme & Old Saybrook, CT
Photos taken August 17, 18, and 19, and September 28, 2020, by REMA Ecological Services, LLC

Photo 21: Investigations of intertidal and subtidal areas associated with Lieutenant River; Old Lyme; facing westerly

Photo 22: Yellow-crowned night heron (juvenile) along the Lieutenant River

Photo 23: Sandy shore (beach) and rocky shore within project area (Old Lyme); facing easterly

Photo 24: Intertidal/subtidal canal northerly of railroad tracks at edge of project footprint; facing easterly

Wetland Resources associated with Amtrak Bridge of the Connecticut River, Old Lyme & Old Saybrook, CT
Photos taken August 17, 18, and 19, and September 28, 2020, by REMA Ecological Services, LLC

Photo 25: Western approach to existing bridge; area of aquatic bed (submerged aquatic vegetation; SAV); facing easterly

Photo 26: Rocky Shore within project area (Old Saybrook); facing northeasterly

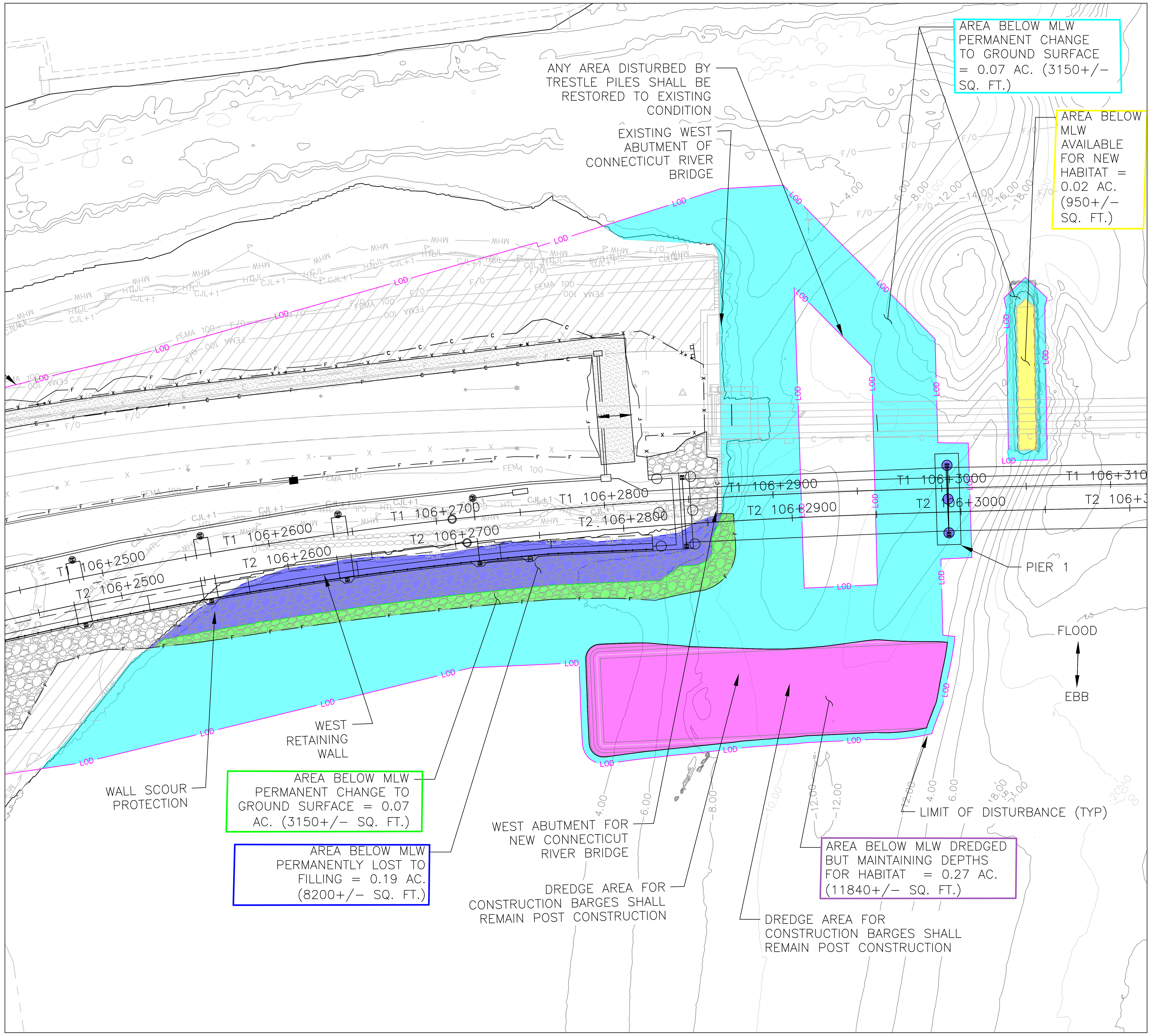
Photo 27: Sampling of aquatic bed was conducted both from the shore and by kayak; facing easterly

Photo 28: Within the subtidal aquatic bed gutweed (*Uva intestinalis*), an alga (seaweed), was dominant, while eelgrass (*Zostera marina*) was sparse;

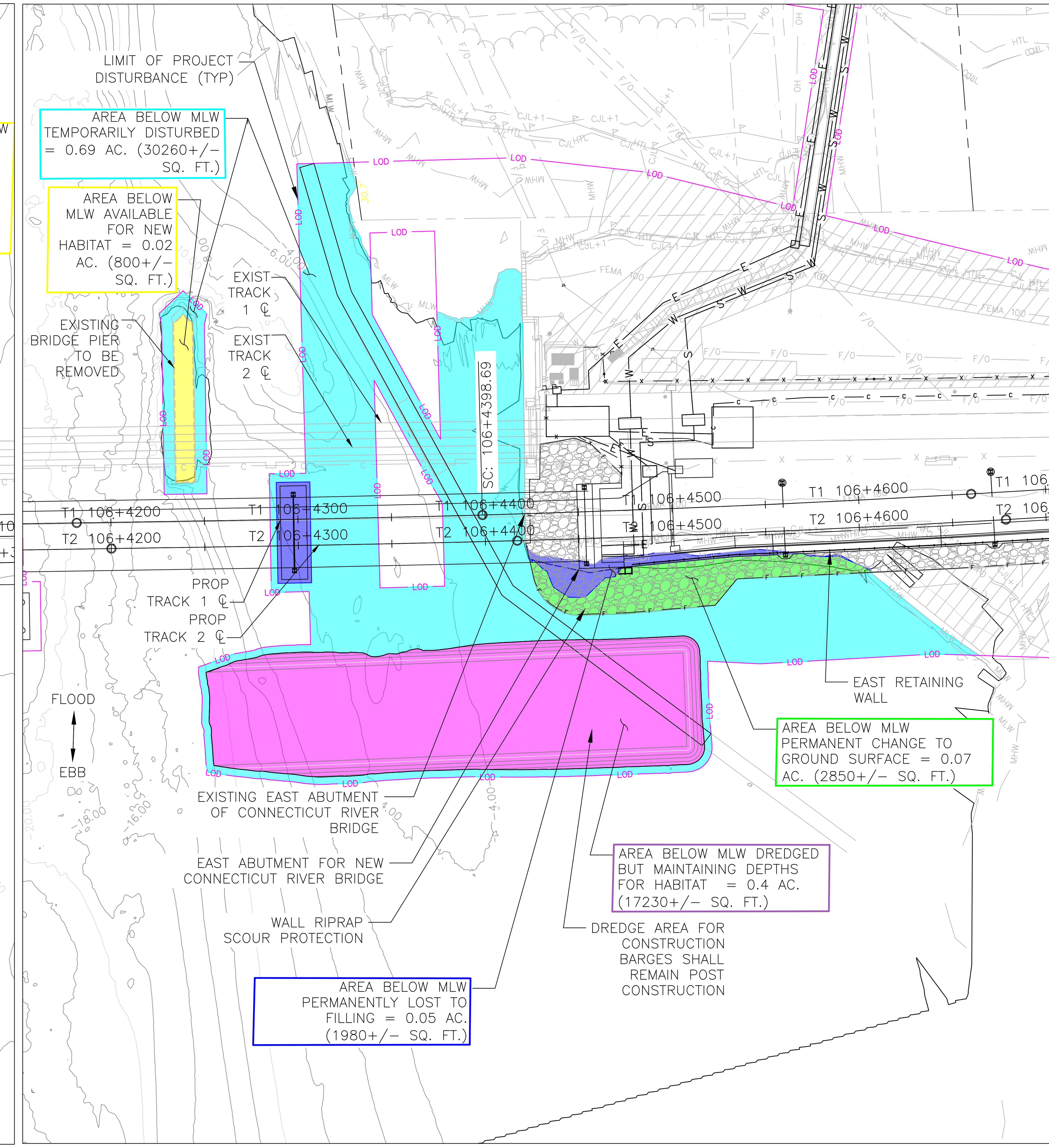
ATTACHMENT E
Bathymetry within the Proposed Dredge Area

TO NEW HAVEN ←

TO BOSTON →



WEST APPROACH



EAST APPROACH

LEGEND:

- AREA BELOW MLW PERMANENTLY LOST TO FILLING
- AREA BELOW MLW PERMANENT CHANGE TO GROUND SURFACE
- AREA BELOW MLW DREDGED BUT MAINTAINING DEPTHS FOR HABITAT
- AREA BELOW MLW AVAILABLE FOR NEW HABITAT
- AREA BELOW MLW TEMPORARILY DISTURBED

- MLW — MEAN LOW WATER (MLW) – ELEVATION 1.71'
- MHW — MEAN HIGH WATER (MHW) – ELEVATION 1.60'
- CJL+1 — TIDAL WETLAND BOUNDARY – COASTAL JURISDICTION LINE (CJL=2.9')+1' – ELEVATION 3.9'
- HTL — HIGH TIDE LINE (HTL) – ELEVATION 3.04'
- FIELD LOCATED WETLAND BOUNDARY
- LOD — LIMITS OF PROJECT DISTURBANCE
- AMTRAK RIGHT OF WAY (ROW)

TIDAL DATUM		
CJL	2.90	3.01
MLW	−1.71	−1.48
MHW	1.60	1.71
HTL	3.04	3.15

*ALL ELEVATIONS SHOWN ARE APPROXIMATE AND CONTAINS AN ACCURACY OF 0.10' ± BASED ON RELATION WITH THE USGS AND NOAA GAUGE BENCHMARKS INTERPOLATION AND FIELD VERIFICATION.

40 20 0 40 80
SCALE IN FEET
SCALE 1" = 40'

No.	Revisions	Date	By

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30th Street Station, Philadelphia, Pennsylvania 19104

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PRE–FINAL

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Philadelphia, PA 19103

OLD SAYBROOK — CONNECTICUT

REPLACEMENT OF MB 106.89 OVER CONNECTICUT RIVER

WINTER FLOUNDER HABITAT DISTURBANCE

Designed CB | Drawn CB | Checked KM | Date 12/8/2022

Project Code: XXX XXX
WBS: 000000
Sheet No. OF 000
Dwg. No. WFH-1

FILE NAME: <UNSAVED DRAWING>
PRINT DATE/TIME: 12/8/2022 6:07 PM
PLOT SCALE: AS NOTED
STANDARD PEN TABLE: YES

ATTACHMENT F
Original 2014 Essential Fish Habitat Assessment

Appendix C-4

ESSENTIAL FISH HABITAT ASSESSMENT

Connecticut River Bridge Replacement Project
Old Saybrook and Old Lyme, Connecticut
Essential Fish Habitat Assessment

A. INTRODUCTION

Essential fish habitat (EFH) is defined under the Magnuson-Stevens Fishery Conservation Management Act (16 USC §§ 1801 to 1883), as amended by the Sustainable Fisheries Act (SFA) of 1996, as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." "Waters" include aquatic areas and their physical, chemical, and biological properties that are used by fish. "Substrate" includes sediment, hard bottom, structures, and associated biological communities that are under the water column. Waters and substrates necessary for fish spawning, breeding, feeding, or growth to maturity—covering all stages within the life cycle of a particular species—refers to those habitats required to support a sustainable fishery and a particular species' contribution to a healthy ecosystem (50 Code of Federal Regulations (CFR) 600.10).

Section 303(a)(7) of the Magnuson-Stevens Act requires that the eight Regional Fishery Management Councils (RFMC) describe and identify EFH for each federally managed species, and minimize adverse impacts from fishing activities on EFH. Section 305(b)(2)-(4) of the Magnuson-Stevens Act outlines the process for providing the National Marine Fisheries Service (NMFS) within the National Oceanic and Atmospheric Administration (NOAA), and the RFMC with the opportunity to comment on activities proposed by federal agencies that have the potential to adversely impact EFH areas. Federal agencies are required to consult with NMFS (using existing consultation processes for NEPA, the Endangered Species Act, or the Fish and Wildlife Coordination Act) on any action that they authorize, fund, or undertake that may adversely impact EFH.

Adverse effects to EFH, as defined in 50 CFR 600.910(A) include any impact that reduces the quality and/or quantity of EFH. Adverse effects may include:

- Direct impacts such as physical disruption or the release of contaminants;
- Indirect impacts such as the loss of prey or reduction in the fecundity (number of offspring produced) of a managed species; and
- Site-specific or habitat-wide impacts that may include individual, cumulative, or synergetic consequences of a federal action.

