Draft Supplemental Environmental Assessment and Finding of No Significant Impact for Invasive Aquatic Plant Control Demonstration

# Connecticut River Hydrilla Control Research and Demonstration Project

Lower Connecticut River Watershed, Connecticut

US Army Corps of Engineers ®
New England District

**JUNE 2025**

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**List of Acronyms**

| | |
|---|---|
| APCRP | Aquatic Plant Control Research Program |
| EA | Environmental Assessment |
| EFH | Essential Fish Habitat |
| EIS | Environmental Impact Statement |
| EPA | U.S. Environmental Protection Agency |
| ERDC | Engineer Research and Development Center |
| ESA | Endangered Species Act |
| DEEP | Department of Energy and Environmental Protection |
| DO | Dissolved oxygen |
| DPS | Distinct population segments |
| FONSI | Finding of No Significant Impact |
| FWS | U.S. Fish and Wildlife Service |
| IPaC | Information for Planning and Consultation |
| HAPC | Habitat Area of Particular Concern |
| MHHW | Mean higher high water |
| NEPA | National Environmental Policy Act |
| NDDB | Natural Diversity Data Base |
| NLEB | Northern long-eared bat |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration |
| NPS | National Parks Service |
| ppb | Parts per billion |
| ppm | Parts per million |
| SAV | Submerged aquatic vegetation |
| SEA | Supplemental environmental assessment |
| SHPO | State Historic Preservation Officer |
| TCB | Tricolored bat |
| USACE | U.S. Army Corps of Engineers |
| YOY | young of year |

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# FINDING OF NO SIGNIFICANT IMPACT

## Connecticut River Hydrilla Control Research and Demonstration Project in Lower Connecticut River, Connecticut

The U.S. Army Corps of Engineers (USACE), New England District proposes to conduct an aquatic invasive plant control research demonstration project at twelve sites in the Lower Connecticut River watershed, Connecticut. USACE, including the Engineer Research and Development Center (ERDC), propose aquatic herbicide application to control the aquatic invasive plant, hydrilla (*Hydrilla verticillata*) in the Lower Connecticut River watershed. In 2024, the New England District Commander signed a Finding of No Significant Impact (FONSI) for the project at five treatment sites in the watershed. The project is authorized by Section 104 of the Rivers and Harbors Act of 1958, as amended. Section 104 authorized the Aquatic Plant Control Research Program (APCRP), which provides an expanded aquatic plant control program that supports the "prevention, control, and progressive eradication of noxious aquatic plant growths and aquatic invasive species from the navigable waters, tributary streams, connecting channels, and other allied waters of the Unites States," (Section 104 of the River and Harbor Act of 1958, 33 USC 610(a)(1)). This includes continuous research into efficient and economical methods for aquatic plant control.

The purpose of the proposed project is to provide a field-scale demonstration of technology developed under the APCRP, which is evaluating the effectiveness of an aquatic herbicide to manage monoecious hydrilla in high water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time requirements for effective control of hydrilla. The proposed project will also provide interim control of hydrilla at sites in the lower Connecticut River for the duration of the research and demonstration project to demonstrate and understand effective management practices.

The proposed project need is to address impairments to the natural and human environment by the invasive aquatic plant hydrilla. Invasive aquatic plants are non-native plant species whose establishment in a system causes economic, human health, and/or environmental harm. Hydrilla, native to Asia, Africa, and Australia, was first discovered in the United States in Florida during the 1960's and is believed to have been introduced by two separate occurrences since there are multiple variants. The species now occurs along eastern North America and California. Hydrilla can alter native habitats by limiting the species diversity, which can reduce habitat quality and foraging resources, and impact fisheries in aquatic systems. It may inhibit recreation by clogging water bodies used for boating, fishing, and swimming Genetic testing of hydrilla present in the Connecticut River has identified a new genotype within the United States. Because this strain of hydrilla is unique, it is unknown if this genotype is responsive to the established management practices for hydrilla in the rest of the U.S.

The Connecticut River Hydrilla Control Research and Demonstration Project currently includes five treatment sites: Chapman Pond in Haddam, CT; Chester Boat Basin in Chester, CT; Keeney Cove in Glastonbury, CT; Selden Cove in Lyme, CT; and Portland Boat Works in Portland, CT. The proposed action expands the original project to include twelve additional treatment sites within the Lower Connecticut watershed: (1) Chester Creek in Chester; (2) Deep River in Deep River; (3) Hamburg Cove in Lyme; (4) Joshua Creek in Lyme; (5) Mattabesset River in Middletown; (6) Parker's Point in Chester; (7) an expanded Portland Boat Works in Portland; (8) Post and Pratt Coves in Deep River; (9) Salmon River in East Haddam; (10) Selden Creek in Lyme; (11) Lake Pocotopaug in East Hampton; and (12) Pameacha Pond in Middletown.

The action proposes the use of diquat dibromide (diquat), dipotassium salt of endothall, imazamox, florpyrauxifen-benzyl, flumioxazin, fluridone, penoxsulam, or combinations thereof. During the field demonstration, herbicides will be selected based on site-specific environmental characteristics, such as water movement, retention, and the presence of native species, as well as the likelihood of the herbicide's effectiveness in controlling target plant species within the application limits outlined on the product label. The herbicide will be evenly distributed across the entire treatment areas using the industry-standard boat-based, subsurface injection application method consisting of a calibrated pump and trailing hoses. The proposed action will occur in summer of 2025 and may include future treatments. For sites connected to or along the Connecticut River, application will occur after July 4, 2025 or July 4th in subsequent years, to avoid impacts to diadromous fish spawning. Pre- and post-application monitoring will occur at the treatment sites to understand control efficacy and non-target impacts to inform the management of other hydrilla infestations. Post-application monitoring may occur for up to three years.

I find that based on the evaluation of environmental effects discussed in the supplemental environmental assessment (SEA), this project is not a major federal action significantly affecting the quality of the environment. The SEA includes an evaluation of the affected environment and the geographical context and intensity of the direct, indirect, and cumulative long-term and short-term effects of the action. The effects of the proposed plan relative to significance criteria are summarized below.

(i) The degree to which the action may adversely affect public health and safety. The action will not adversely affect public health and safety. The action is anticipated to have a beneficial impact effect on public health and safety through researching efficient and effective control of invasive hydrilla that will minimize the adverse impacts to navigation and recreation.

(ii) The degree to which the action may adversely affect unique characteristics of the geographic area such as historic or cultural resources, parks, Tribal sacred sites, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. The action will have no adverse effects to unique characteristics of the geographic area such as Tribal

sacred sites, prime farmlands, wild and scenic rivers, or ecologically critical areas. The project will have no adverse effects on historical and cultural resources.

(iii) Whether the action may violate relevant Federal, State, Tribal, or local laws or other requirements or be inconsistent with Federal, State, Tribal, or local policies designed for the protection of the environment**.** The action will not violate federal, state, tribal or local laws or policies for the protection of the environment.

(iv) The degree to which the potential effects on the human environment are highly uncertain. The effects are not uncertain. ERDC has conducted previous invasive aquatic plant control demonstrations. USACE has conducted previous demonstrations for the Connecticut River Hydrilla Control Research and Demonstration Project.

(v) The degree to which the action may adversely affect resources listed or eligible for listing in the National Register of Historic Places (NRHP)**.** The action will have no adverse effects on historic properties eligible or listed on the NRHP.

(vi) The degree to which the action may adversely affect an endangered or threatened species or its habitat, including habitat that has been determined to be critical under the Endangered Species Act of 1973. The action will have no effect on northern long-eared bat (*Myotis septentrionalis)* and tricolored bat (*Perimyotis subflavus)* species. USACE determined that the action is not likely to adversely affect Atlantic sturgeon (*Acipenser oxyrinchus)* and Shortnose sturgeon (*Acipenser brevirostrum)* and designated critical habitat for such species.

(vii) The degree to which the action may adversely affect rights of Tribal Nations that have been reserved through treaties, statutes, or Executive Orders. The action will not adversely affect rights of Tribal Nations that have been reserved through treaties, statutes, or Executive Orders.

Based on my review and evaluation of the environmental effects as presented in the SEA, I have determined that the Connecticut River Hydrilla Control Research and Demonstration Project is not a major federal action significantly affecting the quality of the human environment and is therefore exempt from requirements to prepare an Environmental Impact Statement.

_____ _____

Date

Justin R. Pabis, PE
Colonel, Corps of Engineers
District Engineer

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# 1.0 Introduction

The U.S. Army Corps of Engineers (USACE), New England District, has prepared this supplemental Environmental Assessment (SEA) to assess the potential environmental and cultural impacts of the proposed alternatives. In 2024, the New England District Commander signed a Finding of No Significant Impact (FONSI) for the Connecticut River Hydrilla Control Research & Development Project (USACE, 2024). The FONSI and final EA proposed the control of the non-native aquatic plant, hydrilla (*Hydrilla verticillata*), through herbicide at five treatment sites in the Lower Connecticut River. The SEA was prepared to consider twelve additional sites for treatment in the Lower Connecticut River. These sites will expand the project to understand hydrilla control herbicide efficacy in varied environments, such as lakes and ponds, within the Connecticut River system. This SEA describes USACE project compliance with the National Environmental Policy Act of 1969 (NEPA) and all applicable federal and state environmental regulations, laws, and executive orders. This SEA provides sufficient information about the potential adverse and beneficial environmental effects to allow the USACE, New England District Commander to make an informed decision on the appropriateness of completing an Environmental Impact Statement (EIS) or signing a FONSI. This SEA has been coordinated with federal, state, and tribal entities (Appendix A).

The research is being led by the research branch of USACE— the Engineer Research and Development Center (ERDC). The proposed project is a part of ERDC's Aquatic Plant Control Research Program (APCRP) which is authorized by Section 104 of the Rivers and Harbors Act of 1958, as amended. Section 104 supports the "prevention, control, and progressive eradication of noxious aquatic plant growths and aquatic invasive species from the navigable waters, tributary streams, connecting channels, and other allied waters of the Unites States" (Section 104 of the River and Harbor Act of 1958, 33 USC 610(a)(1)). This includes continuous research into efficient and economical methods for aquatic plant control.

The Connecticut River is a tidally influenced river that flows from the Canadian border to Long Island Sound running through New Hampshire, Vermont, Massachusetts, and Connecticut and spanning about 410 miles. Hydrilla was first detected within the Connecticut River in 2016 in Glastonbury, Connecticut (USACE, 2024).

## 1.1 Location

The focus of the proposed project is on the Lower Connecticut River watershed (Figure 1). The lower Connecticut River includes areas of southern Massachusetts and Connecticut. The extent of hydrilla and other aquatic invasive species has been determined through surveys by the Connecticut Agricultural Experiment Station and the Massachusetts Department of Conservation and Recreation (CAES, 2025). The current northern extent of hydrilla is in Agawam, Massachusetts. In addition to the Connecticut River, the genetically distinct strain has spread to other waterbodies (*i.e.,* lakes and ponds).