An EFH assessment of a federal action that may adversely affect EFH must contain:

- A description of the proposed project;
- An analysis of the effects, including cumulative, on EFH, the managed species and associated species such as major prey species, and the life history stages that may be affected;

- The agency's conclusions regarding the effects of the action on EFH; and
- Proposed mitigation, if applicable (50 CFR 600.920(g)).

The following sections describe:

- The project actions that have potential to affect aquatic resources near the Connecticut River Bridge;
- Existing water and sediment quality within the Connecticut River in the project area;
- Potential impacts to aquatic biota and habitat that may result from the proposed project activities;
- Species for which EFH has been identified near the proposed project and potential impacts to their habitats; and
- Potential impacts to three non-EFH fish species: shortnose sturgeon (*Acipenser brevirostrum*) – a federal and state-listed endangered species, Atlantic sturgeon (*Acipenser oxyrinchus*) – a federal-listed endangered and state-listed threatened species, blueback herring (*Alosa aestivalis*) – a candidate species for federal listing, and five species of marine turtles with the potential to occur in the vicinity of the project as seasonal transients.

B. PROJECT DESCRIPTION

OVERVIEW

The National Railroad Passenger Corporation (Amtrak) is proposing improvements to the Connecticut River Bridge (also known as "CONN" or the "Old Saybrook-Old Lyme Bridge"). The Federal Railroad Administration (FRA) is serving as the lead federal agency for this Environmental Assessment (EA). The bridge is located between the Town of Old Saybrook in Middlesex County and the Town of Old Lyme in New London County. The bridge is located along Amtrak's Northeast Corridor (MP 106.89) at approximately 41°18′39″N, 72°20′57″W and spans the Connecticut River, 3.4 miles from its mouth at Long Island Sound (see Figure 1). The Connecticut River Bridge is one of several moveable rail bridges along the Northeast Corridor. The existing bridge is a two-track, ten-span steel rail bridge with an open deck and stone masonry piers. The bridge is over 1,500 feet long and has two abutments and nine piers. Seven of the ten spans are through-truss spans (roughly 185 feet in length each). Two of the spans are deck-girder spans (one 38 feet in length and one 70 feet in length). One span is a 160-foot-long moveable rolling lift bascule span. The lift span opens to allow boats and other marine vessels to traverse the Connecticut River. The bridge is owned by Amtrak and used primarily for passenger rail. Providence and Worcester Railroad (P&W) also uses the bridge for freight transport.

The Connecticut River Bridge was constructed between 1904 and 1907, and is nearing the end of its serviceable life. Amtrak is initiating the Connecticut River Bridge Replacement Project to identify problems posed by the current rail crossing and propose necessary improvements. Amtrak has considered a range of improvement alternatives, including minor repairs, rehabilitation of the existing bridge, partial replacement, and complete replacement. Amtrak evaluated 21 build alternatives and identified the Preferred Alternative. The Preferred Alternative includes replacing the existing bridge with a new moveable two-track bridge along a new alignment to the south of the existing alignment.

Two feasible options have been identified for the Preferred Alternative (see Figure 2). One option (Option A) would replace the existing bridge with a bascule bridge and would maintain the existing 150-foot channel width. A bascule bridge is typically appropriate to span a navigational channel with a maximum width of 150 feet. Option A would provide a vertical clearance of 18 feet in the closed position. In the open position, it would likely provide a similar vertical clearance as the existing bridge (i.e., 68 feet for full channel width and unlimited for vessels requiring less than 71 feet in width).

The other option (Option B) would replace the existing bridge with a vertical lift bridge. This option could potentially provide for a wider channel. The exact channel width for Option B would be determined during preliminary engineering; however, it would provide a minimum of 150 feet and a maximum of 200 feet. Option B would provide a vertical clearance of 18 feet in the closed position. When in the open position, the vertical clearance of the lift bridge would be at least 90 feet. For purposes of the project's EA and this EFH, both options are considered.

Regardless of the type of moveable bridge and channel width, the Preferred Alternative would include ballast deck girders for the approach spans. It would require widening of the existing rail embankment for the bridge approaches. Based on Amtrak's previous experience with similar bridge replacement projects, a combination of embankments and retaining walls are assumed to be required for the bridge approaches. The use of retaining walls in certain locations would minimize wetland impacts. The Preferred Alternative would include new navigation channel fenders, regardless of whether the channel is expanded.

DETAILED DESCRIPTION OF THE PROPOSED PLAN

The Preferred Alternative would include the decommissioning and removal of the existing Connecticut River Bridge. The Preferred Alternative would involve the construction of temporary access roads and staging platforms along the existing Amtrak right-of-way and the shoreline to support in-water construction of embankments and retaining walls along the bridge approaches, new superstructure and substructure, and channel fender system. Following construction of the replacement bridge, the existing bridge would be decommissioned and removed.

At the onset of construction, temporary access roads and staging platforms would be built. Temporary access roads of approximately 30 feet in width would be used for the duration of construction to allow access to sections of the replacement bridge (such as the embankment extensions) that would be located over wetlands and/or open water. Temporary staging platforms constructed of steel piles, steel framing and timber matting decks and varying in width from 20 to 40 feet would be constructed in/over wetlands on each side of the project area for both east and west approaches. While construction of the substructure is not anticipated to employ driven piles, limited pile driving may be required for the construction of temporary construction staging platforms. To decrease the need for additional platform width and its associated impacts, temporary barges may be used. On the west side of the bridge, options are limited due to the presence of wetlands. As a result, the contractor may have to construct temporary platforms over adjacent wetlands on the west shore of the river to construct the new approach embankment, retaining walls, and approach spans. The staging platforms would have minimal underwater footprints and may remain in place for the duration of the proposed bridge construction and existing bridge demolition.

The Preferred Alternative would require embankment extensions to the south of the existing embankments. Embankments would likely be constructed using fill material with precast or poured-in-place concrete retaining walls for the length of the extension. Existing embankments would likely be extended by constructing portions of the retaining walls and compacting the fill material in approximately one-foot vertical sections behind these walls. Precast concrete sheet piling retaining walls can be manufactured offsite in four-foot widths at various lengths, transported to the job site, and installed into the existing soil or marsh with a minimal amount of ground disturbance.

The Preferred Alternative would not reuse any existing piers. It would require the construction of nine new piers—seven approach piers comprising drilled shafts supporting a reinforced concrete pier cap, and two moveable span piers comprising drilled shafts supporting a large concrete cap. The piers of the existing Connecticut River Bridge are founded either on rock or on timber piles installed into dense sand or gravel. This subsurface is anticipated to provide adequate foundation for new piers.

All new piers would require in-water construction in the Connecticut River. The contractor would construct the piers from barges placed in the river with an effort to minimize disruption to marine navigation. Three barges may be required—one to support the shaft drilling equipment, one to store materials, and one to hold any spoils or excavated material. It is assumed that 4.5-foot diameter drilled shafts would be sufficient for most piers, except at the west approaches, where 7-foot diameter drilled shafts may be required. Three drilled shafts would be required for each approach pier. Once each set of shafts is constructed, the contractor would construct a concrete pile cap on top. Construction of the piers in this fashion would eliminate the need for cofferdams. In total, each new pier would take approximately two to three months to construct. Multiple piers would be constructed simultaneously.

The existing Connecticut River Bridge would be removed after constructing the replacement bridge and diverting all train traffic from the existing span. The existing moveable span would likely be floated out on barges. Approach spans would be lifted off their piers with a crane and placed on a barge for removal. After the removal of the superstructure, the contractor would remove the substructure with a barge mounted crane after breaking up the piers into smaller and more easily removed pieces using an expansion demolition agent without the need for explosives. Depending upon U.S. Coast Guard requirements, the existing timber piles would be removed from the pier foundations and fender system, either by removing them completely or by cutting them off two feet below the mudline. Turbidity curtains during demolition would be used to control any sediment that might be disturbed.

Due to the nature and location of the river crossing and the need for continuous operations along the Northeast Corridor, complete avoidance of wetland and open water areas would not be feasible for the Preferred Alternative. Based on the conceptual bridge design described above, it is estimated that the Preferred Alternative would result in approximately 2.8 acres of permanent wetland impacts and 0.74 acres of permanent open water impacts. Removal of the existing Connecticut River Bridge may result in approximately 0.33 acres of restored open water, for a net project impact of 0.41 acres. Based on the conceptual bridge design and the anticipated construction means and methods, it is estimated that approximately 3.2 acres of wetlands and 2.0 acres of open water will be temporarily impacted during the construction period.

To the extent practicable, the project team has conceptually designed the project to minimize environmental impacts through the use of retaining walls and by locating the new bridge alignment close to the existing alignment. These impact estimates (shown in Table 1) have been based on conceptual engineering performed to date and will be refined during the preliminary engineering and permitting phase.

Table 1
Estimated Wetland and Open Water Impacts

Impact Type	Western Approach	Eastern Approach	New Bridge	Total
Permanent Wetland	1.28	1.49	-	**2.77**
Permanent Open Water	0.23	0.26	0.25*	**0.74***
Temporary Wetland	2.40	0.78	-	**3.18**
Temporary Open Water	-	-	2.04	**2.04**
Notes:	* The removal of the existing bridge may restore approximately 0.33 acres of open water, for a net project impact of 0.41 acres of open water (0.74 – 0.33 = 0.41 acres).			

DESCRIPTION OF EXISTING AQUATIC HABITAT

SURFACE WATER RESOURCES IN THE PROJECT AREA

The Connecticut River is known for its exceptional biological and recreational resources. The lower, estuarine portion of the river extends about 30 miles upstream of the river's mouth on Long Island Sound. This river reach is known as the Connecticut Gateway Conservation Zone. The river serves as a major migratory route for diadromous fishes, linking the estuarine waters of Long Island Sound and the marine environment of the Atlantic Ocean to the freshwaters of inland rivers, streams, and lakes. The Connecticut River Valley also is a major bird migration route between wintering grounds and summer nesting areas for many species of waterfowl, shore and wading birds, rails, raptors, and neo-tropical migratory song birds. The estuary, its wetlands, and surrounding buffer areas all provide critical habitats and nutrients for a wide array of plant, invertebrate, fish, bird, and other wildlife species, including many listed as federal and/or state endangered, threatened, or of special concern. The significance of the river as an important habitat has been recognized nationally by the U.S. Fish and Wildlife Service (USFWS). In the 1990s the river was designated as one of 14 National Heritage Rivers and its estuary is considered one of the "Last Great Places" by the Nature Conservancy (one of 40 in the northern hemisphere). The estuary has also been identified as globally significant by the Ramsar Convention on Wetlands of International Importance.

The Connecticut River is the largest river in New England, flowing south from the Connecticut Lakes in northern New Hampshire, along the border between New Hampshire and Vermont, through Western Massachusetts and central Connecticut, and into Long Island Sound. It has a total main-stem length of 407 miles (655 km), and a drainage basin extending over 11,250 square miles (29,100 km^2) (Connecticut River Watershed Council 2008). The mean freshwater discharge into Long Island Sound is nearly 16,000 cubic feet per second (cfs). The flow has ranged as high as 282,000 cfs and as low as 971 cfs. The river is tidally influenced up to Windsor Locks, approximately 60 miles (97 km) from the mouth. Significant tributaries include the Ashuelot, West, Miller's, Mill, Deerfield, White, and Chicopee Rivers. Significantly, the Swift River, itself a tributary of the Chicopee, has been largely drowned to create the Quabbin Reservoir which provides potable water to Boston, Massachusetts.

The Connecticut River carries a large silt load, especially during spring snow melt, from as far north as Canada. As with many large rivers, the often heavy silt load results in the formation of a large and shifting sandbar near its mouth. In historic times, this sandbar provided a formidable obstacle to navigation, which is the primary reason that the Connecticut River is one of the few large rivers in the region without a major city near its mouth.

The shoreline of the Connecticut River in the project area primarily comprises tidal salt-marsh vegetated with the native smooth cordgrass (*Spartina alterniflora*) and saltmeadow cordgrass (*Spartina patens*) and the invasive, non-native common reed (*Phragmites australis*). Railroad approaches to the existing bridge pass through several sensitive ecological and recreational areas. On both sides of the river, portions of these areas are designated as Wildlife Management Areas. In the Town of Old Saybrook, the marsh includes the Ragged Rock Creek Marsh Wildlife Management Area (WMA). In Old Lyme, the marsh includes the Roger Tory Peterson Wildlife Area, formerly called the Great Island Wildlife Area.[1]

Several significant tributary watercourses are present near the proposed project. A network of tidal creeks and ditches run through the Ragged Rock Creek WMA. The largest creek passes under the tracks near the end of the western approach and discharges into the Connecticut River approximately 4,000 feet (1,220 m) south of the bridge. On the east side of the Connecticut River, the Lieutenant River represents a substantial input with a 12.1 mi^2 watershed. The tributary flows under the eastern approach and discharges into the main river approximately 500 feet (150 m) south of the existing bridge. Another small stream also flows under the eastern approach within the project area.