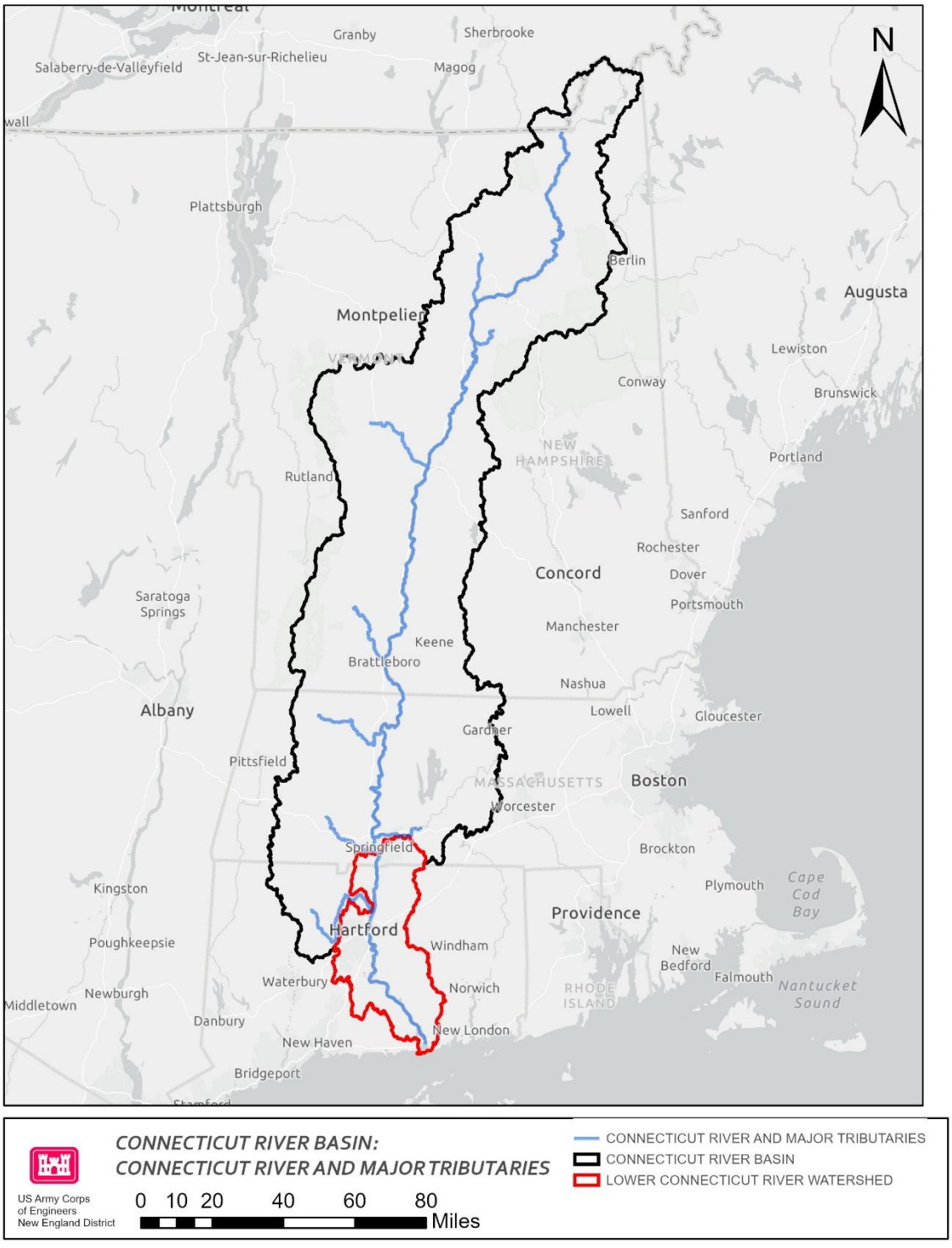


**Figure 1. The Connecticut River basin and Lower Connecticut River watershed.**

### 1.2 Purpose and Need

The purpose of the proposed project is to provide a field-scale demonstration of technology developed under the APCRP, which is evaluating the effectiveness of aquatic herbicides to manage monoecious hydrilla in high water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time requirements for effective control of hydrilla. The proposed project will also provide interim control of hydrilla at sites in the lower Connecticut River for the duration of the research and demonstration project to demonstrate and understand effective management practices.

The need for this project is to address impairments to the natural and human environment by the invasive aquatic plant hydrilla. Invasive aquatic plants are non-native plant species whose establishment in a system causes economic, human health, and/or environmental harm. Hydrilla can alter native habitats by limiting the species diversity, which can reduce habitat quality and foraging resources, and impact fisheries in aquatic systems. It may inhibit recreation by clogging water bodies used for boating, fishing, and swimming (USACE, 2024). Hydrilla, native to Asia, Africa, and Australia, was first discovered in the United States in Florida during the 1960's. Three genetically distinct hydrilla variants are identified in the US: dioecious hydrilla primarily found in southern and western states, monoecious hydrilla in mid-Atlantic to northern states, and Clade C hydrilla found in the Lower Connecticut River watershed, which is rapidly spreading in New England. Clade C or Connecticut River hydrilla, was identified in 2020 (Tippery et al., 2020). Because this strain of hydrilla is unique, it is unknown if this variant is responsive to the established management practices for hydrilla in the rest of the U.S.

## 2.0 Alternatives

This section describes the No Action Alternative and the Proposed action. The impacts of these alternatives are described in the SEA. The proposed action includes the use of chemical herbicides for hydrilla control. In addition to chemical methods, other alternatives were considered and not carried forward. Alternative methods include mechanical physical, and biological control. Refer to Section 3.3 of the 2024 EA for a discussion on these alternative control methods. Mechanical and physical methods including mechanical harvesting and hand pulling can result in plant fragmentation which can increase hydrilla spread to new areas. Additionally, mechanical harvesting and biological methods, such as grass carp, can lack plant selectivity and can impact native vegetation and wildlife in the area. Various physical methods such as benthic barriers and water drawdowns are not suitable in riverine environments and therefore not considered effective measures (USACE, 2024).

## 2.1 No Action Alternative

The No Action Alternative serves as a baseline against which the proposed action and alternatives can be evaluated. Under the No Action Alternative, no herbicide application would occur. Hydrilla would persist and plant coverage and density will likely increase. USACE and ERDC would not conduct field demonstrations or develop regional guidance for the management of hydrilla.

Under the No Action Alternative, clogged waterways may result from the spread of hydrilla which forms dense vegetation mats. The Connecticut River is used for recreational and commercial fishing, with many marinas and harbors that support the fishing industry. Recreational vessels, including motorboats, kayaks, and canoes, used by locals and tourists, also benefit from the river. Clogged waterways would limit access to recreational areas and opportunities that benefit the communities and local tourist economies. Clogged waterways may increase flood risk through hydrilla impeding water flow and flood control structures. In addition, the clogged waterways may increase safety concerns associated with reduced navigability (*e.g.*, boat stranding and boat break downs). The spread of hydrilla will cause further degradation of the native aquatic plant assemblages, reduced diversity and disproportional abundance (community evenness) in the river system negatively impacting the fish and wildlife habitat.

## 2.2 Proposed Action

### 2.2.1 Additional Treatment Sites

The proposed action is to expand the existing Connecticut River Hydrilla Control Research and Demonstration Project by adding twelve additional treatment sites within the Lower Connecticut watershed. These sites will allow for further demonstration on varied environments, such as lakes and ponds, within the Connecticut River system. These additional sites are: (1) Chester Creek in Chester; (2) Deep River in Deep River; (3) Hamburg Cove in Lyme; (4) Joshua Creek in Lyme; (5) Mattabesset River in Middletown; (6) Parker's Point in Chester; (7) an expanded Portland Boat Works in Portland; (8) Post and Pratt Coves in Deep River; (9) Salmon River in East Haddam; (10) Selden Creek in Lyme; (11) Lake Pocotopaug in East Hampton; and (12) Pameacha Pond in Middletown. Appendix B includes site-specific maps for these proposed treatment areas. Sites selected for potential management represent a variety of water exchange characteristics, have dense stands of hydrilla, and are of recreational and economic value to surrounding communities

This section describes the proposed treatment sites within the Lower Connecticut River watershed. Figure 2 shows the general vicinity of the current treatment sites, and the potential treatment sites considered in the proposed action. Appendix B includes site-specific maps for the treatment areas considered.

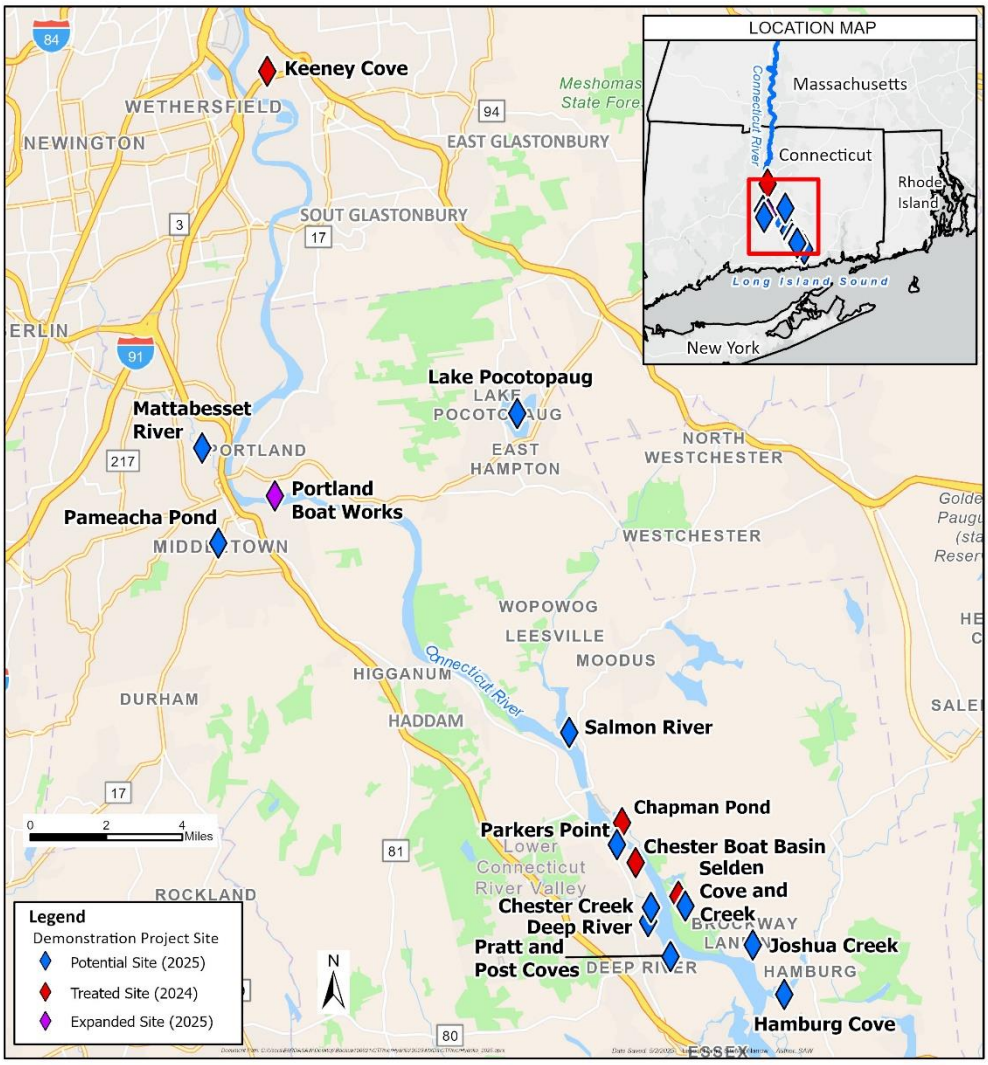


**Figure 2. Prior research and demonstration treatment sites and proposed treatment sites within the Lower Connecticut River watershed**

1. Chester Creek

Chester Creek is a tidal creek off the mainstem of the Connecticut River located in Chester, Middlesex County, CT and centered at 41.409° N, 72.435° W. The treatment area is 37.9 acres with an estimated mean depth of nine feet mean higher high water (MHHW). The tidal creek contains multiple marinas and a yacht club.

2. Deep River

Deep River is a tributary to the Connecticut River and is located in Chester, Middlesex County, CT and centered at 41.401° N, 72.434°W. The treatment area is 5.3 acres with an estimated mean depth of seven feet MHHW. Deep River is surrounded by wetlands, rural residential area, and marinas including the Chester Boat Basin to the north.

3. Hamburg Cove

Hamburg Cove is a tidal cove located at the confluence of the Eightmile River and the Connecticut River. Hamburg Cove is located in Lyme, New London County, CT and centered at 41.379° N, 72.359° W. The treatment area is 178.8 acres with an estimated mean depth of 11 feet MHHW. The cove has heavy recreational use, and includes numerous boat docks, a summer camp, two marinas, and a yacht club.

The Eightmile River Watershed is protected under the Wild and Scenic Rivers Act (16 U.S.C 1271 *et seq*.). The mainstem of the river, including Hamburg Cove, and specified tributaries are managed by the Eightmile River Wild and Scenic Coordination Committee and the National Park Service (NPS) (Eightmile River Wild & Scenic Study Committee, 2005).

4. Joshua Creek

Joshua Creek is a tidal creek off the mainstem of the Connecticut River and located in Lyme, New London County, CT and centered at 41.395° N, 72.377° W. The treatment area is 20.7 acres with an estimated mean depth of six feet MHHW. The creek is transected by two roads, with a culvert connecting the upper and lower ponds.

5. Mattabesset River

Mattabesset River is a tidal river off the mainstem of the Connecticut River and located in Middletown, Middlesex County, CT and centered at 41.583° N, 72.663° W. The treatment area is 65.6 acres with an estimated mean depth of seven feet MHHW.

6. Parker's Point

Parkers Point is located on the mainstem of the Connecticut River in Chester, Middlesex County, CT and centered at 41.431° N, 72.449° W. The treatment area is three acres with an estimated mean depth of six feet MHHW.

7. Portland Boat Works

Portland Boat Works is an operating marina located in Portland, Middlesex County, CT off the Connecticut River located in Chester, Middlesex County, CT and centered at 41.411° N, 72.417°W. The total treatment area is 16.1 acres. The marina is located along the shore of the mainstem of the Connecticut River.

The site was treated during the 2024 field demonstration, and USACE is proposing an expanded treatment area in 2025. The original treatment area was 0.6 acres with a mean depth of 2.1 feet MHHW. The proposed expanded treatment area is 3.8 acres with an estimated mean depth of five feet MHHW.

8. Post and Pratt Coves

Post and Pratt coves are tidal coves off the mainstem of the Connecticut River located in Deep River, Middlesex County, CT and centered at 41.386° N, 72.421° W. The treatment area is 35.5 acres with an estimated mean depth of six feet MHHW.

9. Salmon River

Salmon River is a river off the mainstem of the Connecticut River located in East Haddam and Haddam, Middlesex County, CT and centered at 41.484° N, 72.478° W. The treatment area is 274.3 acres with an estimated mean depth of nine feet MHHW.

10. Selden Creek

Selden Creek is a tidal creek off the mainstem of the Connecticut River located in Lyme, New London County, CT and centered at 41.400° N, 72.406° W. The treatment area is 48.1 acres with an estimated mean depth of 12 feet MHHW.

11. Lake Pocotopaug

Lake Pocotopaug is a large lake approximately 7.3 miles upstream of the Salmon River, a tributary to the Connecticut River. It is located in East Haddam, Middlesex County, CT and is centered at 41.595° N, 72.501° W. The shoreline of Lake Pocotopaug is heavily developed. The treatment area is approximately 232 acres with an estimated mean depth of ten feet.

12. Pameacha Pond

Pameacha Pond is located in Middletown, Middlesex County, CT and is centered at 41.544° N, 72.653°W. This pond drains via Long Hill Brook and Sumner Brook before discharging to the Connecticut River. The treatment area is 18.8 acres with an estimated mean depth of 8.5 feet. Surrounding lands are highly developed, with residential and commercial use.

### 2.2.2 Herbicides

The proposed herbicides for the additional treatments sites are bispyribac-sodium, diquat dibromide (diquat), dipotassium salt of endothall, imazamox, florpyrauxifen-benzyl, flumioxazin, fluridone, penoxsulam, or combinations thereof. The proposed herbicides include contact and systematic herbicides. Contact herbicides are those which quickly absorb into exposed plant surfaces and kill aboveground plant material, including: diquat, dipotassium salt of endothall, flumioxazin. While systematic herbicides are slow-acting and inhibit enzyme activity in target plants, including: bispyribac-sodium, imazamox, florpyrauxifen-benzyl, fluridone, and penoxsulam. Diquat dibromide, dipotassium salt of endothall, and florpyrauxifen-benzyl were proposed for the 2024 treatment sites. The use of these herbicides are all anticipated to have a similar level of effect on the environment. Table 1 describes the proposed herbicides for consideration at each treatment site and the proposed treatment area in acres. During the field demonstration, herbicides will be selected based on site-specific environmental characteristics, such as water exchange rate, product retention, and the presence of native species, as well as the likelihood of the herbicide's effectiveness in controlling target plant species within the application limits outlined on the product label.

The herbicide will be evenly distributed across the entire treatment areas using the industry-standard boat-based subsurface injection application methods consisting of a calibrate pump and trailing hoses. Herbicide will be applied by licensed applicators and in accordance with product labels. Application rates describe the amount of pesticide that is applied to an area and are described on the product labels. Table 2 includes the maximum application rate for the proposed herbicides in parts per million (ppm) and parts per billion (ppb) in accordance with the U.S. Environmental Protection Agency (EPA)-approved label.

The proposed applications will occur in the summer after July 4$^{th}$, 2025, with any subsequent treatments, occurring after July 4th of future years. This timing was selected to avoid impacts to diadromous fish and northern pike that may spawn in submerged aquatic vegetation at sites in or adjacent to the Connecticut River. Pre- and post-application monitoring will occur at the treatment sites to understand control efficacy for hydrilla and impacts to non-target species to inform the management of other hydrilla infestations. Post-application monitoring may occur for up to three years. The monitoring protocol is provided in Appendix C.

## Table 1. Proposed herbicides for consideration

| Site | Treatment Area (acres) | Potential Herbicide(s)[1] |
|---|---|---|
| Chester Creek | 37.9 | Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl |
| Deep River | 5.3 | Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl |
| Hamburg Cove | 178.8 | Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl |
| Mattabesset River | 65.6 | Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl, Fluridone |
| Parker's Point | 3.0 | Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl |
| Portland Boat Works | 16.1 | Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl |
| Post and Pratt Coves | 35.5 | Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl |
| Salmon River | 274.3 | Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl |
| Joshua Creek | 20.7 | Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl |
| Selden Creek | 48.1 | Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl |
| Lake Pocotopaug | 232 | Diquat, Dipotassium salt of endothall, Imazamox, Florpyrauxifen-benzyl, Flumioxazin, Penoxsulam |
| Pameacha Pond | 18.8 | Fluridone, Bispyribac-sodium, Dipotassium salt of endothall, Florpyrauxifen-benzyl |

1 Herbicide(s) will be selected based on field conditions during summer demonstrations.

## Table 2. Proposed herbicides use rates

| Potential Herbicide | Maximum Application Rate |
|---|---|
| Bispyribac-sodium | 40 ppb |
| Diquat | 370 ppb |
| Dipotassium salt of endothall | 5 ppm |
| Florpyrauxifen-benzyl | 48 ppb |
| Imazamox | 500 ppb |
| Flumioxazin | 400 ppb |
| Fluridone | 15 ppb |
| Penoxsulam | 150 ppb |

# 3.0 Affected Environment

The affected environment for the proposed twelve treatment sites located within the Lower Connecticut River watershed is described below. Site-specific environmental features that may be sensitive or unique to each location are discussed in this section under the appropriate resource subsection.

## 3.1 Resources Previously Considered

The following resources were considered, and it was determined that the proposed action for the additional sites are covered in the 2024 EA. Specifically, the Affected Environment in Section 4.0 and the Environmental Consequences in Section 5.0 cover the following resources (USACE, 2024):

- Geology and Sediments
- Hydrology
- Floodplains
- Benthic Resources
- Hazardous, Toxic, and Radioactive Waste
- Air Quality
- Greenhouse Gases
- Noise
- Socioeconomics
- Recreation and Aesthetics

## 3.2 Water Quality

Surface water quality is highly variable within the Connecticut River system as result of the system's size and adjacent land uses. Connecticut Water Quality Standards designate uses and criteria for surface waters in order to set objectives for water quality. The Connecticut River system includes Class A and B waters. Designated uses for both classes include: habitat for fish and other aquatic life habitat; navigation; and industrial and agricultural water supply. In addition, Class A uses include potential drinking water supplies and recreation. Water Quality Standards for dissolved oxygen (DO) and turbidity are the same. DO concentrations may be no less than 5 mg/L at any time. Turbidity shall not exceed 5 NTU over ambient levels, with none exceeding levels necessary to protect and maintain all designated uses. Best management practices and reasonable controls should be used to control turbidity (CT DEEP, 2011).

North of Windsor and in the larger tributaries of the river, surface water quality is classified as B waters. Smaller tributaries and creeks within the system have surface waters that are classified as A waters (USACE, 2024; CT DEEP, 2011). Surface water quality of other inland waterbodies is also variable. Lake Pocotopaug is a Class A waterbody, with downstream surface waters, including the Salmon River, classified as B waters. Pameacha Pond is located on Long Hill Brook, which are both classified as A

waters. Downstream of the pond, Long Hill Brook confluences with Sumner Brook which is a Class B surface water (CT DEEP, 2025).

## 3.3 Wetlands

The wetlands of the Connecticut River watershed consist of estuarine wetlands near the mouth of the river and freshwater emergent and forested/shrub wetlands higher in the watershed. Within the Connecticut River system, there are estuarine and freshwater wetlands. Freshwater wetlands in the system may be either riverine or palustrine wetlands (USACE, 2024; Ramsar, 1994). Riverine wetlands are associated with rivers and streams, while palustrine wetlands are associates with marshes, bogs, swamps, or small shallow ponds (Metzler & Tiner, 1992). The proposed sites include tidal freshwater systems that contain or are adjacent to riverine wetlands. Hamburg Cove contains both riverine and palustrine wetlands. Additionally, Lake Pocotopaug, Pameacha Pond, and Parker's Point include palustrine wetlands as described below. No wetlands are located within or adjacent to Portland Boat Works (FWS, 2025d).

Riverine wetlands include nonpersistent emergent wetlands, aquatic beds, unvegetated flats, and shallow water. Common riverine vegetation in the Connecticut River includes wild rice (*Zizania aquatica*), pickerelweed (*Pontederia cordata*), and three-square club-bulrush (*Schoenoplectus pungens*) (USACE, 2024; Ramsar, 1994; Metzler & Tiner, 1992). Freshwater palustrine wetlands vary in vegetation depending on the frequency of inundation (flooding) or saturation (Table 3).

Palustrine wetlands are associated with the waterbody or with surface water inflows such as the confluence of Falls Brook and Tisdale Brook at Hamburg Cove. Forested, shrub-scrub (shrub), or emergent palustrine wetlands may be present within the treatment sites (FWS, 2025d). No wetlands are within the proposed treatment sites for Lake Pocotopaug and Parkers Point, but seasonally flooded or saturated forested wetlands are adjacent to these sites (FWS, 2025d).

**Table 3. Dominant hydrophytic vegetation in palustrine wetlands in Connecticut**

| Common Name | Scientific Name | Common Name | Scientific Name |
|---|---|---|---|
| Bluejoint grass | *Calmagrostis canadensis* | Pickerelweed | *Pontederia cordata* |
| Shagbark hickory | *Carya ovata* | Pin oak | *Quercus palustris* |
| Buttonbush | *Cephalanthus occidentalis* | Goldenrods | *Solidago spp.* |
| Water willow | *Decadon verticillatus* | Bur-reed | *Sparganium americanum* |
| Joe-pye weeds | *Eupatorium spp.* | Skunk cabbage | *Symplocarpus foetidus* |
| Green ash | *Fraxinus pennsylvanica* | Carex stricta | *Tussock sedg* |
| Duckweed | *Lemna minor* | Common cattail | *Typha latafolia* |
| Canada lily | *Lilium canadense* | American elm | *Ulmus americana* |
| Fragrant white water lily | *Nymphaea odorata* | Highbush blueberry | *Vaccinium corymbosum* |
| Black gum | *Nyssa sylvatica* | Tapegrass | *Vallisneria americana* |

Source: Metzler & Tiner, 1992.