WATER QUALITY

From colonial times through the late 1960s, untreated or minimally treated waste discharges from upstream urban areas (e.g. Hartford) and industrialization had resulted in significant and widespread water quality issues in the Connecticut River. Trends in important water quality data in Connecticut for the period 1968 to 1998, collected and analyzed by the U.S. Geological Survey and the CTDEEP, shows that water quality generally has improved during this period. Many of the trends detected are attributable to regional improvements in wastewater treatment programs following the promulgation of the Federal Clean Water Act (CWA) of 1972. Downward trends have been observed in total phosphorus, total nitrogen, indicator bacteria species, while upward trends in pH and dissolved oxygen were recorded. In addition, downward trends in sulfate concentrations have been attributed to reductions in sulfur dioxide emissions resulting from measures undertaken by order of the Clean Air Act of 1970 and subsequent amendments. Increasing chloride trends apparent in this analysis may be the effects of increasing urbanization and nonpoint-source pollution.

The United States Environmental Protection Agency (USEPA) has published its Environmental Monitoring and Assessment Program (EMAP) data for sampling stations within the Connecticut River in the vicinity of the proposed project. The EMAP is a research program designed to foster the scientific understanding needed to translate environmental monitoring data from multiple

[1] http://www.depdata.ct.gov/wildlife/hunting/hntareas.asp (accessed March 23, 2012).

spatial and temporal scales into assessments of current ecological condition and forecasts of future risks to our natural resources. The most recent available EMAP data for the project area was queried from the EMAP web interface.[1] Data obtained includes water quality data (2001), sediment contaminant data (2000), and benthic invertebrate data (1991). Although these data do not represent a long-term continuous series of measurements, certain parameters may be seen as a “snap-shot” of prevailing conditions, and values indicating severe impairment should be conspicuous.

With respect to water quality, the EMAP sampling near the Connecticut River Bridge in September 2001 indicated a salinity concentration of approximately 30.7 ppt, a dissolved oxygen concentration of 6.9 mg/L (at 20.2 °C), chlorophyll a concentrations of around 2.5 µg/L, and total suspended solids (TSS) concentrations of 6 mg/L. The results were nearly identical for near-surface and near-bottom measurements, likely because the sample was collected from a depth of only 2.2 meters (7.2 ft). The relative clarity, high salinity, and low chlorophyll a concentrations are indicative of the site’s proximity to the nearly oceanic waters of eastern Long Island Sound. Although NMFS classifies the project’s region of the Connecticut River estuary as the “mixing zone” in EFH documents, the available water quality data suggests that the project area may be more marine in terms of water quality, and by extension, biota.

In 1998, the New England Interstate Water Pollution Control Commission issued a report of ongoing water quality threats to the river. "The Health of the Watershed" identified specific locations of problems such as toxins in the river (e.g. PCBs), combined sewer overflows (CSOs), bio-accumulation of contaminants, and nonpoint source pollution. CSOs can cause temporary Class C conditions in urban areas (e.g. Hartford) after storm events. All four of the states in the watershed have public health advisories on consumption of fish. Connecticut advises against the consumption of bluefish or striped bass from waters of Long Island Sound and tributary rivers for high risk individuals, and recommends limited consumption for these species for lower risk consumers. The contaminants of concern associated with this restriction are polychlorinated biphenyls (PCBs). These contaminants do not necessarily originate in the Connecticut River but are nevertheless quite common regionally.

The CTDEEP issues a State of Connecticut Integrated Water Quality Report prepared to satisfy statutory reporting requirements pursuant to Sections 305(b) and 303(d) of the Federal CWA. In the 2006 report, the existing Connecticut Bridge served as a demarcation between two 305(b) and 303(d) assessment segments: Segment CT4000-E_01 comprised the Connecticut River south of the existing bridge to Long Island Sound and Segment CT4000-E_02 comprised the Connecticut River north of the existing bridge as far upriver as East Haddam, approximately 16 miles. Segment CT4000-E_01 was listed as a Category 1 waterbody, which means it fully supports all designated uses: commercial shellfishing (where permitted), fish consumption, recreation, and habitat for aquatic and other wildlife. Segment CT4000-E_02 was listed as a Category 2 waterbody, which means that some designated uses are fully supported, whereas others are not (or were not assessed). Segment CT4000-E_02 was listed as fully supportive as a habitat for aquatic and other wildlife. In the following State of Connecticut Integrated Water Quality Reports (2008 and 2011), both segments had been removed from the list of impaired waters, thus indicating that the waters now meet their designated uses.

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[1] EMAP Data Set Search Engine. Available: http://oaspub.epa.gov/emap/webdev_emap.search.

SEDIMENT QUALITY

As discussed above, the Connecticut River carries a heavy amount of silt. As a fluvial source of sediments to Long Island Sound, the Connecticut River contributes approximately 42,000 tons (3.5×10^8 kg) of suspended solids per year (Gordon 1980, cited in Knebel et al. 1999).

Drawings provided from the Amtrak Engineering Archives provide sub-bottom profile information on sediment size and sorting within the project area. In general, sediments are course grained sand overlain with a silt/sand surficial layer. Silt/sand is more predominant in the shallows on the nearshore portions of the river, while coarser sediments mixed with shell hash appear to be more predominant in the deeper channel areas. This grain-size distribution is consistent with that of other southern New England rivers and is similar to grain sizes reported from EMAP stations in Long Island Sound near the mouth of the Connecticut River.

As discussed previously, the USEPA has published its EMAP data for sampling stations within the Connecticut River in the vicinity of the proposed project. Sediment contaminant data is available from this dataset from the 2000 sampling run. The sediments indicated the presence of metals, including iron (13,200 µg/g), aluminum (5,560 µg/g), manganese (511 µg/g), zinc (49.5 µg/g), chromium (23.6 µg/g), lead (19.5 µg/g), copper (7.8 µg/g), nickel (6.36 µg/g), and arsenic (3.78 µg/g). Tin, silver, cadmium, and mercury were also present in concentrations of less than 1 µg/g. It is worthwhile to note that the presence of some these metals in the Connecticut River sediments near the proposed project does not necessarily imply anthropogenic sources; some of these elements, such as aluminum and iron, are common in rocks and soils within the watershed. Nevertheless, silver, cadmium, chromium, copper, mercury, lead, and zinc are generally considered anthropogenic metals. Interestingly, the concentrations of polyaromatic hydrocarbons (PAHs), PCBs, DDT congeners, and pesticides in the sediments near the project area were all below analytical detection limits in the EMAP sampling.

C. EFH DESIGNATIONS

The project area is located within the tidal Connecticut River. The Connecticut River estuary EFH designation comprises the following NOAA 10’ x 10’ latitude and longitude squares: 41˚ 20.0 N; 72˚ 20.0 W; 41˚ 10.0 N; and 72˚ 30.0 W. The EFH covers a number of waters within the Connecticut River estuary including those of the study area (i.e., Connecticut River, Ragged Rock Creek, and southwest Lieutenant River. The area of the Connecticut River containing the project area has been identified as EFH for 13 species. Table 2 lists the species and life stages of fishes identified as having EFH in the Connecticut River.

Table 2
Essential Fish Habitat Designated Species for the Connecticut River

Species	Eggs	Larvae	Juveniles	Adults
Atlantic salmon (*Salmo salar*)			X	X
Pollock (*Pollachius virens*)			X	X
Red hake (*Urophycis chuss*)	X	X	X	X
Winter flounder (*Pseudopleuronectes americanus*)	X	X	X	X
Windowpane (*Scophthalmus aquosus*)	X	X	X	X
Atlantic sea herring (*Clupea harengus*)			X	X
Bluefish (*Pomatomus saltatrix*)			X	X
King mackerel (*Scomberomorus cavalla*)	X	X	X	X
Spanish mackerel (*Scomberomorus maculatus*)	X	X	X	X
Cobia (*Rachycentron canadum*)	X	X	X	X
Sand tiger shark (*Carcharias taurus*)		X*		
Little skate (*Leucoraja erinacea*)			X	X
Winter skate (*Leucoraja ocellata*)			X	X

Source: National Marine Fisheries Service. "Summary of Essential Fish Habitat (EFH) Designation." Available: http://www.nero.noaa.gov/hcd/STATES4/conn_li_ny/41107220.html (accessed on March 29, 2012).
Note: "X" denotes that the river is designated as EFH for the life stage; "*" denotes neonates.

D. POTENTIAL IMPACTS TO EFH

GENERAL DISCUSSION OF POTENTIAL AQUATIC IMPACTS FROM THE PROPOSED PROJECT

WATER QUALITY

Sediment resuspension resulting from construction of the Preferred Alternative has the potential to cause temporary impacts to EFH by reducing water clarity and increasing concentrations of total suspended sediments. While mitigation measures such as silt curtains would be employed during in-water work associated with the proposed project, it is possible that some sediment may escape such controls, however any temporary sediment resuspension associated with pile driving or other construction activities would be localized to the project area. While Connecticut River sediments have been found to contain contaminants (especially metals), the strong tidal currents within the project area should ensure that the redeposition within or outside the project area would not be expected to adversely affect benthic macroinvertebrates or bottom fish. Furthermore, the sediments within the lower Connecticut River are highly dynamic and mobile, and are largely driven by river discharge and sediment load, and therefore sediments under the Connecticut River Bridge are in constant flux with or without construction activity.

Life stages of estuarine-dependent and anadromous fish species as well as bivalves, crustaceans, and other macroinvertebrates are generally tolerant of elevated suspended sediment concentrations. These species have evolved behavioral and physiological mechanisms for dealing with variable concentrations of suspended sediment (Birtwell et al. 1987; Dunford 1975; and LaSalle et al. 1991). Many estuarine fish species have the ability to expel materials that may clog their gills when they return to cleaner, less sediment-laden waters. The shellfish species found in the Connecticut River are necessarily adapted to naturally turbid conditions and can tolerate short-term exposures by closing valves or reducing pumping activity. Mobile benthic invertebrates that occur in estuaries have been found to be tolerant of elevated suspended sediment concentrations. In studies involving the tolerance of crustaceans to suspended sediment for up to two weeks, nearly all mortality was caused by the full-time exposure to high suspended sediment concentrations (greater than 10,000 mg/L) (Clarke and Wilber 2000). Impact of this magnitude is not expected from the in-water work associated with the proposed project. Due to its coarse nature, the Connecticut River sediment will settle out of suspension more quickly than finer sediments. Furthermore, the intermittent timing of in-water work as various project elements are constructed will minimize the duration over which elevated levels of suspended sediments are present. In addition, fishes are mobile and generally avoid unsuitable conditions such as increased suspended sediment (Clarke and Wilber 2000). While a localized increase in suspended sediment may cause fish to temporarily avoid the area where bottom-disturbing activities are occurring, the area affected would be confined to the project area. Similar habitats would be available upstream and downstream of the project area for use by displaced fishes. Therefore, temporary increases in suspended sediment resulting from in-water construction activities would not be expected to adversely affect fishes and mobile benthic macroinvertebrates.

PHYSICAL HABITAT

Four types of potential permanent effects to physical aspects of EFH resulting from the Preferred Alternative were identified and are discussed below:

- Changes to benthic habitat from the installation/removal of in-water piers, shaft and pile footprints, and retaining walls;
- Shading of benthic habitat by overhead structure;
- Potential radiated noise/vibration into estuarine waters;
- Potential obstruction of fish migration.

Changes to Benthic Habitat

The Preferred Alternative would require the installation of piers and/or piles in open water areas and extension of embankments with the construction of retaining walls adjacent to wetlands. In addition, the Preferred Alternative would involve the replacement of the existing timber channel fender structure. The new substructure would result in a permanent open water loss of 0.74 acres of benthic habitat. However, the Preferred Alternative would likely include the removal of piers from the existing bridge. The area of recovered benthic habitat as a result of the existing pier removal would be approximately 0.33 acres.

Within any areas of benthic habitat permanently occupied by new support structures, impacts to sessile and infaunal benthic invertebrates would be expected. The direct loss of these organisms would have a highly localized effect, and would not be expected to result in significant adverse impacts to fishes and other aquatic organisms for several reasons. First, the area of impact to benthic habitat would be smaller than the available areas of equivalent habitat adjacent to the project area. Second, estuarine benthic invertebrates typically have evolved short times to maturity, high fecundities, and widely dispersed juvenile stages in response to the variable nature of their environment (Brey 2001). The Connecticut River environment at the project site is highly dynamic, and shifts in salinity and habitat type can occur rapidly over time. Third, the new bridge support piers and/or piles would ensure habitat complexity in the project area (which includes the habitats created by existing in-water structures) by providing new attachment substrate and foraging opportunities for the estuarine fouling community (including barnacles, mussels, hydroids, algae, tunicates, etc.) and those consumers that feed on attached biota. Lastly, the benthic habitat recovered by the removal of existing structures would be rapidly colonized by the area's benthic fauna, thereby offsetting the loss of habitat associated with new construction. Therefore, changes to benthic habitat as a result of construction activities will be limited to a localized area within the project area and may affect, but are not likely to adversely affect EFH or EFH species at the project site.

Shading of Benthic Habitat by Overhead Structure

Construction of the Preferred Alternative would result in overwater coverage and the associated shading of aquatic habitat within the project area; however, it is expected that this area would be roughly equal to the area currently shaded by the existing structure. It has been maintained that shading of estuarine habitats can result in decreased light levels and reduced benthic and water-column primary production, both of which may adversely affect invertebrates and fishes that use these areas (Able et al. 1998, Struck et al. 2004). Given the changing daily and seasonal angles of solar illumination, light would be expected to reach the water under these structures during substantial portions of the day, reducing potential impacts to aquatic biota due to shading. Additionally, the seasonally high turbidities on the Connecticut River limit any effect of the additional shading to the first few feet of the water column; therefore, benthic communities would be relatively unaffected by the increase in shaded habitat. Lastly, because the tidal currents under the bridge are strong and the bridge structure would be comparatively narrow, plankton would be expected to move through the project area quickly and would not be expected to be adversely impacted by shading from the proposed project. Therefore, shading by the replacement bridge may affect, but is not expected to adversely affect EFH or EFH species at the project site.