## 3.4 Aquatic Vegetation

The Connecticut River watershed supports a variety of aquatic vegetation that serve as important habitat and forage for fish and wildlife species. The Connecticut Agricultural Experiment Station preformed aquatic vegetation surveys in a portion of the lower Connecticut River designated as the Gateway Conservation Zone, which includes portions of the river from the East Hampton/East Haddam border to Long Island Sound. Visual observations, rake tosses, and sonar were used to identify invasive aquatic plants, including hydrilla. The survey also identified common native aquatic plant species through transect sampling. Transects were established with ten points, and the frequency of occurrence of native species was determined across transect points (Bugbee & Stebbins, 2020). The most common of these native species, are American eelgrass (*Vallisineria americana)* and coontail (*Ceratophyllum demersum*) (Table 4), which are both found through much of the U.S. and New England lakes and slow-moving rivers. Invasive aquatic plants were observed, such as hydrilla, curlyleaf pondweed (*Potamogeton crispus*), Eurasian watermilfoil (*Myriophyllum spicatum*), fanwort (*Cabomba caroliniana*), variable-leaf watermilfoil (*Myriophyllum heterophyllum*), and water chestnut (*Trapa natans)*.

Invasive aquatic plants also provide habitat and forage for fish and wildlife, but excessive densities of plants, especially monocultures of aggressive non-native species, may result in habitat degradation. Excessive plant biomass can increase water

temperature fluctuations, reduce DO concentrations during respiration and upon decay, elevate pH during photosynthesis, and reduce overall biodiversity by outcompeting other species (USACE, 2024).

**Table 4. Common native aquatic plant species of the Connecticut River**

| Common Name | Scientific Name | Frequency of Occurrence (% of transect points) |
|---|---|---|
| Arrowhead | *Sagittaria spp.* | 4 |
| Cattail | *Typha spp.* | 1 |
| Clasping-leaf pondweed | *Potamogeton perfoliatus* | 22 |
| Common duckweed | *Lemna minor* | 7 |
| Coontail | *Ceratophyllum demersum* | 32 |
| American eelgrass | *Vallisneria americana* | 33 |
| Great duckweed | *Spirodela polyrhiza* | 12 |
| Horned pondweed | *Zannichellia palustris* | 19 |
| Primrose-willow | *Ludwigia spp.* | 3 |
| Sevenangle pipewort | *Eriocaulon aquaticum* | 8 |
| Waterwort | *Elatine spp.* | 2 |
| Western waterweed | *Elodea nuttallii* | 15 |
| White water lily | *Nymphaea odorata* | 7 |

Source: Bugbee & Stebbins, 2020.

## 3.5 Fish and Wildlife

The Connecticut River is home to rich communities of both migratory and resident fish populations that use its waters for foraging, migration, and spawning. Resident fish species include longnose dace (*Rhinichthys cataractae*), fallfish (*Semotilus corporalis*), white sucker (*Catostomus commersonii*), brook trout (*Salvelinus fontinalis*), slimy sculpin (*Cottus cognatus*), tessellated darter (*Etheostoma olmstedi*), yellow perch (*Perca flavescens*), northern pike (*Esox lucius*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), channel catfish (*Ictalurus punctatus*), and white catfish (*Ameiurus catus*) among many others (Ramsar, 1994; Kennedy *et al.*, 2018). There are 13 species of migratory fish which utilize the Connecticut River system for spawning, foraging, and juvenile development and rearing (USACE, 2024; FWS, n.d.).

In addition to fish species, various reptile and amphibian species inhabit the Connecticut River watershed that may occur within aquatic or wetland habitat directly within or adjacent to the proposed treatment sites (Table 5).

**Table 5. Common reptile and amphibian species in the Connecticut River**

| Common Name | Scientific Name |
|---|---|
| Snapping turtle | *Chelydra s. serpentine* |
| Eastern painted turtle | *Chrysemys picta* |
| Spotted turtle | *Clemmys guttata* |
| Wood turtle | *Glyptemys insculpta* |
| Mid-Atlantic coast leopard frog | *Lithobates kauffeldi* |
| American bullfrog | *Lithobathes catesbeianus* |
| Green frog | *Lithobathes clamitans* |
| Pickerel frog | *Lithobathes palustris* |
| Northern diamondback terrapin | *Malaclemys t. terrapin* |
| Northern watersnake | *Nerodia sipedon* |
| Common musk turtle | *Sternotherus odoratus* |
| Dekay's brownsnake | *Storeria dekayi* |
| Common ribbonsnake | *Thamnophis sauritus* |

Source: CT DEEP, 2023

## 3.6 Essential Fish Habitat

Essential Fish Habitat (EFH) is broadly defined as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity." The NOAA Fisheries EFH Mapper was reviewed to identify EFH-managed species that may utilize aquatic habitat within the proposed treatment sites (NMFS, 2025). Table 6 provides a summary of EFH-managed species for the proposed treatment sites. Various life stages may occur within a proposed treatment site. Table 6 provides a summary of life stages for EFH-managed species, and Appendix D includes site-specific life stages for the project.

Additionally, the proposed treatment sites were identified as falling within the summer flounder (*Paralichthys dentatus)* Submerged Aquatic Vegetation (SAV) Habitat Area of Particular Concern (HAPC). The summer flounder HAPC recognizes the importance of inshore sandy, shallow coastal, and estuarine water habitat areas (MAFMC, 2020). The proposed treatment sites include both native and exotic (non-native) species, as discussed in Section 3.4, that is suitable for summer flounder habitat. The summer flounder HAPC is designated 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 is HAPC. If native species of SAV are eliminated then exotic species should be protected because of functional value, however, all efforts should be made to restore native species (MAFMC, 1998).

No EFH or summer flounder HAPC were present at Lake Pocotopaug and Pameacha Pond. Lake Pocotopaug is not mapped for either. While Pameacha Pond is located within EFH and HAPC designated areas, no suitable habitat is anticipated as fish passage between the pond and the Connecticut River is restricted by the Pameacha Pond Dam.

**Table 6**. **EFH-managed fish species designated for proposed treatment sites**

| **Common Name** | **Scientific Name** | **Life Stages** | | | |
|---|---|---|---|---|---|
| | | Eggs | Larvae | Juveniles | Adults |
| Black sea bass | *Centropristis striata* | | | X | |
| Atlantic herring | *Clupea harengus* | | | X | X |
| Longfin inshore squid | *Doryteuthis pealeii* | X | | X | X |
| Little skate | *Leucoraja erinacea* | | | X | X |
| Winter skate | *Leucoraja ocellata* | | | X | X |
| Smoothhound shark complex[1] | *Mustelus spp.* | X | X | X | X |
| Summer flounder | *Paralichthys dentatus)* | | | X | X |
| Atlantic butterfish | *Peprilus triacanthus* | X | X | X | X |
| Pollock | *Pollachius virens* | | | X | X |
| Bluefish | *Pomatomus saltatrix* | | | X | X |
| Windowpane flounder | *Psuedopleuronectes americanus* | X | X | X | X |
| Winter flounder | *Psuedopleuronectes americanus* | X | X | X | X |
| Atlantic salmon | *Salmo salar* | X | X | X | X |
| Atlantic mackerel | *Scomber scombrus* | X | X | X | X |
| Scup | *Stenotomus chrysops* | X | X | X | X |
| Red hake | *Urophycis chuss* | X | X | X | X |

Source: NMFS, 2025

[1] This complex was only identified at Hamburg Cove. The Smoothhound shark complex includes the smooth dogfish (*Mustelus canis)*, florida smoothhound (*Mustelus norrisi)*, and the gulf smoothhound (*Mustelus sinusmexicanus)*.

## 3.7 Threatened and Endangered Species

In compliance with Section 7 of the Endangered Species Act (ESA) of 1973, as amended, multiple resources were used to assess the presence of federally listed threatened or endangered species within the action area. The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR §402.02). The action area for the project includes the proposed treatment sites and their access routes along the Connecticut River. The U.S. Fish and Wildlife Service's (FWS) Information for Planning and Consultation (IPaC) system and the National Oceanic and Atmospheric Administration (NOAA) Greater Atlantic Region's ESA Section 7 Mapper were utilized to gather relevant data. These tools provided detailed information on species that may be present in the area, ensuring that potential impacts on protected species were thoroughly considered (FWS, 2025a; NOAA, 2025).

Northern long-eared bat (NLEB) and Tricolored bat (TCB)

The NLEB is a federally endangered bat species (*Myotis septentrionalis*) with a range that includes 37 states. White-nose syndrome, a fungal disease known to affect bats, is currently the predominant threat to this bat, especially throughout the Northeast where the species has faced significant decline. Winter hibernation occurs in hibernacula in caves or mines. Forested areas provide spring, summer, and fall habitat. During these seasons, NLEBs roost in cavities or crevices of both live trees and snags, or dead trees (FWS, 2025b).

The TCB (*Perimyotis subflavus)* is a proposed endangered species. In September 2022, FWS proposed the listing of the species under the ESA. The species' range includes 39 states. Similar to the NLEB, white-nose syndrome is a predominant threat to this species. During spring, summer, and fall, TCB roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees, as well as in Spanish moss (*Tillandsia usneoides*) and *Usnea trichodea* lichen. The species has also been observed roosting among pine needles, eastern red cedar (*Juniperus virginiana*), and in artificial roosts (*e.g*., barns, bridges, concrete bunkers, etc.), and are rarely found roosting in caves. In winter, the TCB may hibernate in caves and mines (FWS, 2025c).

NLEB and TCB are not likely to occur within the action area, as the proposed action will be within the aquatic or intertidal habitats. No known maternity roost trees or hibernacula are known within the action area, but suitable summer habitat may occur within 1000 feet of the action area (FWS, 2025a).

Atlantic Sturgeon

Atlantic sturgeon (*Acipenser oxyrinchus*) of all age classes and life stages (adults, subadults, juveniles, young of year (YOY), post-yolk sac larvae, and eggs) from any of the five Distinct Population Segments (DPS) may be present in the project area. The Gulf of Maine DPS is listed as threatened with the other four DPSs listed as

endangered. The species is also listed as a state endangered species (CT DEEP, 2015). Available information indicates that the majority of the species in the action area will be from the New York Bight DPS (Savoy et al., 2017).

Adult, subadult, juvenile, and YOY Atlantic sturgeon may occur in the full reach of the river, from the mouth to the Holyoke Dam (Kynard et al. 2012). Based on the nearby Hudson River, it is expected that adult and subadult Atlantic sturgeon will be migrating and foraging in the Connecticut River (which contains the action area) between mid-April through November (Pers. Comm. Dewayne Fox, DSU and Kathy Hattala, NYDEC, 2014; Dovel & Berggren, 1983). Early life stages and YOY remain in the freshwater reaches of their natal river until reaching the subadult stage when individuals have a higher tolerance for salinities up to 30 ppt. Juvenile and YOY Atlantic sturgeon are present in the river year-round and may utilize the full extent of the downstream portion of the river from the mouth to the Holyoke Dam to migrate and forage. After their first year, juveniles become increasingly tolerant to saline water and may use the entirety of the species' range in the Connecticut River to forage (ASSRT, 2007).

Spawning adults, eggs and yolk-sac larvae may occur in proposed treatment sites along the mainstem of the river (Portland Boat Works and Parker's Point) if suitable habitat is available. Fully mobile post yolk-sac larvae, YOY, juvenile, subadult, and adult Atlantic sturgeon may potentially occur in sites that are adjacent to the Connecticut River if there is suitable habitat (*e.g.*, hard bottom substrate, freshwater environment) (Anderson, 2024).

Shortnose Sturgeon

Shortnose sturgeon (*Acipenser brevirostrum*) are federally endangered, and also listed as state endangered (CT DEEP, 2015). The species is considered amphidromous, spawning in freshwater and making short feeding or migratory trips to salt water. They live in rivers and coastal waters from Canada to Florida and spend most of their lives in estuaries with relatively little time in the ocean. When they are present in marine waters, they generally stay close to shore during the winter months. As with Atlantic sturgeon, spawning and early life stages of shortnose sturgeon only occur in freshwater habitats. As benthic feeders, they use areas with aquatic vegetation to feed, consuming a variety of foods including small mollusks, insect larvae, and crustaceans (USACE, 2024; Brundage & Meadows, 1982). Therefore, all life stages (adults, juveniles, YOY, and post yolk-sac larvae) could occur in the action area.

Due to its amphidromous behavior, all life stages are likely to be present in Connecticut River throughout the year between the Holyoke Dam and the mouth of the river. Post yolk-sac larvae may be migrating and foraging in the river from April 15 to July 31 and is based on the spawning time in the river plus an additional 60 days to account for the larvae stage. YOY, juvenile, and adult Shortnose sturgeon may be present migrating and foraging year-round in the Connecticut River. YOY would be present from the Holyoke Dam to the downstream limit of the saltwater line (downstream saltwater limit under average flow conditions is the mouth of Hamburg Cove). After their first year,

juveniles become increasingly tolerant to saline water and may use the entirety of the species' range in the Connecticut River to forage. They are present in the river year-round and like adults may utilize the full extent of the downstream portion of the river from the mouth to the Holyoke Dam. The documented foraging areas are located in the Agawam Concentration Area and the Connecticut Concentration Area. While present in the Connecticut River, adults and juveniles may overwinter from November 15 to April 15 and utilize the full extent of the downstream portion of the river from the mouth to the Holyoke Dam. The documented downstream overwintering areas are located in the Connecticut Concentration Area, Agawam Concentration Area, Holyoke Dam Area, Hartford, and Portland (USACE, 2024). These locations are adjacent or within the proposed treatment areas.

Migratory Bird Species

IPaC also identified bird species that are federally protected, under the Migratory Bird Treaty Act or the Bald and Golden Eagle Act. Some species may be present within the proposed treatment areas (Table 7). Bird species considered include nongame birds, game birds without hunting season, subsistence-hunted nongame birds in Alaska, and ESA candidate, proposed, and recently delisted species. The overall goal of the Migratory Bird Treaty Act is to accurately identify the migratory and non-migratory bird species (beyond those already designated as federally threated or endangered that represent the FWS’s highest conservation priorities (FWS, 2025a).

**Table 7. Migratory birds that may utilize project area.**

| Common Name | Scientific Name | Common Name | Scientific Name |
|---|---|---|---|
| Bald eagle | *Haliaeetus leucocephalus* | Least tern | *Sternula antillarum* |
| Black-billed cuckoo | *Coccyzus erythropthalmus* | Lesser yellowlegs | *Tringa flavipes* |
| Blue-winged warbler | *Vermivora pinus* | Pectoral sandpiper | *Calidris melanotos* |
| Bobolink | *Dolichonyx oryzivorus* | Prairie warbler | *Dendroica discolor* |
| Canada warbler | *Cardellina canadensis* | Red-headed woodpecker | *Melanerpes erythrocephalus* |
| Cerulean warbler | *Dendroica cerulea* | Rusty blackbird | *Euphagus carolinus* |
| Chimney swift | *Chaetura pelagica* | Scarlet tanager | *Piranga olivacea* |
| | | Semipalmated sandpiper | *Calidris pusilla* |
| Eastern whip-poor-will | *Antrostomus vociferus* | Short-billed dowitcher | *Limnodromus griseus* |
| Golden eagle | *Aquila chrysaetos* | Willet | *Tringa semipalmata* |
| Grasshopper sparrow | *Ammodramus savannarum perpallidus* | Wood thrush | *Hylocichla mustelina* |
| Kentucky warbler | *Oporornis formosus* | | |

Source: FWS, 2025

## 3.8 State-listed Species

The CT DEEP Natural Diversity Data Base (NDDB) protects at-risk species listed under the State Endangered Species Act by conducting project review for state-listed species.

Potential state-listed species were identified for the proposed treatment sites in coordination with CT DEEP. Table 8 provides of a summary of state-listed species identified during NDDB review that may occur within the proposed treatment areas based on historical records, available habitat, and presence of critical habitat.

**Table 8. Potential state-listed species within the proposed treatment sites**

| Taxa | Common Name | Scientific Name | Status |
|---|---|---|---|
| Amphibian | Mudpuppy | *Necturus maculosus* | Special Concern |
| | Northern leopard frog | *Rana pipiens* | Special Concern |
| Reptile | Spotted turtle | *Clemmys guttata* | Special Concern |
| | Wood turtle | *Glyptemys insculpta* | Special Concern |
| Bird | Whip-poor-will | *Caprimulgus vociferus* | Special Concern |
| | Peregrine falcon | *Falco peregrinus* | Threatened |
| | Bald eagle | *Haliaeetus leucocephalus* | Threatened |
| | Least bittern | *Ixobrychus exilis* | Threatened |
| | Pied-billed grebe | *Podilymbus podiceps* | Endangered |
| | Cerulean warbler | *Setophaga cerulea* | Special Concern |
| Fish | Shortnose sturgeon | *Acipenser brevirostrum* | State Endangered |
| | Atlantic sturgeon | *Acipenser oxyrinchus oxyrinchus* | State Endangered |
| | Blueback herring | *Alosa aestivalis* | Special Concern |
| | Bridle shiner | *Notropis bifernatus* | Special Concern |
| Invertebrate | Brook floater | *Alasmidonta varicosa* | Endangered |
| | Tiger spiketail | *Cordulegaster erronea* | Threatened |
| | Little bluet | *Enallagma minusculum* | Special Concern |
| | Midland clubtail | *Gomphus fraternus* | Threatened |
| | Cobra clubtail | *Gomphus vastus* | Special Concern |
| | Tidewater mucket | *Leptodea ochracea* | Special Concern |
| | Eastern pondmussel | *Ligumia nasuta* | Special Concern |
| | Bronze copper | *Lycaena hyllus* | Special Concern |
| | Eastern pearlshell | *Margaritifera margaritifera* | Special Concern |
| | Slender walker | *Pomatiopsis lapidaria* | Special Concern |
| | Woodland pondsnail | *Stagnicola catascopium* | Special Concern |
| | Riverine clubtail | *Stylurus amnicola* | Threatened |
| Mammal | Red bat | *Lasiurus borealis* | Special Concern |
| Plant | Beck's water-marigold | *Bidens beckii* | Special Concern |
| | Eaton's beggarticks | *Bidens eatonii* | Threatened |
| | Pygmyweed | *Crassula aquatica* | Endangered |
| | Tufted hairgrass | *Deschampsia cespitosa* | Special Concern |
| | Parker's pipewort | *Eriocaulon parkeri* | Endangered |
| | Mudwort | *Limosella australis* | Special Concern |

| Taxa | Common Name | Scientific Name | Status |
|---|---|---|---|
| Plant | Large yellow pond lily | *Nuphar advena* | Special Concern Historic |
| | Small yellow pond lily | *Nuphar microphylla* | Special Concern |
| | Golden club | *Orontium aquaticum* | Special Concern |
| | American reed | *Phragmites americanus* | Special Concern |
| | Pale green orchid | *Platanthera flava var. herbiola* | Special Concern |
| | Awl-leaved arrowhead | *Sagittaria subulata* | Special Concern |
| | Torrey bulrush | *Schoenoplectus torreyi* | Threatened |
| | Wild senna | *Senna hebecarpa* | Threatened |

## 3.9 Historic and Archaeological Resources

The National Historic Preservation Act of 1966 (NHPA), as amended by Public Law 96-515 (94 Stat. 2987), established a national policy for historic preservation, authorized the Secretary of the Interior to expand and maintain a National Register of Historic Places designation, and created the Advisory Council on Historic Preservation. Section 106 of NHPA specifies that federal agencies, before approval of any expenditure or issuing any license, must consider the effect of the action on any property included in or eligible for the National Register of Historic Places.

This proposed action expands the 2024 demonstration project to twelve additional sites, including an increased treatment area at the Portland Boat Works location. The Connecticut Cultural Resources Information System (CRIS) was used to identify historic properties and Native American pre-contact archaeological sites within or in the vicinity of these sites for potential NHPA impacts. The treatment sites are grouped by towns that abut each other. Table 9 lists the pre-contact archaeological sites and historic structure or districts within or proximal to the proposed treatment sites (Table 9).

Coordination with the Tribal governments is ongoing. Letters will be sent to the following Tribal governments to determine if there are areas of concern or sacred and/or spiritual sites within the additional twelve treatment locations in accordance with Section 106 of the NHPA and implementing regulations 36 CFR 800:

- Mohegan
- Mashantucket Pequot
- Narragansett Indian Tribe
- Wampanoag Tribe of Gay Head (Aquinnah)

**Table 9. Pre-Contact Archaeological Sites and Historic Structures/Districts Within or Near the Proposed Treatment Sites**

| Treatment Site(s) | General Location | Pre-contact Archaeological Sites | Historic Structures/Districts |
|---|---|---|---|
| Chester Creek; Deep River; Parker's Point; and Post & Pratts Coves | Chester and Deep River (western bank of CT River) | 061-001 – Clark Creek;<br>061-011 – Old County Rockshelter;<br>026-005 – Banning Shore;<br>026-006 – Cahill Site;<br>036-001 – Pratt Cove Sandpit;<br>036-003 – River Street. | Knollenberg House and Chester-Hadlyme Ferry in Chester;<br>Deep River Depot;<br>Deep River Landing;<br>Deep River Freight Station;<br>Deep River Freight Station Railroad Switches;<br>Doris Sailing Yacht;<br>James Dennison House;<br>1797 Cape Cod Style House at 83 River Road; and the<br>Lurana Arnold Homestead in Deep River |
| Hamburg Cove | Lyme | 075-007 – Hamburg Cove Site;<br>075-083 – Joshuatown Prehistoric Site;<br>075-100 – Cooper Bench Prehistoric Site;<br>075-101 – Cooper Hilltop Prehistoric Site;<br>075-056 – Coopers Boat House. | Ely House (circa 1790) at Joshuatown Road at the mouth of Hamburg Cove. |
| Selden Creek and Joshua Creek | Lyme, bordering the Selden Neck State Park | 075-001 – Selden Island;<br>075-002 – Selden Island South;<br>075-005 – Cold Spring Rockshelter;<br>075-006 – Coudert Ledge;<br>075-022 – Cold Spring;<br>075-023 – Unnamed (Selden Neck State Park)<br>075-024 – Unnamed Rockshelter (State Park); | Brockway Ferry Road along Joshua Creek<br>Captain William Brockway House-Barn (circa 1900);<br>Captain William Brockway House (circa 1740);<br>Brockway Cemetery;<br>Levi Luther House (1730); |

| | | | |
|---|---|---|---|
| | | 075-025 – Unnamed Selden Neck State Park;<br>075-027 – Selden Neck Southwest Shore;<br>075-043 – Selden Neck Northwest Shore;<br>075-049 – Brockway Landing<br>075-065 – Coudert Ledge #2 Site;<br>075-066 - Selden Neck Quarry/Camp;<br>075-067 – Island Quarry;<br>075-095 Joshuatown Road Prehistoric Site (L1-36). | William Brockway House (circa 1779);<br>53 Brockway Ferry Road, Building 1 (circa 1701);<br>53 Brockway Ferry Road, Building 2 (circa 1767);<br>55 Brockway Ferry Road (1750);<br>59 Brockway Ferry Road (1909);<br>68 Brockway Ferry Road (1854);<br>70 Brockway Ferry Road (1838); and the 33 Joshua Lane (circa 1750). |
| Mattabesset River | Middletown, south of State Highway 9 | 083-006 – Brick Yard Quarry. | Timothy Gilbert House (circa 1850). |
| Portland Boat Works (previously evaluated in USACE 2024 EA) | near Pecausett Pond outlet;<br>Grove & Riverview Streets | 113-027 – Cornwall (Post-Contact). | Joseph Kellop House (circa 1780);<br>Henry McCleve House (circa 1875); and the<br>John McCleve House (circa 1795). |
| Salmon River | East Haddam (east & west banks of CT River) | 061-114 – Haddam Sand Pits;<br>061-115 – Peninsula 1 Site;<br>061-116 – Peninsula 2 Site;<br>061-117 – Midway Marina;<br>061-034 – Duffy Site;<br>061-035 – Unnamed;<br>061-040 – Lang and Butler Site;<br>061-055 – Brainard Homestead State Park. | Camp Bethel National Register District; and<br>East Haddam Historic District |
| Lake Pocotopaug | East Hampton | 042-027 – P. Derby Site;<br>042-028 – School Site. | Several historic homes and structures surround the lake on the north, south, and east sides. |

| | | | |
|---|---|---|---|
| Pameacha Pond | North end of pond | | Pameacha Pond Dam; William Wilcox Manufacturing Company (Hartford Club Beverage Company, circa 1850). |