Potential Noise Caused by Project Construction and Operation

Anthropogenic noise in the environment has the potential to impact aquatic organisms. Impacts range from behavioral avoidance of ensonified areas to sublethal physiological stress and physical injury, to mortality (Hastings and Popper 2005). In the case of sublethal and lethal impacts, the spatial extent of the impacts is typically smaller than the area of behavioral avoidance. Research on noise produced by pile driving, dredging, offshore wind farms, and vessel operation has provided a better understanding of the potential impacts of these activities (Vella et al 2001), whereas those resulting from radiated noise produced by bridge traffic and the operation of moving bridges (noise likely to result from the proposed project) are less well understood.

Pile driving in particular can produce underwater sound pressure waves that can affect fishes, although the type and intensity of pile-driving noise vary with factors such as the type and size of the pile and pile driver, firmness of the substrate, and water depth. Larger piles driven in firmer substrates require greater energy to install resulting in higher sound pressure levels (SPL). Hollow steel piles produce higher SPLs than similarly sized timber piles (Hastings and Popper

2005). Sound attenuates more rapidly in shallow waters than in deep waters (Rogers and Cox 1988 in Hanson et al. 2003). Fish with swim bladders have been shown to be more vulnerable to these impacts than fish without swim bladders (Hanson et al. 2003, Halvorsen et al. 2012). The noise levels associated with the potential onset of physiological effects and recoverable physical injury appear to be considerably higher than the currently accepted noise levels used to assess impacts to fishes (Halvorsen et al. 2012).

A number of factors determine the intensity and frequency of sound radiated into the aquatic environment during bridge construction and normal bridge operations. The factors include, but are not limited to, bridge design, construction materials, degree of coupling to the water column, typical uses, and water depth (Hazelwood 1994). The effect of radiated noise from the existing Connecticut River Bridge on the aquatic biota of the Connecticut River is largely unknown, however many other sources of natural and anthropogenic sounds exist in the Connecticut River estuary and in Long Island Sound; it is expected that fishes moving through the estuary will encounter an acoustic environment that is at least as noisy as that encountered in the vicinity of the Connecticut River Bridge. Operation of the Preferred Alternative is not expected to radiate substantially more sound into the water than the existing bridge. It is likely that fishes will habituate to the noise produced by the bridge (Wysocki et al. 2007; Popper and Schilt 2008).

As discussed above, construction of the bridge substructure will be accomplished using drilled shafts rather than pile driving, which will minimize the extent of underwater noise impacts. Compared to other methods of pile installation such as vibratory or impact pile driving, drilling provides a relatively quiet option by which to install piles (HDR 2011). Noise at close range to pile drilling (30 m from the drilling operation) has been shown to be well below the level thought to cause behavioral avoidance by fishes (i.e., 150 dB re 1µPa root mean square sound pressure level; SPL_{rms}) and only slightly higher on average (122 dB re 1µPa) than ambient noise levels (116 dB re 1µPa; HDR 2011). Because the nature of the sound produced during drilling is continuous rather than percussive (as with impact pile driving), the amplitude of the sound is far less than that created during impact pile driving and thus the spatial extent of the ensonified area, and the likelihood that fish will be exposed, is also considerably smaller.

Furthermore, because the length of time for in-water construction is expected to be relatively short, individual fish should not be exposed to SPLs of the magnitude known to result in sublethal or lethal injury. To further protect fish populations, in-water construction activities would be limited to periods outside of the spawning season for anadromous fishes as identified by regulatory authorities. Therefore, noise produced during in-water construction activities may affect, but is not likely to adversely affect EFH or EFH species in the Connecticut River.

Potential Obstruction of Fish Migration

In-water structures can serve as barriers to fish migration, especially when these structures create significant areas of turbulence, cause a rapid change in hydraulic head, or physically restrict passage to a large degree (USACE 1991). Typically, these types of obstructions (or restrictions) are found in flowing rivers blocked by hydroelectric dams, low-head weirs, or culverts. In the case of the Preferred Alternative, the width of the navigable bridge passage would be between 150 to 200 feet wide, with substantial open water areas remaining beneath the fixed spans. As with the existing structure, these wide passages are not expected to obstruct fish movements. In general, natural resources agencies may require work windows where in-water work may be restricted during the spawning and migration of fish and shellfish species found in the Connecticut River. Such restrictions are typically enforced to prevent potential disturbance of migratory fish during spawning. These work windows will be more clearly defined in conjunction with the natural resource agencies during the final design and permitting stage. Therefore, construction and operation of the Preferred Alternative is not expected to obstruct fish migration within the Connecticut River and is not likely to adversely affect EFH or EFH species at the project site.

CUMULATIVE IMPACTS

Cumulative impacts associated with the proposed project are difficult to assess but are expected to be minimal. The proposed project would not result in increased train traffic over the Connecticut River Bridge. Therefore, the project is not expected to facilitate a long-term increase in development in the watershed beyond any increases from natural population growth. Habitat loss and fragmentation were found by the USFWS to be significant threats to the bio-diversity in much of the Connecticut River Valley. The USFWS identified 142,000 acres as "special focus areas" that warrant protection, either because of the presence of protected species, or in order to maintain bio-diversity. The proposed project is not expected to accelerate or exacerbate regional habitat loss or fragmentation. The proposed project is also entirely consistent with existing land uses, and any cumulative impacts would likely be imperceptible.

ASSESSMENT OF EFH SPECIES

This assessment evaluated the potential for adverse impacts to EFH species due to the following:

- Changes or permanent loss of benthic habitat within pier footprints and due to embankment construction;
- Shading by bridge superstructure;
- Temporary increases in suspended sediment;
- Temporary noise associated with shaft drilling and other construction;
- Permanent noise associated with bridge operation and roadway traffic;
- Potential obstruction of fish migration.

In order to assess the potential impacts of project activities on EFH species, an analysis of EFH for each fish species and life stage listed in Table 2—including the likelihood that the species would occupy the project area—is summarized below. Where not specifically cited, data regarding these species were synthesized from the NOAA Technical Memorandum Series, Essential Fish Habitat Source Documents for the managed species and from the NMFS "Guide to EFH Species Designations." Additional references consulted that describe life history characteristics of these species include "Fishes of the Gulf of Maine" (Bigelow and Schroeder 1953), "The First Year in the Life of Estuarine Fishes in the Middle Atlantic Bight" (Able and Fahay 1998), the USFWS's "Development of the Fishes of the Mid-Atlantic Bight: An Atlas of Egg, Larval and Juvenile Stages," Volumes I through IV (Jones et al 1978), and the NMFS's "Angler's Guide to the United States Atlantic Coast," Section II (Freeman and Walford 1974), among others.

ATLANTIC SALMON (SALMO SALAR)

Atlantic salmon is an anadromous species that once ranged from the rivers of Ungava Bay, Canada to tributaries of Long Island Sound. As a consequence of industrial and agricultural development (especially hydroelectric dams) and historic overfishing, most native New England Atlantic salmon have been extirpated (i.e., become regionally extinct). Remnant native populations of Atlantic salmon in the United States now exist only in Maine. The decline of Atlantic salmon populations in the U.S. has prompted an “endangered” listing of the species under the Endangered Species Act (65 Fed. Reg. 69459) in 2000. The Connecticut River is designated as EFH for juvenile and adult Atlantic salmon.

In the fall, spawning female Atlantic salmon build nests (known as “redds”) in freshwater streams by excavating gravel from the stream bed. The eggs will remain in the gravel through the winter and will hatch during the following spring. Newly hatched fry are associated with the gravel and continue to develop using the energy stored in their yolk before transitioning to live prey as the yolk-sac is absorbed. Atlantic salmon occupy small, freshwater streams and rivers during their first few years of life. They will typically feed on aquatic insects and other small aquatic prey. During the juvenile life stages, Atlantic salmon tend to be solitary and protective of their feeding territory. After reaching a size of approximately 4 inches, the fish are called "smolts." At this stage, they begin migrating to the ocean during spring months.

In southern New England salmon may take only two years to become smolts, whereas farther north the process takes longer due to the cooler climate—up to three years in Northern Vermont, four years in Nova Scotia, and five years in Newfoundland. During their downstream migration, smolts become more gregarious, begin schooling, and develop the salinity tolerance needed in the oceanic environment.

In the ocean, Atlantic salmon grow rapidly. The salmon migrate toward their major feeding grounds in the North Atlantic near Greenland. After spending several years offshore, adult Atlantic salmon return to their natal streams. It is thought that salmon use a combination of magnetic and phototaxic cues to facilitate the homing process. Closer to the coast, salmon use olfactory cues imprinted during their early residency in the stream to find their natal habitat. Salmon may reenter fresh waters at any time during spring, summer, or fall, though earnest spawning only occurs in the fall.

Despite declining natural populations, the aquaculture of Atlantic salmon continues to develop throughout the world. In eastern Maine and Canada, companies typically rear fish to smolt stage in onshore freshwater facilities, subsequently transfer them into anchored net pens at sea, and harvest the fish at marketable sizes. In the western Atlantic, 66 percent of salmon production is based in Canada with the remainder of western Atlantic production occurring in Maine. Current management efforts focus on the recovery of natural populations and support of responsible aquaculture to ensure both resource components are managed in a sustainable fashion.

Through federal and state legislation, the interstate Connecticut River Atlantic Salmon Commission guides cooperative salmon restoration efforts. The long-term effort has resulted in an annual return of adult salmon to the Connecticut River. The Lieutenant River, just south of the project area, has been a stocking location for juvenile Atlantic salmon (USFWS 1999). As of January 2012, 111 Atlantic salmon were documented in the Connecticut River (USFWS 2012).

Within the project area, Atlantic salmon would only be expected as transients during the fall spawning migration and migration of the smolts during the spring. Limitations on in-water construction activities during the migration window, to be determined in consultation with natural resources agencies, will protect Atlantic salmon in the vicinity of the project area. Furthermore, spawning habitat is located in the freshwater reaches of the Connecticut River well above the project area. Minimal impact to nursery habitat in the Lieutenant River, just south of the project area, is possible. Based on the limited overlap between EFH for Atlantic salmon and construction/operation activities, the proposed project may affect but is not likely to adversely affect this species. Stocking efforts in the Lieutenant River would further reduce the likelihood of any potential impacts as a result of construction.

POLLOCK (POLLACHIUS VIRENS)

Pollock is a bottom-dwelling fish of the Gulf of Maine and Georges Bank and hard bottom habitats (including artificial reefs) off southern New England and the middle Atlantic south to New Jersey. Adults are found in waters with temperatures below 57.2° F (14° C), depths from 15 to 365 meters (50 to 1,200 feet), and salinities between 31 and 34 ppt. Spawning adults are found in the same region and habitats with water temperatures below 46.4° F (8° C), depths from 15 to 365 meters (50 to 1,200 feet), and salinities between 32 and 32.8 ppt. Pollock are most often observed spawning during the months September to April with peaks from December to February. Eggs are found in pelagic waters of the Gulf of Maine and Georges Bank with sea surface temperatures less than 17° C, water depths 30 and 270 meters (100 to 890 feet), and salinities between 32 and 32.8 ppt. Pollock eggs are often observed from October through June with peaks from November to February. Larvae are also found in the waters of the Gulf of Maine and Georges Bank with surface temperatures less than 17° C and water depths between 10 and 250 meters. Pollock larvae have been reported between September and July with peaks from December to February. Juveniles are found in bottom habitats with aquatic vegetation or a substrate of sand, mud or rocks in the Gulf of Maine and Georges Bank in waters with temperatures below 18° C, depths from 0 to 250 meters (0 to 820 feet), and salinities between 29 and 32 ppt.

In its Report to Congress: Status of the Fisheries of the United States (2010), NMFS determined that the stocks of Pollock have been rebuilt.

Water quality impacts from in-water construction activities would be temporary and localized. Noise generated by in-water construction activity would also be temporary and would not be expected to result in significant adverse impacts to juvenile pollock within the project area. Operation of the bridge would be similar to existing bridge operations would not be expected to result in significant adverse impacts to water quality or impede use of the project area by aquatic biota. Pollock spend the majority of their life cycles offshore, only migrating inshore as juveniles. In addition, pollock are uncommon in the waters of the Long Island Sound, and thus unlikely to be present in the vicinity of project area (Cargnelli et al. 1999). Therefore, the proposed project is not likely to adversely affect this species or habitat designated as EFH for this species.

RED HAKE (UROPHYCIS CHUSS)

Red Hake is a bottom-dwelling fish that lives over sand and mud substrates along the continental shelf from southern Nova Scotia to North Carolina (concentrated from the southwestern part of the Georges Banks to New Jersey). Spawning adults and eggs are common in marine portions of most coastal bays between Rhode Island and Massachusetts. Spawning occurs from May to June in the New York Bight and Long Island Sound (Steimle et al. 1999). The Connecticut River is designated as EFH for eggs, larval, juvenile, and adult red hake.