# 4.0 Environmental Consequences

This section describes the environmental effects of the proposed action and alternatives. Effects or impacts are changes to the environment from the proposed action or alternatives. Impacts can be beneficial or adverse, direct or indirect, cumulative, and either permanent or temporary.

## 4.1 Water Quality

No Action Alternative

Under the no action alternative, no control of hydrilla would occur within the proposed sites and no progress in advancing knowledge of hydrilla management would occur. Without management of hydrilla, water quality will decline in the areas that it is present due altering temperature, pH, and DO levels in the system. Fluctuations in these aquatic parameters can contribute to the release of nutrients, such as phosphorus, from the sediments. There would continue to be a seasonal decrease in DO when hydrilla senesces and decomposes causing harm and imbalances over the long-term. These factors contribute to eutrophication resulting in harmful algal blooms and fish kills (Hou *et al.*, 2013).

Proposed Action

Under the proposed action, for all twelve sites, short-term adverse direct impacts would occur, including the temporary increase in turbidity due to the reduction and removal of hydrilla as well as a short-term decrease in DO due to the death and decomposition of hydrilla from herbicide treatment. Dense infestations of hydrilla decrease the baseline turbidity by lowering water flow and increasing settling of suspended sediment compared to a native SAV community (Shrivastava & Srivastava, 2021). Hydrilla dieback from the proposed action will result in a localized increase in baseline turbidity but these conditions are temporary while native vegetation community and density is restored.

The short-term decrease in DO will be temporary and the effects would be localized to treatment areas for a short period of time. For project areas connected to the main river, water exchange is highly dynamic due to river flow and tidal influence. Consequently, any waters with low DO will be replaced quickly during tidal exchanges and due to flow-through within the river channel.

The proposed action includes Lake Pocotopaug and Pameacha Pond, which are low flushing environments (water exchange or movement is slow or limited); therefore, a reduced replenishment of DO is anticipated. Temporary, adverse impacts from low DO may occur if substantial dieback of vegetation occurs. The entirety of Lake Pocotopaug will not be treated. Treatment will be restricted to areas adjacent to the shoreline where hydrilla is known to occur. Therefore, no significant, adverse impacts related to DO

concentrations are anticipated in Lake Pocotopaug. Herbicide application at Pameacha Pond includes the treatment of the entire waterbody (about 19 acres) and may result in temporary, adverse impacts to DO. In order to avoid potential impacts, the application will occur in two phases: two half-treatments with at least two weeks between applications.

Long-term beneficial impacts are anticipated to water quality, for all twelve sites, with the treatment of hydrilla including the return of naturally occurring water temperatures, pH, and DO levels.

## 4.2 Wetlands

No Action Alternative

Under the no action alternative, for all twelve sites, hydrilla will spread to inhabit the fringes of the river, coves, ponds, lakes, and tributaries including the permanently flooded portions of wetlands that line these waterbodies. Without management, hydrilla will continue to spread within tidal and shallow wetlands, outcompeting native vegetation and altering the water conditions leading to less diverse habitats, reducing important ecosystem services such as fish and wildlife habitat, carbon sequestration, and others (USACE, 2024).

Proposed Action

Under the proposed action, for all twelve sites, the treatment of hydrilla in the Connecticut River will provide beneficial, long-term indirect impacts to wetlands. The control of hydrilla would prevent encroachment into wetlands and altered wetland integrity. The proposed herbicide treatment, conducted in accordance with product label and state use restrictions, are unlikely to cause a significant effect on wetlands adjacent to the sites. There is minimal risk of treatment affecting susceptible plants that are on the fringe of the treatment areas (i.e., emergent vegetation), as application will utilize subsurface injection methods. If any impacts occur to non-target emergent vegetation these will be temporary as plants would likely recover in following growing seasons. Vegetation within the treatment areas will be monitored after treatment to determine impacts to non-target submerged and emergent vegetation.

## 4.3 Aquatic Vegetation

No Action Alternative

Under the no action alternative, for all twelve sites, no control of hydrilla would occur and hydrilla would continue to spread throughout the Connecticut River system, outcompeting native aquatic vegetation.

Proposed Action

Under the proposed action, for all twelve sites, the treatment of hydrilla may have direct short-term impacts to aquatic vegetation at a treatment site. Native aquatic plants range in sensitivities to the proposed herbicides. Temporary impacts may occur to these species from herbicide application, however, with careful selection and application of herbicides based on the presence of native species, these impacts are minimized. The following factors will be used to minimize non-target impacts to native species: 1) the water exchange rates and anticipated herbicide concentration-exposure times and 2) the selectivity of the herbicide and application concentration. Monitoring will occur after treatments to understand the efficacy of the herbicide treatments to control hydrilla and understand the plant communities that return.

The proposed action, for all twelve sites, may result in long-term, beneficial direct impacts to vegetation. Hydrilla may reestablish if no future treatments occur, and invasive species management is not continued. If the proposed herbicides are used to manage hydrilla in the future, hydrilla populations will decrease and it is anticipated that native aquatic vegetation will reestablish the area. These areas will return to a more balanced, diverse vegetation community.

## 4.4 Fish and Wildlife

No Action Alternative

Under the no action alternative, for all twelve sites, hydrilla would continue to grow uncontrolled and spread, displacing native aquatic vegetation. uncontrolled and spread, displacing native aquatic vegetation. Invasive aquatic plants can be beneficial to fish and other wildlife by providing surfaces for algae and small animals to live that serve as food and providing structure for cover and shelter. However, aggressive invasive aquatic plants like hydrilla will often exceed densities of native aquatic vegetation and form monocultures (single species dominance). Excessively dense vegetation and monocultures reduce open water habitat, diversity of micro-habitats and result in the loss of high-quality food source afforded by native plant plants. This can concentrate fish and wildlife into small areas of open water, which exposes them to predators and limits their use of available habitat. Hydrilla can grow into the intertidal zone, emerging from the water during low tide. This can diminish habitat quality for wildlife that utilize these habitats. Indirect impacts to fish and wildlife from increased hydrilla coverage and density are associated with changing water quality as mentioned above (temperature, DO, pH etc.)

Proposed Action

Under the proposed action, for all twelve sites, the treatment of hydrilla would provide beneficial, long-term indirect impacts to fish and wildlife. Herbicides application would reduce hydrilla presence and abundance and improve fish and wildlife habitat. No significant, long-term impacts are anticipated to fish and wildlife resources, as the proposed herbicides have passed comprehensive EPA risk assessments for registration of aquatic use (EPA, 2017; 2014; 2011; 2010; 2008; 2005; 1986; 1995). There may be temporary, adverse indirect impacts to aquatic organisms due to habitat loss (reduction

in plant coverage) following herbicide treatment. These impacts are expected to be minimal since aquatic organisms can relocate to other vegetated areas within the river or waterbody. In addition, native plant species reestablish in the treatment area during the next growing season. A minimal risk of exposure is anticipated for non-aquatic organisms, as application will utilize subsurface injection methods.

Consultation was completed for all proposed sites with CT DEEP's Fisheries Division. It was determined that the proposed action would not significantly impact any fisheries and/or habitat. To avoid impacts to diadromous fish and northern pike spawning, treatments will occur after July 4th to sites along or adjacent to the Connecticut River. For inland waterbodies, the treatment will be conducted in a manner to prevent low DO and subsequent fish kills. The application will occur in two phases if a whole lake/pond treatment is planned to avoid impacts from reduced DO concentrations. The phasing would include two half-treatments with at least two weeks between applications.

## 4.5 Essential Fish Habitat

No Action Alternative

Under the no action alternative, for all twelve sites, the expansion of hydrilla would continue and fish habitat conditions would degrade as hydrilla would displace native aquatic vegetation that provides shelter and forage for designated fish species and their prey. Although non-native species can provide habitat to fish and their prey species, aggressive invasives such as hydrilla, outcompete native plants, reducing species richness and reach nuisance densities impacting the overall quality of the habitat.

Proposed Action

Under the proposed action, the treatment of hydrilla would result in temporary, direct impacts to EFH from the control of hydrilla and potential impacts to non-target SAV. No impacts would occur at Lake Pocotopaug or Pameacha Pond, as no EFH-managed species occur within these treatment sites.

The EFH Assessment (Appendix D) of the treatment areas concluded that the proposed action would have no significant impacts to EFH. Short-term, direct impacts may result from the control of hydrilla and potential impacts to non-target SAV. Hydrilla and other SAV provide habitat to fish by providing structure and cover as well as serving as habitat to animals that provide forage for fish. To avoid impacts to diadromous fish and EFH habitat, the proposed treatments will occur after July 4 to sites along or adjacent to the Connecticut River. Long-term beneficial impacts are anticipated from hydrilla control. Although there may be impacts short term impacts to habitat availability to native fish following the hydrilla treatment, the goal is to reduce hydrilla presence, abundance and density to a level that allows native SAV to reestablish providing higher quality habitat.

## 4.6 Threatened and Endangered Species

No Action Alternative

Under the no action alternative, at all twelve sites, no control of hydrilla would occur. No impacts to NLEBs or TCBs will occur as a result of the no action alternative. No known maternity roost trees or hibernacula are within the project areas or within any of the counties within the Connecticut River watershed. Atlantic and shortnose sturgeon may be affected by localized habitat conversion with the continued spread of hydrilla in the Connecticut River, displacing native aquatic vegetation. Invasive aquatic plants can be beneficial to fish in the same way that natives are by providing surfaces for algae and small animals to live that serve as food and providing structure for cover and shelter. However, hydrilla grows at greater densities than native aquatic vegetation. Since sturgeon are bottom feeders (Bigelow & Schroeder, 1993), dense hydrilla stands may make it difficult for fish to access their prey on the river bottom.

Proposed Action

Under the proposed action, at all twelve sites, herbicide application would occur to control hydrilla. Application will utilize subsurface injection methods to reduce impacts to non-aquatic species. No impacts to NLEBs or TCBs will occur as a result of the proposed action. No known maternity roost trees or hibernacula are within the project areas or within any of the counties within the Connecticut River watershed. Suitable habitat may be present within 1000 feet of the proposed treatment sites. USACE determined the proposed action may affect, but is not likely to adversely affect NLEB and TCB. Letters of concurrence for these species were obtained on April 8, 2025.