Larval red hake are free-floating and occur in the middle and outer continental shelf. They are most common at water temperatures from 52 to 66°F (11 to 19°C) and depths from 33 to 660 feet (10 to 200 m). Recently metamorphosed juveniles remain pelagic (in the water column) for approximately two months, during which time they achieve growth up to 25 to 30 millimeters (1.0 to 1.2 in) in total length. Physical structure is a critical habitat requirement for juvenile red hake. In the autumn, juveniles descend from the water column to the bottom and seek structure in depressions in the sea floor. Juvenile settlement usually occurs in October and November. Older juveniles use scallop shells, mussel beds, moon snail collars, and other available structures until their second autumn when they move inshore to waters less than 55 meters (180 ft) in depth. They typically remain inshore until the temperature reaches 4°C (39°F), at which point they migrate offshore to overwinter (Steimle et al. 1999).

In the Connecticut River Estuary, the distribution of red hake is influenced by salinity, water temperature, and dissolved oxygen. In Long Island Sound, red hake occur most often in coastal waters in the spring and autumn, moving offshore to avoid warm summer temperatures. Additionally, red hake have been reported to be sensitive to low dissolved oxygen and prefer concentrations above 6 mg/L (Steimle et al. 1999).

Juvenile and adult red hake have the potential to occur in deeper waters in the vicinity of the proposed project. The area of the proposed project represents a small portion of the EFH for this species. The southern stock of red hake, the stock that could occur within the project area, is not currently considered overfished (defined as the stock size being below a prescribed biomass threshold) (NMFS 2010).

Water quality impacts from in-water construction activities would be temporary and localized. Noise generated by in-water construction activity would also be temporary and would not be expected to result in significant adverse impacts to red hake within the project area. Operation of the bridge would be similar to existing bridge operations and would not be expected to result in significant adverse impacts to water quality or impede use of the project area by this species. Therefore, the proposed project is not likely to adversely affect this species or habitat designated as EFH for this species.

WINTER FLOUNDER (PSEUDOPLEURONECTES AMERICANUS)

Winter flounder is a demersal flatfish inhabiting the Northwest Atlantic Ocean from Labrador to Georgia. Important U.S. commercial and recreational fisheries for this species exist from the Gulf of Maine to the Mid-Atlantic Bight. In the U.S., the resource is managed as three separate stocks: Gulf of Maine, Southern New England/Mid-Atlantic Bight, and Georges Bank. Winter flounder usually occur in inshore bays and estuaries during the winter months, and migrate into deeper waters during the summer. Spawning occurs during winter and spring (Pereira et al. 1999). Growth and time to maturation vary by stock. The Georges Bank fish have the fastest growth and reach the largest size, reaching maturity at the earliest age and smallest size. In contrast, fish from the Gulf of Maine stock grow the slowest and reach the smallest size, reaching maturity at the oldest age and largest size (O’Brien et al. 1993). Winter flounder can grow up to 58 centimeters (23 inches) in total length and attain 15 to 20 years of age (Pentilla et al. 1989; Pereira et al. 1999).

Winter flounder are typically found from Labrador to North Carolina, but are most common in estuaries from the Gulf of St. Lawrence to the Chesapeake Bay (Bigelow and Schroeder 1993; Heimbuch et al. 1994). This fairly small, thick-bodied flatfish is abundant in Long Island Sound, where it is a resident, but fish may also move upriver into fresh water (Heimbuch et al. 1994). It spawns during the winter and early spring, typically at night, in shallow, inshore estuarine waters with sandy bottoms. Woodhead (1990) reports that spawning occurs mostly in the Lower New York Bay and the New York Bight. The Connecticut River is within an area designated as EFH for eggs, larval, juvenile, and adult flounder.

Winter flounder have negatively buoyant eggs that clump together and sink following fertilization. Optimal hatching occurs at 3°C (37°F) and in salinities ranging from 15 to 25 ppt. Winter flounder larvae develop to juveniles within the estuarine systems. In March, April, and May, winter flounder larvae can be found well into tidal estuaries near the bottom (Heimbuch et al. 1994).

For the first summer, young-of-year (YOY) winter flounder remain in the shallow waters (0.1 to 10 m [0.2 to 33 ft] in depth) of bays and estuaries where temperatures are generally less than 28°C (82°F) and salinities range from 5 to 33 ppt. Juveniles often occupy areas with sand and/or mud substrates. Juveniles beyond their first year have also been found to overwinter in estuaries at temperatures less than 25°C (77°F), salinities from 10 to 30 ppt, and depths from 1 to 5 meters (3-16 ft) (Pereira et al. 1999). However, in some studies, juvenile catches during winter generally increased outside of the estuary while at the same time decreasing within the estuary, suggesting that juveniles emigrate from the estuary during the winter (Pearcy 1962, Warfel and Merriman 1944, and Richards 1963 in Pereira et al. 1999).

Adult winter flounder prefer depths of 20 to 48 meters (66-158 ft) and are commonly associated with mud, sand, pebble, or gravel bottoms. Adults generally leave the estuaries in the summer as water temperatures increase, returning in the autumn. Winter flounder will live close to shore, swimming in shallow water to feed. Adults tend to move to deeper water when water temperatures increase in the summer or decrease in the autumn and winter.

While winter flounder are still found throughout the region, this species is currently experiencing high fishing rates that exceed natural production. The Southern New England/Mid-Atlantic stock unit (which includes the Connecticut River population), is considered to be overfished, but overfishing is not occurring (ASMFC 2011). The latest assessment, conducted by the Northeast Fisheries Science Center's Groundfish Assessment Review Meeting (GARM III) in 2008 addressed this retrospective pattern for the first time and estimated SNE/MA biomass to be 9% of its target (ASMFC 2009).

Water quality impacts from in-water construction activities would be temporary and localized. Noise generated by in-water construction activity would also be temporary and would not be expected to result in significant adverse impacts to winter flounder within the project area. Operation of the bridge would be similar to existing bridge operations and would not be expected to result in significant adverse impacts to water quality or impede use of the project area by this species. All life stages of winter flounder are likely to occur in the vicinity of the project area, particularly eggs, larvae and early juveniles. However, the short duration and localized extent of construction activities may affect, but is not likely to adversely affect winter flounder or designated EFH for this species.

WINDOWPANE (SCOPHTHALMUS AQUOSUS)

Windowpane is a thin-bodied, left-eyed flatfish species distributed in the Northwest Atlantic Ocean from the Gulf of St. Lawrence to Florida (Bigelow and Schroeder 1993). Windowpanes prefer areas of sandy bottom and are most abundant from Georges Bank to the Chesapeake Bay. Windowpane occurs in bays and estuaries at depths from the shoreline to 60 meters (197 ft). On

Georges Bank, the species is most abundant on the shoals (depths < 60 m) during late spring through autumn but overwintering occurs in deeper waters out to 366 meters (1200 ft) (Chang et al. 1999). The Connecticut River is within an area designated as EFH for eggs, larval, juvenile, and adult windowpane.

In U.S. waters, windowpane are assessed and managed as two separate stocks (the Gulf of Maine/Georges Bank and Southern New England/Middle Atlantic stocks) based on differences in measured growth rates (Thorpe 1991), size at maturity, and trends in relative abundance.

Windowpane eggs and larvae are found predominantly in the estuaries and coastal shelf water for the spring spawning period and in the coastal shelf waters alone for those eggs spawned in the autumn. Windowpane eggs are buoyant, and can be found in the water column at temperatures of 5 to 20°C (41 to 68°F), specifically at 4 to 16°C (39 to 61°F) in spring (March through May), 10 to 16°C (50 to 61°F) in summer (June through August), and 14 to 20°C (57 to 68ºF) in autumn (September through November), and within depths less than 70 meters (230 ft) (Chang et al. 1999). Larvae are free-swimming, and typically are found in the areas of the estuaries where salinity ranges from 18 to 30 ppt in the spring and on the continental shelf in the autumn. During a recent study of the New York Harbor Estuary, juvenile windowpane were found year-round in both the shelf waters and inshore (Chang et al. 1999). In this study, juveniles were fairly evenly distributed but seemed to prefer the deeper channels in the winter and summer. They were most abundant where bottom water temperatures ranged from 5 to 23°C (41 to 73°F), depths ranged from 7 to 17 meters (23 to 56 ft), salinities ranged from 22 to 30 ppt, and dissolved oxygen concentrations ranged from 7 to 11 mg/L. Similarly, adults were fairly evenly distributed year-round, preferring deeper channels in the summer months. Adults were collected in bottom waters where temperatures ranged from 0 to 23°C (32 to 73°F), depths were less then 25 meters (82 ft), salinity ranged from 15 to 33 ppt, and dissolved oxygen ranged from 2 to 13 mg/L.

As with winter flounder, this species is widely distributed throughout the region. The southern New England/Middle Atlantic windowpane stock is currently considered to be overfished. Windowpane is managed under the New England Fishery Management Council's Northeast Multispecies Fishery Management Plan (FMP). Under this FMP, windowpane are included in a complex of 15 species managed by time/area closures, gear restrictions, minimum size limits, and by direct effort controls including a moratorium on fishing permits and days-at-sea restrictions. The goal of the management program is to reduce fishing mortality to allow stocks to rebuild above minimum biomass thresholds and to attain and remain at/near target biomass levels.

Water quality impacts from in-water construction activities would be temporary and localized. Noise generated by in-water construction activity would also be temporary and would not be expected to result in significant adverse impacts to windowpane within the project area. Operation of the bridge would be substantially similar to existing bridge operations and would not be expected to result in significant adverse impacts to water quality or impede use of the project area by windowpane. All life stages of windowpane have the potential to occur within the vicinity of the proposed project. Juvenile and adult windowpane are most likely to occur in waters deeper than those in the project area during winter and summer months and would be less likely to experience adverse effects of construction activities during that time. Therefore, despite their common occurrence in the vicinity of the project area, the proposed project may affect, but is not likely to adversely affect windowpane or designated EFH for this species.

ATLANTIC SEA HERRING (CLUPEA HARENGUS)

Atlantic herring is a planktivorous marine species that occurs in coastal waters throughout the Northwestern Atlantic waters from Greenland to North Carolina. They are most abundant north of Cape Cod and relatively scarce in waters south of New Jersey (USACE 2000). Adult Atlantic herring routinely move into estuaries, but are largely restricted to well-mixed waters at salinities greater than 24 ppt. Adults rarely move into freshwater (Smith 1985) and appear to limit their distribution based on the transition zone between well-mixed and stratified waters. Juvenile and adult herring undergo complex north-south migrations and inshore-offshore migration for feeding, spawning, and overwintering. They spawn once a year in late August through November in the coastal ocean waters of the Gulf of Maine and Georges Banks. This species never spawns in brackish water. The Connecticut River is within an area designated as EFH for juvenile and adult Atlantic sea herring.

Larval herring are free-floating, and for autumn-spawned fish this stage can last 4 to 8 months until the spring metamorphosis into juveniles. A fraction of those hatched remain at the spawning site, while others may drift in ocean currents, reaching eastern Long Island Sound and entering the Hudson River estuary on flood tides. In the Gulf of Maine, larvae occur at temperatures ranging from 48 to 61°F (9 to 16°C) and a salinity of 32 ppt. During post-metamorphosis, which occurs through April and May, juveniles form large schools and move into shallow waters. As early juveniles, Atlantic herring are found in brackish waters, but as older juveniles, this species emigrates from the estuary during summer and fall to overwinter in higher salinity bays or near the bottom in offshore areas. Within Long Island Sound, springtime abundances have been reported as being highest at temperatures ranging from 48 to 50°F (9 to 10°C), depths ranging from 33 to 98 ft (10 to 30 m), and salinity ranging from 25 to 28 ppt. Juveniles are commonly found at depths ranging from 98 to 443 ft (30 to 135 m) though their depth distribution varies seasonally (depths increasing with the summer months) (Reid et al. 1999).

On average, males and females mature at about 10 to 11 in (25 to 27 cm). Preferred salinities for the Atlantic herring are greater than 28 ppt (Reid et al. 1999). Juveniles and adults perform diel and semi-diel vertical migrations in response to photoperiod and variations in turbidity. Being sensitive to light intensity, activity is highest after sunrise and just before sunset, when herring will avoid the surface during daylight to avoid predators (Reid et al. 1999).

In 2005, the NOAA Technical Memo for the species indicated that the U.S. stock complex has fully recovered from the effects of over-exploitation during the 1960s and 1970s. The Atlantic herring fishery is not overfished and overfishing is not occurring (ASMFC 2012).

Water quality impacts from in-water construction activities would be temporary and localized. Noise generated by in-water construction activity would also be temporary and would not be expected to result in significant adverse impacts to windowpane within the project area. Operation of the bridge would be substantially similar to existing bridge operations and would not be expected to result in significant adverse impacts to water quality or impede use of the project area by Atlantic herring. Spawning occurs offshore on the continental shelf, which means that eggs and larvae would not be adversely impacted by the proposed project. Juvenile and adult Atlantic herring have the potential to occur within the vicinity of the proposed project, but could avoid the localized increases in suspended sediments and noise. Therefore, despite the potential occurrence of juveniles and adults in the vicinity of the project area, the proposed project is not likely to adversely affect this species or habitat designated as EFH for this species..

BLUEFISH (POMATOMUS SALTATRIX)

Bluefish is a carnivorous marine species that occurs in temperate and tropical waters on the continental shelf and in estuarine habitats around the world. In North America, bluefish live along most of the Atlantic coastal waters south of Nova Scotia, around the tip of Florida, and along the Gulf Coast to Mexico. Bluefish migrate between summering and wintering grounds, generally traveling in groups of similar size and loosely aggregated with other groups. They migrate north in the spring and summer and south in the autumn and winter. Along the North Atlantic, summering waters are centered in the New York Bight, southern New England and northern sections of the North Carolina coastline. Wintering grounds are found in the southeastern parts of the Florida coast. Juvenile and adult bluefish travel far up estuarine waters (where salinity may be less then 10 ppt) while eggs and larvae are largely restricted to marine habitats. The Connecticut River is within an area designated as EFH for juvenile and adult bluefish.

There are two spawning stocks along the U.S. Atlantic coast—a south Atlantic spring spawning stock and a mid-Atlantic summer spawning stock. The fish spawning in the spring migrate to the Gulf Stream/coastal shelf interface between northern Florida and Cape Hatteras in April and May. Post-spring spawn, smaller bluefish drift westward while the larger fish slowly migrate north along the shelf and west into mid-Atlantic bays and estuaries, including Long Island Sound where they remain until autumn. Summer-spawning fish migrate to the mid-Atlantic from Cape Cod to Cape Hatteras in June through August. Summer post-spawn fish head towards the mid-Atlantic shores and are particularly abundant in Long Island Sound (Fahay et al. 1999). Juveniles from the spring spawn drift north in the early summer and enter the important nursery habitats in estuaries and bays along the mid-Atlantic coast in June. Summer-spawned fish appear in estuaries in mid- to late-summer (Buckel et al. 1999). Reproductively spent adults and juveniles migrate to the wintering grounds in the autumn.

Juveniles in the Mid-Atlantic Bight inhabit inshore estuaries from May to October, preferring temperatures between 15 and 30°C (59 to 86°F), and salinities between 23 and 33 ppt. Although juvenile and adult bluefish are moderately euryhaline, they occasionally will ascend well into estuaries where salinities may be less than 3 ppt. Juveniles use estuaries as nursery areas, and can be found over sand, mud, silt, or clay substrates as well as in *Spartina* marshes or *Fucus* beds. Bluefish juveniles are sensitive to changes in temperature, and thermal boundaries apparently serve as important cues to juvenile migration off-shore in the winter season (Fahay et al. 1999).

Adult bluefish are pelagic and highly migratory with a seasonal occurrence in Mid-Atlantic estuaries from April to October. They prefer temperatures from 14 to 16°C (57 to 61°F) but can tolerate temperatures from 11.8 to 30.4°C (35 to 87°F) and salinities greater than 25 ppt. Adult bluefish are not uncommon in bays and larger estuaries, as well as in coastal waters (Bigelow and Schroeder 1993, Olla and Studholme 1971 in Fahay et al. 1999).

Historically, bluefish was categorized as overfished—the stock size was below the minimum threshold set for this species—and a rebuilding program has been implemented. However, as of October 2009, the stock has been declared rebuilt (MAFMC 2012). On February 15, 2012, NMFS proposed specifications for the 2012 Atlantic bluefish fishery, including an annual catch limit, total allowable landings, a commercial quota and recreational harvest limit, and a recreational possession limit. The purpose of this action was to establish the allowable 2012 harvest levels and management measures to achieve the target fishing mortality rate, consistent with the Atlantic Bluefish Fishery Management Plan.

Within the Connecticut River Estuary, juvenile and adult bluefish may occur in the late spring through autumn; however, no spawning would occur within the project area. Therefore, eggs and larvae of this species would be unaffected by the project. Water quality impacts from in-water construction activities would be temporary and localized. Noise generated by in-water construction activity would also be temporary and would not be expected to adversely affect bluefish within the project area. Operation of the bridge would be similar to existing bridge operations and would also not be expected to result in significant adverse impacts to water quality or to impede use of the project area by this species. The loss of tidal wetlands along the existing railroad right-of-way (ROW) could affect a small area of nursery habitat for estuary-dependent juvenile bluefish, but is not likely to adversely affect juveniles of this species. Adult bluefish are highly transitory and may be affected, but are not likely to be adversely affected by construction of the project.

KING MACKEREL (SCOMBEROMORUS CAVALLA)

King mackerel is a marine species that inhabits Atlantic coastal waters from the Gulf of Maine to Rio de Janeiro, Brazil, including the Gulf of Mexico. There may be two distinct populations of king mackerel. One group migrates from waters near Cape Canaveral, Florida south to the Gulf of Mexico, arriving by spring and continuing along the continental shelf off western Florida throughout the summer. A second group migrates to waters off the coast of the Carolinas in the summer, after spending the spring in the waters of southern Florida, and continues on in the autumn to the northern extent of the range. The Connecticut River is within an area designated as EFH for eggs, larval, juvenile, and adult king mackerel.

Overall, temperature appears to be the major factor governing the distribution of the species. The northern extent of its common range is near Block Island, Rhode Island, near the 20°C (68°F) isotherm and the 18-meter (59 ft) contour. King mackerel spawn in the northern Gulf of Mexico and southern Atlantic coast. Larvae have been collected from May to October, with a peak in September. In the south Atlantic, larvae have been collected at the surface with salinities ranging from 30 to 37 ppt and temperatures from 22 to 28°C (70 to 81°F). Adults are normally found in water with salinity ranging from 32 to 36 ppt.

King mackerel, because of their temperature and salinity preferences, would likely occur only as rare transient individuals within the Connecticut River estuary. Therefore, the proposed project is not likely to adversely affect this species or habitat designated as EFH for this species.

SPANISH MACKEREL (SCOMBEROMORUS MACULATUS)

Spanish mackerel is a marine species that can occur in the Atlantic Ocean from the Gulf of Maine to the Yucatan Peninsula. The Connecticut River is within an area designated as EFH for egg, larval, juvenile, and adult Spanish mackerel. This species occurs most commonly between the Chesapeake Bay and the northern Gulf of Mexico from spring through autumn, and then overwinters in the waters of south Florida. Spanish mackerel spawn in the northern extent of their range (along the northern Gulf Coast and the Atlantic Coast). Spawning begins in mid-June in the Chesapeake Bay and in late September off of Long Island. Temperature is an important factor in the timing of spawning and few spawn in temperatures below 26°C (79°F). Spanish mackerel apparently spawn at night. Studies indicate that Spanish mackerel spawn over the Inner Continental Shelf in water 12 to 34 meters (39 to 112 ft) deep. Overfishing of Spanish mackerel is not occurring (although annual estimates of are not available) and the overfished status is unknown (ASMFC 2011).

Spanish mackerel eggs are pelagic and about 1 millimeter in diameter. Hatching takes place after about 25 hours at a temperature of 26°C. Most larvae have been collected in coastal waters of the Gulf of Mexico and the east coast of the United States. Juvenile Spanish mackerel can use low salinity estuaries (~12.8 to 19.7 ppt) as nurseries and also tend to stay close inshore in open beach waters.

Water temperature and salinity appear to be the major factors governing the distribution of this species. Like king mackerel, the northern extent of their common range is near Block Island, Rhode Island, near the 20°C (68°F) isotherm and the 18 meter contour. During warm years, they can be found as far north as Massachusetts. They prefer water from 21 to 27°C (70 to 81°F) and are rarely found in waters cooler than 18°C (64°F). Adult Spanish mackerel generally avoid freshwater or low salinity (less than 32 ppt) areas such as the mouths of rivers.

Because this is a marine species that prefers higher salinity waters, relatively warm water temperatures and depths exceeding that of the project area, only occasional juvenile individuals are likely to occur within the Connecticut River Estuary. Therefore, the proposed project is not likely to adversely affect this species or habitat designated as EFH for this species..

COBIA (RACHYCENTRON CANADUM)

Cobia are large, migratory, coastal pelagic fish of the monotypic family Rachycentridae. In the western Atlantic Ocean, cobia occur from Massachusetts to Argentina, but are most common along the south Atlantic coast of the United States and in the northern Gulf of Mexico. In the eastern Gulf, cobia migrate from wintering grounds off of south Florida into northeastern Gulf waters during early spring. They occur off of northwest Florida, Alabama, Mississippi, and southeast Louisiana wintering grounds in the fall. Some cobia winter in the northern Gulf at depths of 100 to 125 meters (328 to 410 ft). The Connecticut River is within an area designated as EFH for eggs, larval, juvenile and adult cobia.

Information on the life history of cobia from the Gulf and the Atlantic Coast of the United States is limited. EFH for coastal migratory pelagic species such as cobia includes sandy shoals of capes and offshore bars. These species can also be found, from the Gulf Stream shoreward, along high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone, including those areas inhabited by the brown alga *Sargassum.* For cobia, essential fish habitat also includes high salinity bays, estuaries, and seagrass habitat. The Gulf Stream is an EFH because it provides a mechanism to disperse coastal migratory pelagic larvae. Preferred temperatures are greater than 20°C and salinities are greater than 25 ppt. This species is not overfished and overfishing is not occurring (NMFS 2010).

Cobia are likely to occur only as rare transient individuals within the vicinity of the proposed project due to its coastal migrations, pelagic nature, and salinity requirements. Therefore, the proposed project is not likely to adversely affect this species or habitat designated as EFH for this species.

SAND TIGER SHARK (CARCHARIAS TAURUS)

The sand tiger shark is a “species of concern” under the ESA throughout its range and is managed by the Highly Migratory Species Fishery Management Plan (FMP). Under the FMP, it is illegal to land this species or any of its parts on the Atlantic Coast in the United States. The sand sharks aggregating behavior, slow growth, late maturity (i.e., 10 years for females), and low productivity make them vulnerable to overfishing (NMFS 2010).

EFH for adult tiger sharks (>221 cm TL) is characterized as shallow coastal waters to the 25 m (82 feet) isobath from Barnegat Inlet, NJ to Cape Lookout and from St. Augustine to Cape Canaveral, FL. EFH for neonates/early juveniles (<125 cm TL) is shallow coastal waters from Barnegat Inlet, NJ south to Cape Canaveral, FL to the 25 m (82 feet) isobath. Available information is insufficient for the identification of EFH for late juveniles/subadults (126 to 220 cm TL). The Connecticut River is within an area designated as EFH for neonates.

Water quality impacts from in-water construction activities would be temporary and localized. Noise generated by in-water construction activity would also be temporary and would not be expected to result in significant adverse impacts to fish within the project area. Operation of the bridge would be substantially similar to existing bridge operations and would not be expected to result in significant adverse impacts to water quality or impede the use of the project area by neonate sand tiger sharks. Therefore, the proposed project is not likely to adversely affect this species or habitat designated as EFH for this species.

LITTLE SKATE (LEUCORAJA ERINACEA)

Little skates occur from Nova Scotia to Cape Hatteras and are possibly one of the most abundant demersal species in the northwest Atlantic. The center of abundance is in the northern portion of the Mid-Atlantic Bight and on Georges Bank, where it is found year-round. Little skates do not undertake extensive migrations, but do move onshore and offshore with the seasons - generally to shallow waters in the spring and deeper waters in winter (Packer et al. 2003b). The Connecticut River is within an area designated as EFH for juvenile and adult little skates.

Little skates are generally found on sandy or gravelly bottoms but can also be found on muddy bottoms. This species is found in Long Island Sound when temperatures are less than 16 to 18°C (61 to 64°F). Juvenile little skates are mostly absent from the Sound during summer months and well distributed in the spring, autumn, and winter. Those that have been collected in the estuary in the summer were generally found in the deeper, colder waters. Juveniles are found at depths between 4 and 24 meters (13 to 79 ft) and salinities between 17 and 35 ppt (but most at ≥ 25 ppt).

Data from a 2007 survey, showed that little skate biomass also had declined and was very close to the overfishing threshold, but preliminary spring trawl survey biomass had substantially increased, thus indicating that overfishing probably was not occurring. More recent data, from surveys conducted between 2008 and 2011, shows that little skate biomass has increased and that it is above the target. Therefore, this species is not overfished and overfishing is not occurring (NEFMC 2012).

Water quality impacts from in-water construction activities would be temporary and localized. Noise generated by in-water construction activity would also be temporary and would not be expected to result in significant adverse impacts to fish within the project area. Operation of the bridge would be substantially similar to existing bridge operations and would not be expected to result in significant adverse impacts to water quality or impede the use of the project area by little skates. Occurrence of little skate in the vicinity of the project area is seasonal and would further reduce the potential for adverse impacts resulting from construction of the replacement bridge. Therefore, the proposed project is not likely to adversely affect this species or habitat designated as EFH for this species.

WINTER SKATE (LEUCORAJA OCELLATA)

The winter skate occurs from the south coast of Newfoundland and the southern Gulf of St. Lawrence to Cape Hatteras. Its center of abundance is on Georges Bank and in the northern portion of the Mid-Atlantic Bight. It is often second in abundance to the little skate and immature winter skates are often confused with immature little skates (Packer et al. 2003b). The Connecticut River is within an area designated as EFH for juvenile and adult winter skates.

Winter skate is found most often at depths less than 111 meters (364 ft) on sandy or gravelly bottoms but can also be found on muddy bottoms. In Long Island Sound, juvenile winter skates are generally absent during the summer and well distributed in winter, spring, and autumn. Those individuals present in the summer are generally found in deeper channel waters. Juveniles are found in warmer waters during the spring and autumn (most at 6 to 9°C and 5 to 17°C, respectively) than winter (mostly in 0 to 7°C), and remain mostly around depths of 5 to 8 meters (16 to 26 ft) during those seasons. Preferred salinities range from 15 to 34 ppt, although most occur between 23 and 32 ppt.