Under the proposed action, herbicide application would occur to control hydrilla. USACE determined that the proposed action may affect, but is not likely to adversely affect Atlantic and shortnose sturgeons (USACE, 2024). A letter of concurrence was received on July 11, 2024 from NMFS. USACE determined that the proposed action would not result in additional effects. The effects of the proposed action are covered within the letter of concurrence and prior biological assessment, therefore no reinitiation of consultation is required. USACE and NMFS met on May 29, 2025 to discuss the potential need for reinitiation of consultation. NMFS did not object with this determination.

## 4.7 State-listed Species

No Action Alternative

Under the no action alternative, state-listed species are expected to be adversely impacted. Hydrilla may displace or outcompete native plant species due to its rapid colonization, growth rate and adaptability to various environments. While some species of fish, waterfowl, invertebrates and insects feed on hydrilla, rarely are these predators abundant enough to control hydrilla growth. The expansion of hydrilla will convert habitat that supports state-listed wildlife, limiting available shelter and forage resources.

Proposed Action

Under the proposed action, herbicide application may result in adverse impacts to state-listed species. Non-target impacts will vary based on species sensitivity to the proposed herbicides. No impacts are anticipated to state-listed vertebrate or invertebrate species based on ecotoxicology data for the proposed herbicides (BLM 2005; Hartless & Lin 2010; UPL, 2019; Levey, 2022; EPA, 2017b; SePRO, 2017a; 2017b). Non-target plant species, including state-listed species, may be impacted from herbicide application. Site-specific protection plans were developed to determine potential impacts to state-listed species that may occur within the proposed treatment areas (Appendix E). A CT DEEP Fisheries consultation was completed for state-listed fish species and other fisheries impacts. USACE is coordinating with CT NDDB in regards to non-target impacts for other state-listed species. Determination letters were received for the proposed action at Deep River, Portland Boat Works, and Pameacha Pond. NDDB determinations will be received for the proposed treatment sites prior to their treatment.

## 4.8 Historic and Archaeological Resources

No Action Alternative

Under the no action alternative, there would be no change in the current conditions within the Connecticut River and its harbors, coves, and tributaries. Control of the invasive aquatic plant, hydrilla, would not occur and the plant would continue to inhabit and spread through the Connecticut River system and surrounding areas. Historic properties along the river and within coves and other waterbodies could potentially be impacted by flooding and damage to banks and bank erosion if the hydrilla is allowed to continue to proliferate.

Proposed Action

Impacts to historic properties are not anticipated from hydrilla management. Implementation of this action will need to be evaluated as it pertains to site access and staging areas, if any, as historic properties are noted in the vicinity of all treatment locations. A copy of the draft EA will be provided to CT State Historic Preservation Officer (SHPO) and the tribes.

## 4.9 Cumulative Impacts

Cumulative effects are those resulting from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or other person undertakes such actions. These can result from actions with individually minor but collectively significant effects taking place over a period of time. Past and current activities within the Connecticut River and its coves and tributaries include previous aquatic invasive plant treatment, dredging, and recreational activities. Reasonably foreseeable activities include these actions. Pameacha Pond and Lake Pocotopaug include similar actions

such as aquatic invasive plant treatment and recreational activities. No adverse cumulative impacts are anticipated. Short-term impacts from the application, such as water quality and herbicide persistence, will be localized and herbicides will be degraded before the sites are considered for retreatment. There may be beneficial cumulative impacts to aquatic vegetation from the proposed action. Future treatment and management of hydrilla may result in increased hydrilla control, in which native aquatic vegetation may reestablish resulting in a more balanced, diverse vegetation community. The impacts of past actions are discussed in Section 3.0 of the SEA, which describes existing or baseline conditions.

## 5.0 Actions Taken to Minimize Impacts

1. Application of aquatic herbicides will not occur between March 1st to July 4th to avoid the spawning season for diadromous fish species, such as alewife and blueback herring, and for northern pike.
2. All herbicide applications will adhere to EPA and herbicide label requirements.
3. All applications will comply with applicable state permits including: the use of pesticides in state waters; and the general permit for point source discharges to waters of the state from the application of pesticides.
4. Post-treatment monitoring will occur for up to three years in order to assess the efficacy of the herbicide treatments and non-target impacts.
5. For Lake Pocotopaug and Pameacha Pond herbicide application will occur in phased treatments if temporary, adverse impacts to dissolved oxygen are expected. The phased application will occur in two treatments that are at least two weeks apart.

## 6.0 Coordination

The project has been coordinated with the following federal, state, and tribal entities. An initial interagency meeting was held on March 19, 2025, to introduce the proposed action to federal and state agencies and obtain their initial comments. A 30-day public notice will be published to allow for public comment, and the draft SEA will be released to federal, state, and tribal entities for a 30-day comment period. Received comments will be incorporated into the final SEA, and Appendix A will include coordination letters and received comments.

**Federal**
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
National Marine Fisheries Service
National Parks Service

**State**
Connecticut Department of Energy and Environmental Protection (DEEP),
Connecticut Pesticide Management Program
Connecticut State Historic Preservation Office
Connecticut Office of Aquatic Invasive Species

**Tribal Nations**
Mohegan
Mashantucket Pequot
Narragansett Indian Tribe
Wampanoag Tribe of Gay Head (Aquinnah)

## 7.0 Environmental Compliance

This section describes the Federal laws, regulations and programs that are relevant to the herbicide treatments of sites in the Connecticut River.

### 7.1 Federal Statutes

1. *Archaeological Resources Protection Act of 1979, as amended, 16 U.S.C. 470aa et seq.*

   Compliance: Not applicable to this project.

2. *Preservation of Historic and Archeological Data Act of 1974, as amended, 54 U.S.C. 312501 et seq.*

   Compliance: Coordination with CT SHPO will occur and a copy of the draft EA will be released to CT SHPO.

3. *American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996.*

   Compliance: This project will not impede access by Native Americans to sacred sites, possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

4. *Bald and Golden Eagle Protection Act, 16. U.S.C. 688 et seq.*

   Compliance: The project does not involve take, sale, purchase, or transport of any Bald or Golden Eagles.

5. *Clean Air Act, as amended, 42 U.S.C. 7401 et seq.*

   Compliance: Public notice of the availability of this report to the Environmental Protection Agency is required for compliance pursuant to Sections 176c and 309 of the Clean Air Act. Record of Non-Applicability of general conformity rule shows compliance with Section 176(c). A Public Notice was published and coordination with EPA will be completed.

6. *Clean Water Act of 1977 (Federal Water Pollution Control Act Amendments of 1972) 33 U.S.C. 1251 et seq.*

   Compliance: The project was coordinated with CT DEEP's Pesticide Management Program. The proposed action is covered by the National Pollutant Discharge Elimination System (NPDES) General Permit for Point Source Discharge to Waters of the State from the Application of Pesticides. The proposed herbicide application will meet all conditions of the permit.

7. *Coastal Barrier Resources Act, 16 U.S.C. 3501 et seq.*

   Compliance: Not Applicable.

8. *Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 et seq.*

   Compliance: In-progress. A CZM consistency determination was provided to Connecticut's Land and Water Resource for Chester Creek, Deep River, Hamburg Cove, Joshua Creek, Parkers Point, Post and Pratt Coves, and Selden Creek, pursuant to Section 307 of the Coastal Zone Management Act.

9. *Comprehensive Environmental Response, Compensation and Liability Act (CERLA), as amended, 42 U.S.C. 9601 et seq.*

   Compliance: Not applicable. The project does not involve the use or remediation of Superfund sites or hazardous waste.

10. *Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.*

    Compliance: Coordination was completed with the U.S. Fish and Wildlife Service (FWS) and not likely to adversely affect determination letters were received on April 8, 2025 for the NLEB and TCB. Coordination with the National Marine Fisheries Service (NMFS) was completed. USACE made a not likely to adversely affect determination for the Atlantic and shortnose sturgeons. A letter of concurrence was received on July 11, 2024. USACE and NMFS met on May 29, 2025 to discuss the potential need for reinitiated consultation. USACE determined there was no need to reinitiate, and NMFS did not object with the determination.

11. *Estuarine Areas Act, 16 U.S.C. 1221 et seq.*

    Compliance: Not applicable.

12. *Farmland Protection Act, 16 U.S.C. 4601-12 et seq.*

    Compliance: Not applicable

13. *Federal Water Project Recreation Act, 16 U.S.C. 4601-12 et seq.*

    Compliance: Not applicable

14. *Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq.*

    Compliance: Coordination with the FWS, NMFS, and state fish and wildlife agencies signifies compliance with the Fish and Wildlife Coordination Act. A copy of the draft SEA will be sent to the state and federal fish and wildlife agencies.

15. *Land and Water Conservation Fund Act of 1965, 54 U.S.C. 200301 et seq.*

    Public notice of the availability of this report to the NPS and the Office of Statewide Planning relative to the federal and state comprehensive outdoor recreation plans signifies compliance with this Act.

16. *Marine Protection, Research, and Sanctuaries Act of 1971, 33 U.S.C. 1401 et seq.*

    Compliance: Not applicable.

17. *Marine Mammal Protection Act of 1972, 16 U.S.C. 1361-1407.*

    Compliance: Not applicable.

18. *Migratory Bird Treaty Act, 16 U.S.C. 703-712 et seq.*

    Compliance: The proposed project will not include the take of any protected migratory bird species.

19. *National Historic Preservation Act of 1966, as amended, 54 U.S.C. 3001010 et seq.*

    Compliance: The proposed project will be coordinated with CT SHPO pursuant to Section 106 of the National Historic Preservation Act. A copy of the draft SEA will be provided to CT SHPO.

20. *Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3001-3013, 18 U.S.C. 1170*

    Compliance: Regulations implementing NAGPRA will be followed if discovery of human remains and/or funerary items occur during implementation of this project.

21. *National Environmental Policy Act of 1969, as amended, 42 U.S.C 4321 et seq.*

    Compliance: Preparation of this Supplemental Environmental Assessment signifies partial compliance with NEPA. Full compliance shall be noted at the time the Finding of No Significant Impact is signed.

22. *Watershed Protection and Flood Prevention Act as amended, 16 U.S.C 1001 et seq.*

    Compliance: Not applicable.

23. *. Wild and Scenic Rivers Act, as amended, 16 U.S.C 1271 et seq.*

    Compliance: In-progress. Hamburg Cove is a part of the Eightmile river, which is designated under the Wild and Scenic Rivers Act. Initial coordination occurred with NPS and a copy of the draft SEA will be released to the NPS. A public meeting will be held for Hamburg Cove, in coordination with the Eightmile River Wild & Scenic Watershed.

24. *Magnuson-Stevens Act, as amended, 16 U.S.C. 1801 et seq.*

    Compliance: Coordination with the National Marine Fisheries Service and preparation of an Essential Fish Habitat (EFH) Assessment signifies compliance with the EFH provisions of the Magnuson-Stevens Act. Coordination with NMFS is ongoing.

25. *Bald and Golden Eagle Protection Act, 16 U.S.C. 688 et seq.*

    Compliance: The project does not involve take, sale, purchase, or transport of any Bald or Golden Eagles.

26. *National Invasive Species Act (NISA), as amended, 16 U.S.C. 4701 et seq.*

    Compliance: This project focuses on the management of an invasive aquatic plant species. The project will not promote or cause the introduction or spread of invasive species into waters of the United States.

## 7.2 Executive Orders

1. *Executive Order 11593, Protection and Enhancement of the Cultural Environment, 13 May 1971.*

   Compliance: Coordination will occur with the CT SHPO. A copy of the draft SEA will be released to the CT SHPO.

2. *Executive Order 11988, Floodplain Management, 24 May 1977 amended by Executive Order 12148, 20 July 1979.*

   Compliance: Public notice of the availability of this report or public review fulfills the requirements of Executive Order 11988, Section 2(a)(2).