NMFS notified the NEFMC on February 20, 2007 that winter skate had become overfished. At the time, the Magnuson-Stevens Act required the Council to develop a plan amendment to address the overfished condition and initiate rebuilding. Data from surveys conducted between 2008 and 2011 indicates that the winter skate biomass has increased and that it is above the target. At this time, the winter skate is not overfished and overfishing is not occurring.

Water quality impacts from in-water construction activities would be temporary and localized. Noise generated by in-water construction activity would also be temporary and would not be expected to result in significant adverse impacts to fish within the project area. Operation of the bridge would be substantially similar to existing bridge operations and would not be expected to result in significant adverse impacts to water quality or impede the use of the project area by winter skates. Occurrence of winter skate in the vicinity of the project area is seasonal and would further reduce the potential for adverse impacts resulting from construction of the replacement bridge. Therefore, the proposed project is not likely to adversely affect this species or habitat designated as EFH for this species.

E. POTENTIAL IMPACTS TO ENDANGERED SPECIES

SHORTNOSE STURGEON AND ATLANTIC STURGEON

The shortnose sturgeon is federally and state-listed as an endangered species throughout its range. Shortnose sturgeon are typically anadromous, migrating from saline estuaries (and occasionally the Atlantic Ocean) into fresh water to spawn. Shortnose sturgeon are found along the Atlantic coast of North America in estuaries and large rivers such as the Hudson, Delaware, and Susquehanna (Chesapeake Bay). In the Connecticut River system, there are presently two populations historically separated by the construction of dams. One population is considered to be landlocked from above the Holyoke Dam up to the Turner's Falls Dam in Massachusetts. The other may be anadromous, migrating from saltwater areas of the River to freshwater reaches below the dam to spawn. In general, shortnose sturgeon remain within the freshwater portion of the river above the salt front, based on acoustic telemetry studies in the Connecticut River (Buckley and Kynard 1985). Recent studies suggest that the downstream population is not successfully reproducing, but is instead sustained by migrants from the upstream population (Kynard 1997). The population in the Connecticut River watershed is thought to be stable, and is estimated at 1,200 to 1,500 individuals (Kynard 1997, USFWS 2010).

Shortnose sturgeon spawn in the spring between late April and late May at spawning grounds located well upstream of the project area near Montague, MA (RM 120) (NMFS 2011a). Due to the location of spawning areas well upstream of the salt front and the project area, early life stages of shortnose sturgeon (eggs, larvae, juveniles age-0 and 1) do not occur in the project area (NMFS 2012, Kynard et al. 2012). Older juveniles are also not likely to occur in the project area during the spring and summer months as they typically migrate upstream during this time of the year (NMFS 2011b). Even during the rest of the year, juveniles are more commonly found upstream of the salt front. Shortnose sturgeon are most likely to occur in the project area between late April and mid-May when river flows are greatest and salinities are low (NMFS 2011a). By mid-June, most shortnose sturgeon migrate to foraging areas upstream of RM 12 where they spend the summer months (August – October) foraging near the Holyoke Dam (RM 87; NMFS 2011a). During the fall months, adult shortnose sturgeon migrate to overwintering habitats near the spawning grounds in the freshwater portion of the river and remain there until spring (Savoy 2004, NMFS 2011b).

Atlantic sturgeon are also anadromous, sharing much of their range with the closely-related shortnose sturgeon. Of the two species, Atlantic sturgeon can grow considerably larger. In terms of life history, in relatively unperturbed rivers the Atlantic sturgeon tends to be more oceanic than shortnose sturgeon and does not typically migrate as far upstream to spawn. In Connecticut, Atlantic sturgeon are designated as “threatened”. On April 6, 2012, four of the five distinct population segments (DPS) were designated as federally endangered. The New York Bight DPS, which includes the Hudson River population of Atlantic sturgeon, is one of the populations that have been recently listed under the ESA.

Although Atlantic sturgeon are expected to occur at least intermittently in the study area, it is not found there in exceptionally high abundance based on its distribution within the Connecticut River and Long Island Sound and its association with deep-water areas of the river (Savoy and Pacileo 2003, Savoy and Benway 2004). The majority of Atlantic sturgeon (post-migrant juveniles) collected during trawl surveys in Long Island Sound and the lower portion of coastal rivers have been found in the Central Basin area of Long Island Sound (Savoy and Pacileo 2003, Savoy and Benway 2004). Only a small percentage of those Atlantic sturgeon have been observed in the lower part of the river. Atlantic sturgeon occurring in the project area are subadults (<1,100 mm fork length) primarily from the Hudson River population (Savoy and Pacileo 2003, Savoy and Benway 2004). Once they enter the river during late spring (May), the majority of Atlantic sturgeon are found in discrete, deep-water areas (>9 m in depth) upstream (RM 6-16) of the project area (Savoy and Pacileo 2003). Atlantic sturgeon leave the Connecticut River during early fall (September). There is not a spawning population in the Connecticut River (Kynard et al. 2012); therefore, Atlantic sturgeon eggs, larvae, and early juveniles (age-0 and 1) are not expected to occur in the project area.

Both species of sturgeon have the potential to occur within the vicinity of the proposed project; however most sturgeon are likely to occur upstream of the Connecticut River Bridge. According to the response to an information request on the presence of threatened and endangered species in the project area, NMFS indicated that shortnose sturgeon are vulnerable to direct (injury, mortality) and indirect (removal of forage items, increase in sediment etc.) effects of in-water construction activities, including the driving of large piles and blasting, which are often associated with bridge projects (Colligan 2008 and 2011, Attachment 1 and 2). However, if present in the study area, these large and highly mobile fishes would be expected to avoid noise associated with construction activities, which as discussed in the "Construction" chapter of the EA, is not expected to reach levels associated with the onset of physiological impacts, recoverable physical injury, or mortality.. Because of the distance between the project area near the mouth of the Connecticut River (RM 3.5) and the spawning grounds (RM 120) and the location of sturgeon concentration areas upstream of the project area, the likelihood that the proposed project will obstruct migration of shortnose sturgeon is low. Therefore, noise impacts to sturgeon are not expected to result from the proposed project. Furthermore, there is no dredging planned for the proposed project, which will avoid any indirect impacts caused by the removal of benthic forage organisms. Increases in suspended sediment concentrations will be minimized through the use of containment measures during pile drilling. Overall, construction and demolition activities associated with the proposed project may affect but are not expected to adversely affect shortnose sturgeon or Atlantic sturgeon in the Connecticut River.

BLUEBACK HERRING

Blueback herring (*Alosa aestivalis*) was recently designated as a "candidate species" under consideration for Federal listing (50 CFR parts 223 and 224) and is a state-listed species of special concern, in response to declining stocks. In Connecticut, populations have seen a sharp decline since around 1990. Major causes for the decline in populations are dams, habitat degradation, fishing, and predation. Blueback herring are anadromous, spending their adult lives schooling in pelagic waters and feeding on plankton (NOAA 2007). In the Connecticut River adult blueback herring migrate from the Atlantic Ocean to fast-moving, shallow freshwater areas to spawn, between April and July. Adults then return to the ocean shortly after spawning. Similarly larvae and juvenile blueback herring reside primarily in the freshwater portions of the Connecticut River, and only until they reach approximately 5 cm in length, at which point they migrate offshore (USFWS 2010, NOAA 2007). Blueback herring have the potential to occur within the vicinity of the proposed project. Because of the high salinity (30 ppt) of the project area, larval blueback herring are not likely to be present in the study area, and juveniles and adults are only likely to occur seasonally as they migrate out to the ocean during the late summer and fall (August-September). As with sturgeon, blueback herring are highly mobile and would likely avoid construction noise during their migrations to and from the river. Blueback herring are not expected to occur in the Connecticut River between fall and spring. Because blueback herring spend most of the year in freshwater habitats well upstream of the project area or in marine habitats of Long Island Sound and the Atlantic Ocean, and because the Preferred Alternative would not obstruct fish migration through the project area, the proposed project is not expected to adversely affect the blueback herring population.

Since all three of these species (i.e., shortnose sturgeon, Atlantic sturgeon, and blueback herring) are likely to occur at least seasonally within the project area, and Atlantic sturgeon have recently been listed under the ESA, Amtrak will continue to coordinate with NMFS and other involved federal agencies to discuss the potential impacts of the project on these species. If necessary, in-water work restrictions will be implemented to minimize the potential impacts. Permits issued by USCG, USACE, and through USDOT's Endangered Species Act Section 7 Consultation process for similar bridge construction projects have included in-water work restrictions designed to protect fishes. Since construction would adhere to the in-water work restrictions anticipated for this project, the proposed project is not expected to adversely affect any federally or state listed fish populations.

MARINE TURTLES

The diamondback terrapin is the only marine species of turtle that regularly occurs in Connecticut. Terrapins hibernate during winter submerged in the mud of tidal creeks. It is most often found west of the Connecticut River, but has the potential to occur in the Connecticut River within the project area (CTDEEP 2008).

Four other species of marine turtles, all state and federally listed, can occur in the Connecticut River, but are less likely to be encountered than diamondback terrapins. Juvenile Kemp's ridley (*Lepidochelys kempii*) and loggerhead (*Caretta caretta*) turtles regularly enter regional harbors and bays during the summer and fall. The other two species, green sea turtle (*Chelonia mydas*) and leatherback sea turtle (*Dermochelys coriacea*), are usually restricted to the higher salinity areas (Turtle Expert Working Group 1998). These species neither nest in the Connecticut River, nor reside there year-round. Turtles leaving Long Island Sound for the winter usually do so by heading east to the Atlantic Ocean before turning south (Standora et al. 1989, Standora et al. 1990). These turtle species could occur in the project area as occasional transient individuals. Because they neither nest nor reside in the area year-round, and are only rarely observed in this portion of the estuary, they would not be expected to be impacted by the construction or operation of the proposed project.

F. SUMMARY OF EFFECTS ON EFH AND DESIGNATED SPECIES

In consideration of the proposed replacement of the Connecticut River Bridge, temporary and permanent effects on EFH and EFH species were assessed.

Three types of temporary impacts to EFH resulting from the Preferred Alternative were assessed:

- Increases in the concentration of suspended sediments;
- Noise from pile driving to install fender system;
- Shading from temporary staging platforms.

Sediment resuspension resulting from in-water construction activities is not likely to cause adverse impacts to EFH by reducing water clarity or by increasing concentrations of total suspended sediments. Turbidity barriers will be used to contain and minimize the extent of sediment resuspension. Any temporary sediment resuspension associated with pile driving or other construction activities would be localized to the project area by turbidity barriers, transported out of the project area by the strong tidal currents that flush the Connecticut River or avoided by EFH species.

Noise from pile-driving activities will not adversely impact EFH or EFH species. Construction of the bridge substructure will be accomplished using drilled shafts rather than pile driving, which will minimize the extent of underwater noise impacts. Noise generated during pile driving of piles for the fender system is likely to be minimal due to the number and small diameter of piles used and the fact that the piles are composite rather than steel. Furthermore, the short length of time for in-water construction, pile-driving restrictions to protect spawning migrations of anadromous fishes and high tidal flux through the project area will minimize the likelihood that EFH species are exposed to construction noise.

Shading by temporary staging platforms is not expected to cause significant adverse effects to EFH as the size of their underwater footprint will be minimal and barges will be used when possible.

Four types of potential permanent impacts to physical aspects of EFH were also assessed:

- Changes to benthic habitat from the installation/removal of in-water piers, pile footprints, and retaining walls;
- Shading of benthic habitat by overhead structure;
- Potential radiated noise/vibration into estuarine waters;
- Potential obstruction of fish migration.

The most likely impacts to EFH and EFH species resulting from construction of the Preferred Alternative would be related to habitat loss from embankment extensions and the construction of new piers.

Adverse impacts to EFH caused by changes to, or loss of, benthic habitat as a result of construction activities will be limited to a localized area within the project area. It is estimated that the Preferred Alternative would result in approximately 2.8 acres of permanent wetland impacts resulting from construction of embankments and 0.41 acres of permanent open water impacts resulting from construction of new bridge piers and piles (i.e., 0.74 – 0.33 acres of restored benthic habitat).

Shading by the replacement bridge is not expected to adversely affect on EFH or EFH species at the project site. Given the changing daily and seasonal angles of solar illumination, light would be expected to reach the water under these structures during substantial portions of the day. Furthermore, seasonally high turbidities on the Connecticut River limit any effect of the additional shading to the first few feet of the water column meaning that benthic communities would be relatively unaffected by the shaded habitat above. Lastly, tidal currents under the bridge are strong and the bridge structure would be comparatively narrow, which would transport plankton quickly through the project area minimizing the likelihood of adverse impact caused by shading.

Operation of the Preferred Alternative is not expected to radiate substantially more sound into the water than the existing bridge. Given the presence of the existing bridge, it is likely that radiated noise and vibrations created by operation of the replacement bridge will be within the range of ambient noise in this part of the Connecticut River. It is also likely that fishes will habituate to the noise produced by the bridge and will therefore not be adversely affected by operational noise.

Construction of the replacement bridge is not expected to obstruct migration of EFH species in the Connecticut River. The width of the navigable bridge passage would be preserved, with substantial open water areas remaining beneath the fixed spans. As with the existing structure, these wide passages would not obstruct fish movements and would therefore not be expected to adversely affect migrating EFH or listed species.

The bridge replacement project would result in the permanent loss of a small area of open water benthic habitat and tidal wetlands, which would affect four of the EFH species. Juvenile Atlantic salmon and bluefish are known to use these habitats, as are winter flounder and windowpane. The nine other EFH species are more commonly found in deeper habitats and higher salinities, particularly king mackerel, Spanish mackerel, and cobia. For those EFH species likely to occur in the vicinity of the project area, the short duration and localized extent of construction activities and similar operation of existing and replacement bridges means that the proposed project is not likely to adversely affect EFH or EFH species in the Connecticut River. Limitations on in-water construction activities during the migration window will protect anadromous species, including Atlantic salmonthat could move through the project area to freshwater spawning habitat upstream in the Connecticut River. Furthermore, in addition to these efforts to avoid adverse impacts, suitable mitigation measures will be implemented to compensate for the permanent loss of habitat. Once final design has been completed and the project-generated impacts to tidal wetlands and open water habitats are further evaluated, appropriate mitigation measures (e.g., restoration and/or purchasing of wetland banking credits) will be determined through coordination with NMFS, CTDEEP, USACE, USCG, and any other relevant regulatory bodies involved in the permitting process.

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Appendix C-4, Attachment 1

NOAA CORRESPONDENCE: JULY 2, 2008

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

REC'D JUL 9 2008

JUL -2 2008

Shawn Shotzberger
AKRF
440 Park Avenue South
New York, New York 10016

Re: Old Saybrook/Old Lyme Bridge Replacement

Dear Mr. Shotzberger,

This is in response to your letter dated June 16, 2008 regarding a proposal by the National Railroad Passenger Corporation (Amtrak) to improve the Connecticut River Bridge (also known as the "Old Saybrook-Old Lyme Bridge"). The project will involve the demolition and replacement of the bridge. Four of the six alternatives propose moving the existing navigation channel in place to 200 feet. AKRF is working with Amtrak to develop an Environmental Assessment regarding the environmental impacts of the proposed project.

A population of endangered shortnose sturgeon (*Acipenser brevirostrum*) occurs in the Connecticut River. The population is largely divided by the Holyoke Dam, although limited successful downstream passage does occur. Modifications to this facility are currently ongoing to ensure the safe and successful upstream and downstream passage of fish, including shortnose sturgeon, at the Dam. The abundance of the upriver group has been estimated by mark-recapture techniques using Carlin tagging (Taubert 1980) and PIT tagging (Kynard unpublished data). Estimates of total adult abundance calculated in the early 1980s range from 297 to 516 in the upriver population to 800 in the lower river population. Population estimates conducted in the 1990's indicated populations in the same range. The total upriver population estimates ranged from 297 to 714 adult shortnose sturgeon, and the size of the spawning population was estimated at 47 and 98 for the years 1992 and 1993 respectively. The lower Connecticut River population estimate for sturgeon >50 cm TL was based on a Carlin and PIT tag study from 1991 to 1993. A mean value of 875 adult shortnose sturgeon was estimated by these studies. Savoy (in press) estimates that the lower river population may be as high as 1000 individuals, based on tagging studies from 1988-2002. It has been cautioned that these numbers may overestimate the abundance of the lower river group because the sampled area is not completely closed to downstream migration of upriver fish (Kynard 1997). Other estimates of the total adult population in the Connecticut River have reached 1200 (Kynard 1998) and based on Savoy's recent numbers the total population may be as high as 1400 fish.

Several areas of the river have been identified as concentration areas. In the downriver segment, a concentration area is located in Agawam, MA which is thought to provide summer feeding and over-wintering habitat. Other concentration areas for foraging and over wintering are located in Hartford, Connecticut, at the Head of Tide (Buckley and Kynard 1985) and in the vicinity of Portland, Connecticut (CTDEP 1992). Shortnose sturgeon also make seasonal movements into the estuary, presumably to forage (Buckley and Kynard 1985; Savoy in press). Successful spawning has been documented at two sites in Montague and this is thought to be the primary spawning site for shortnose sturgeon in the Connecticut River. Limited shortnose sturgeon spawning is thought to occur downstream of the Dam. Successful spawning at the downstream site has been documented in 1985 and with limited sampling effort one egg was collected at Holyoke in 1998 and seven eggs were collected in 1999 (Kynard *et al.* 1999).

Savoy (2004) summarizes research done of shortnose sturgeon use of the lower Connecticut River, including the estuary. Tagging and telemetry data demonstrate that many shortnose sturgeon make downstream movements into the estuary during times of high freshwater outflow. Shortnose sturgeon move into the reach near rkm 6-20 between late April and mid-May. Most shortnose sturgeon leave this area for upstream foraging sites by mid-June, although some individuals stay in the estuary until late July. Based on this information, shortnose sturgeon are likely to occur near Old Saybrook at least from late April through late July. Due to the distance from the spawning grounds (i.e., greater than 100 miles downstream), shortnose sturgeon eggs or larvae, whose occurrence is limited to the waters near the spawning grounds, are not likely to occur at the project site.

Shortnose sturgeon are vulnerable to direct (injury, mortality) and indirect effects (removal of forage items, increase in sediment etc.) of in-water construction activities, including the driving of large piles and blasting which are often associated with bridge projects. As shortnose sturgeon are likely to occur at least seasonally within the project area and the project is likely to involve in-water work, NMFS encourages Amtrak to meet with NMFS and any other involved Federal agencies (e.g., the US Army Corps of Engineers) to discuss the potential impacts of the project.

As you may know, any discretionary federal action, such as the approval or funding of a project by a Federal agency, that may affect a listed species must undergo consultation pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended. If the proposed project has the potential to affect listed species and it is being approved, permitted or funded by a Federal agency, the lead Federal agency, or their designated non-Federal representative, is responsible for determining whether the proposed action is likely to affect this species. The Federal agency would submit their determination along with justification for their determination and a request for concurrence, to the attention of the Endangered Species Coordinator, NMFS Northeast Regional Office, Protected Resources Division, One Blackburn Drive, Gloucester, MA 01930. After reviewing this information, NMFS would then be able to conduct a consultation under section 7 of the ESA. Should you have any questions about these comments or about the section 7 consultation process in general, or to set up a meeting to discuss this project, please contact Julie Crocker at (978)281-9300 ext. 6530 or by e-mail (Julie.Crocker@noaa.gov).

NMFS' Habitat Conservation Division is responsible for overseeing programs related to Essential Fish Habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act and other NOAA trust resources. Consultation for Essential Fish Habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) may be necessary for this project due to the presence of federally managed species in the project area. If EFH may be adversely affected, the lead Federal agency must submit an EFH Assessment to NMFS analyzing the effects of the action on EFH and federally managed species. A guide to essential fish habitat designations in the Northeastern United States is located on the Habitat Conservation Division web site at http://www.nero.noaa.gov/hcd/webintro.html. Questions concerning EFH and other resources in the project area can be directed to Susan Tuxbury at (203)882-6571 or by e-mail (Susan.Tuxbury@noaa.gov).

Sincerely,

Mary A. Colligan
Assistant Regional Administrator
for Protected Resources

Cc: Tuxbury, F/NER4 Milford
Hartley, F/NER3

File Code: Sec 7 tech assist – Amtrak replace CT River Bridge

PCTS: T/NER/2008/04105

Appendix C-4, Attachment 2

NOAA CORRESPONDENCE: OCTOBER 24, 2011

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

OCT 24 2011

Steven Gates
AKRF
440 Park Avenue South
7th Floor
New York, New York 10016

Re: Connecticut River Bridge Replacement

Dear Mr. Gates,

This is in response to your letter dated October 13, 2011, requesting information on the presence of species listed by NOAA's National Marine Fisheries Service (NMFS) within the vicinity of the Connecticut River Bridge, located at the mouth of the Connecticut River, between the Town of Old Saybrook and the Town of Old Lyme, Connecticut.

Shortnose Sturgeon

The only listed species found within the Connecticut River is the federally endangered shortnose sturgeon (*Acipenser brevirostrum*). The population is largely divided by the Holyoke Dam (rkm 140), creating an up-river group (above the Holyoke Dam) and a lower river group that occurs below the Holyoke Dam to Long Island Sound; however, it should be noted that modifications to this facility are currently ongoing to ensure the safe and successful upstream and downstream passage of fish, including shortnose sturgeon. At this time, there is limited passage downstream and no shortnose sturgeon are passed upstream of the dam.

Shortnose sturgeon spawn in the Connecticut River from late April to late May when water temperatures are between 6 and 15°C. The primary spawning site is located near Montague, MA (approximately rkm 194-193). Numerous investigations have been made to determine if spawning also occurs below the Holyoke Dam (Buckley and Kynard 1985; Kieffer and Kynard, in review). The best available information indicates that while occasional spawning may occur below the dam, spawning only occurs occasionally and spawning success is limited. This is evidenced by the very low numbers of eggs and larvae that have been captured below the Dam (Buckley and Kynard 1985; Kieffer and Kynard, in review).

Eggs and larvae are expected to be present within the vicinity of the Montague spawning grounds for approximately four weeks post spawning (i.e., at the latest, through mid-June). Following spawning, adults disperse down river into their summer foraging grounds and eventually, into their overwintering grounds. Additionally throughout the summer foraging season (i.e., August-October), the lower river group of sturgeon appear to migrate upstream to the area of the Holyoke Dam possibly seeking to reach the upstream foraging and overwintering areas to await the following spring spawning season (Dadswell 1979; Buckley and Kynard 1985). Several areas within the river have been identified as concentration areas for foraging and overwintering. In the down-river segment (below the Holyoke Dam), Agawam, Massachusetts (approximately rkm 120-112) has been identified as a summer feeding and overwintering area, as has the area of the Connecticut River located near Hardford, Connecticut, at the Head of Tide (Buckley and Kynard 1985), and in the vicinity of Portland, Connecticut (Savoy 1991).

Sturgeon restricted to the area below the Holyoke Dam are also known to occur in the lower reaches of the Connecticut River within the estuary to forage. Savoy (2004) summarizes research done of shortnose sturgeon use of the lower Connecticut River, including the estuary. Tagging and telemetry data demonstrate that many shortnose sturgeon make downstream movements into the estuary during times of high freshwater outflow. Shortnose sturgeon move into the reach near rkm 6-20 between late April and mid-May. Most shortnose sturgeon leave this area for upstream foraging sites by mid-June, although some individuals stay in the estuary until late July.

Based on the best available information, shortnose sturgeon are likely to occur within the vicinity of the proposed project, located at the mouth of the Connecticut River (i.e., the estuary) at least from late April through late July. Due to the distance from the spawning grounds (i.e., greater than 100 miles downstream), shortnose sturgeon eggs or larvae, whose occurrence is limited to the waters near the spawning grounds, are not likely to occur at the project site.

Shortnose sturgeon are vulnerable to direct (injury, mortality) and indirect effects (removal of forage items, increase in sediment etc.) of in-water construction activities, including the driving of large piles and blasting which are often associated with bridge projects. As shortnose sturgeon are likely to occur at least seasonally within the project area and the project is likely to involve in-water work, a consultation, pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, may be necessary. Any discretionary federal action, such as the approval or funding of a project by a Federal agency, that may affect a listed species must undergo consultation pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended. If the proposed project has the potential to affect listed species and it is being approved, permitted, funded, or carried out by a Federal agency, the lead Federal agency, or their designated non-Federal representative, is responsible for determining whether the proposed action is likely to affect listed species. The lead Federal agency should submit their determination of effects, along with justification for the determination and a request for concurrence, to the attention of the Section 7 Coordinator, NMFS, Northeast Regional Office, Protected Resources Division, 55 Great Republic Drive, Gloucester, MA 01930. After reviewing this information, NMFS would then be able to conduct a consultation under section 7 of the ESA.

Technical Assistance for Proposed Species
On October 6, 2010, NMFS published two proposed rules to list five distinct population segments (DPS) of Atlantic sturgeon under the ESA. NMFS is proposing to list four DPSs as endangered (New York Bight, Chesapeake Bay, Carolina and South Atlantic) and one DPS of Atlantic sturgeon as threatened (Gulf of Maine DPS) (75 FR 61872; 75 FR 61904).

Please note that once a species is proposed for listing the conference provisions of the ESA may apply (see ESA section 7(a)(4) and 50 CFR 402.10). As stated at 50 CFR 402.10, "Federal agencies are required to confer with NMFS on any action which is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat. The conference is designed to assist the Federal agency and any applicant in identifying and resolving potential conflicts at an early stage in the planning process." Based on the information on the proposed project provided to NMFS to date, NMFS encourages the applicant to consider effects of the proposed action on Atlantic sturgeon and work with NMFS to determine if a conference is required. As the listing status for this species may change, NMFS recommends that the project proponent obtain updated status information from NMFS prior to the submittal of any applications or requests for consultation.

Should you have any questions about these comments or about the section 7 consultation process in general, please contact Danielle Palmer at (978)282-8468 or by e-mail (Danielle.Palmer@noaa.gov).

Sincerely,

for Mary A. Colligan
Assistant Regional Administrator
for Protected Resources

EC: Boelke, NMFS/HCD
Palmer, NMFS/PRD

File Code: Sec 7 Tech. Assistance 2011_ CT River Bridge Replacement
PCTS: T/NER/2011/05405