3. *Executive Order 11990, Protection of Wetlands, 24 May 1977.*

Compliance: This project does not include construction in wetlands and preserves and enhances the value of these natural systems by controlling invasive aquatic plants.

4. *Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, 4 January 1979*

   Compliance: Not Applicable.

5. *Executive 13007, Accommodation of Sacred Sites, 24 May 1996*

   Compliance: Access to and ceremonial use of Indian sacred sites by Indian religious practitioners will be allowed and accommodated. No adverse effects to the physical integrity of such sacred sites will occur.

6. *Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, 21 April 1997.*

   Compliance: The project will not create a disproportionate environmental health or safety risk for children.

7. *Executive Order 13061, and Amendments – Federal Support of Community Efforts Along American Heritage Rivers*

   Compliance: The Connecticut River is an American Heritage River. The proposed action evaluated in this SEA will not impact the character or resources of the river.

8. *Executive Order 13112, Federal Agencies may not authorize, fund, or carry out actions likely to cause or promote the introduction or spread of invasive species*

   Compliance: The project will not promote or cause the introduction or spread of invasive species.

9. *Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000.*

   Compliance: Consultation with Indian Tribal Governments, where applicable, and consistent with executive memoranda, DoD Indian policy, and USACE Tribal Policy Principals signifies compliance. The draft SEA will be released to the tribes.

### 7.3 Executive Memorandum

1. *Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA, 11 August 1980.*

Compliance: Not applicable; the project does not involve or impact agricultural lands.

2. *White House Memorandum, Government-to-Government Relations with Indian Tribes, 29 April 1994.*

   Compliance: Consultation with Federally Recognized Indian Tribes signifies compliance.

## 8.0 References


Atlantic Sturgeon Status Review Team (ASSRT). 2007. Status review of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Report to National Marine Fisheries Service, Northeast Regional Office on February 23, 2007.

Anderson, J. 2024. Re: USACE Connecticut River Hydrilla Research and Demonstration Project. National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) Greater Atlantic Regional Fisheries Office. July 11, 2024.

Bigelow, H.B. & Schroeder, W.C. 1953. Fishes of the Gulf of Maine. Fish. Bull. 53: 577.

Brundage, H.M., & Meadows, R.E. 1982. Occurrence of the endangered shortnose sturgeon, *Acipenser brevirostrum*, in the Delaware River estuary. Estuaries 5, 203–208. https://doi.org/10.2307/1351836.

Bugbee, G.J. & S.E. Stebbins. 2020. Connecticut River Gateway Conservation Zone: Invasive Aquatic Vegetation Survey 2019. The Connecticut Agricultural Experiment Station, 123 Huntington Street, New Haven CT 06511. Accessed on April 28, 2025 from https://www.northeastans.org/wp-content/uploads/2021/02/CTRiverReport_2019_7_7_20.pdf

Bureau of Land Management (BLM). 2005. Diquat Ecological Risk Assessment, Final Report. All U.S. Government Documents (Utah Regional Depository).

Connecticut Agricultural Experiment Station (CAES). 2025. Invasive Aquatic Plants in the Connecticut River. Accessed on April 10, 2025 from https://caes.maps.arcgis.com/apps/webappviewer/index.html?id=007f6ee203b74bcbb1d6e68a953d8baf

Connecticut Department of Energy and Environmental Protection (CT DEEP). 2025. Connecticut Water Quality Classifications. Accessed on April 10, 2025 from https://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=a23ad81358e749aab86342aed4c2dfe7

Connecticut Department of Energy and Environmental Protection (CT DEEP). 2023. Wildlife Fact Sheets. Accessed on April 28, 2025 from https://portal.ct.gov/deep/wildlife/learn-about-wildlife/wildlife-fact-sheets#amphibians

Connecticut Department of Energy and Environmental Protection (CT DEEP). 2015. Endangered, Threatened, and Special Concern Fish. Accessed on April 28, 2025 from https://portal.ct.gov/deep/endangered-species/endangered-species-listings/endangered-threatened--special-concern-fish.

Connecticut Department of Energy and Environmental Protection (CT DEEP). 2011. Water Quality Standards. Accessed 12 May 2023 from https://portal.ct.gov/-/media/DEEP/water/water_quality_standards/WQS-Final-Adopted-February-25-2011.pdf.

Doherty, R.S., Stebbins, S.E., & Bugbee, G.J. 2023. Hamburg Cove 2022 Invasive Aquatic Survey. The Connecticut Agricultural Experiment Station (CAES). Accessed on April 28, 2025 from https://portal.ct.gov/-/media/caes/oais/survey-results/c/connecticut-river/caes-hamburg-cove-report-final.pdf

Dovel, W. L. & Berggren, T.J. 1983. Atlantic sturgeon of the Hudson estuary, New York. New York Fish and Game Journal 30(2): 140-172.

Eightmile River Wild & Scenic Study Committee. 2005. Eightmile River Watershed Management Plan.
Retrieved from https://www.eightmileriver.org/management-plan/.

Hartless, C., & Lin, J. 2010. “Risks of Diquat Dibromide Use to the Federally Threatened Delta Smelt.”

Hou, D., J. He, C. Lü, Y. Sun, F. Zhang, & K. Otgonbayar. 2013. Effects of environmental factors on nutrients release at sediment-water interface and assessment of trophic status for a typical shallow lake, northwest China. The Scientific World Journal, 2013, 716342. https://doi.org/10.1155/2013/716342.

Kennedy, K., Lutz, K., C. Hatfield, L. Martin, T. Barker, R. Palmer, L. Detmiler, J. Anleitner, J. Hickey. 2018. The Connecticut River Flow Restoration Study: A watershed-scale assessment of the potential for flow restoration through dam re-operation. The Nature Conservancy, U.S. Army Corps of Engineers, and University of Massachusetts Amherst. Northampton, MA. Available: http://nature.org/ctriverwatershed.

Kynard, B, M. Kieffer, E. Parker, & D. Pugh. 2012. “Lifetime movements by Connecticut River shortnose sturgeon.” In B. Kynard, P. Bronzi, H. Rosenthal (Eds.), *Life history and behaviour of Connecticut River shortnose sturgeon and other sturgeons* (pp. 227-242). World Sturgeon Conservation Society.

Levey, R. 2022. Aquatic Nuisance Control Permit, ProcellaCOR EC Aquatic Toxicity Review.
https://dec.vermont.gov/sites/dec/files/wsm/lakes/ANC/docs/ProcellaCor%20Aquatic%20Toxicity%20Review%20_03162022.pdf.

Metzler, K.J & R.W. Tiner. 1992. Wetlands of Connecticut – State Geological and Natural History Survey of Connecticut, Department of Environmental Protection & U.S. Fish and Wildlife Service National Wetlands Inventory. Accessed 11 May 2023 from https://portal.ct.gov/-/media/DEEP/water/wetlands/WetlandsofCTpdf.pdf.

Mercurio, A.D. 2014. The Relationship between Invasive Aquatic Plants, Cyanotoxins, and Freshwater Turtles in the Southeastern United States. University of Georgia master's Thesis. Accessed on April 28, 2025 from https://getd.libs.uga.edu/pdfs/mercurio_albert_d_201408_ms.pdf.

Mid-Atlantic Fishery Management Council (MAFMC). 2020. Summer Flounder Commercial Issues and Goals and Objectives amendment: Final Environmental Impact Statement. Accessed 8 August 2023 from https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/601c2a8640e97b119cecdbcd/1612458639776/SF+Commercial+Issues+Amendment+FEIS_FINAL.pdf.

National Marine Fisheries Service (NMFS). 2025. *Essential Fish Habitat Mapper*. Accessed on April 10, 2025 from https://www.habitat.noaa.gov/apps/efhmapper/?page=page_3.

National Oceanic and Atmospheric Administration (NOAA). 2025. Endangered Species Act (ESA) Section 7 Mapper: NOAA Fisheries Greater Atlantic Region. Accessed on April 10, 2025 from https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=a85c0313b68b44e0927b51928271422a.

Parsons, J.K., Hamel, K.S., O'Neal, S.L., & Moore, A.W. 2004. The impact of endothall on the aquatic plant community of Kress Lake, Washington. Journal of Aquatic Plant Management 42:109-114.

Parsons, J.K., Baldwin, L., & Lubliner, N. 2019. An operational study of repeated diquat treatments to control submersed flowering rush. Journal of Aquatic Plant Management 57:28-32.

Ramsar Convention of Wetlands (Ramsar). 1994. Nomination Report to the Convention of Wetlands of International Importance: Connecticut River Estuary and Tidal River Wetlands Complex. Accessed 11 May 2023 from https://rsis.ramsar.org/RISapp/files/RISrep/US710RIS.pdf.

Savoy, T., L. Maceda, N.K Roy, D. Peterson & I. Wirgin. 2017. Evidence of natural reproduction of Atlantic sturgeon in the Connecticut River from unlikely sources. PLoS ONE 12(4): e0175085. Accessed from https://doi.org/10.1371/journal.pone.0175085.

SePRO Corporation (SePRO). 2017a. Safety Data Sheet for ProcellaCOR EC Version 1.0 EPA Registration No. 67690-80.
2.0
SePRO Corporation (SePRO). 2017b. Safety Data Sheet for Sonar A.S. Aquatic Herbicide. EPA Registration No. 67690-4.

Shrivastava, M. & S. Srivastava. 2021. Application and research progress of *Hydrilla verticillata* in ecological restoration of water contaminated with metals and metalloids. Environmental Challenges, 4: e100177. Accessed from https://doi.org/10.1016/j.envc.2021.100177.

Skogerboe, J.G. & K.D. Getsinger. 2001. Endothall species selectivity evaluation: Southern latitude aquatic plant community. Journal of Aquatic Plant Management, 39:129-135.

Skogerboe, J.G. & K.D. Getsinger. 2002. Endothall species selectivity evaluation: Northern latitude aquatic plant community. Journal of Aquatic Plant Management, 40:1-5.

Tippery, N.P., Bugbee, G.J., & Stebbins, S.E. 2020. Evidence for a genetically distrinct strain of introduced *Hydrilla verticillata* (Hydrocharitaceae) in North America. Journal of Aquatic Plant Management, 58: 1-6.

UPL Limited (UPL). 2019. Safety Data Sheet for AQUATHOL® K Aquatic Herbicide.

U.S. Army Corps of Engineers (USACE). 2024. Environmental Assessment and Finding of No Significant Impact for Invasive Aquatic Plant Control Demonstration Connecticut River Hydrilla Control Research and Demonstration Project Lower Connecticut River, Connecticut. U.S. Army Corps of Engineers New England District, July 2024.

U.S. Environmental Protection Agency (EPA). 2017a. Proposed Registration Decision of the New Active Ingredient Florpyrauxifen-benzyl. Accessed from https://www.regulations.gov/document/EPA-HQ-OPP-2016-0560-0023.

U.S. Environmental Protection Agency (EPA). 2017b. The 2017 EPA Environmental Fate and Ecological Risk Assessment for Florpyrauxifen-Benzyl.

U.S. Environmental Protection Agency (EPA). 2014. Notice of Pesticide Registration (EPA Reg. Number 67690-71) for Galleon LZR. Accessed from https://www3.epa.gov/pesticides/chem_search/ppls/067690-00071-20141014.pdf

U.S. Environmental Protection Agency (EPA). 2011. Notice of Pesticide Registration (EPA Reg. Number 59639-165) for Tradewind Herbicide. Accessed from https://www3.epa.gov/pesticides/chem_search/ppls/059639-00165-20110119.pdf

U.S. Environmental Protection Agency (EPA). 2010. Notice of Pesticide Registration (EPA Reg. Number 59639-161) for Clipper Herbicide. Accessed from https://www3.epa.gov/pesticides/chem_search/ppls/059639-00161-20101109.pdf

U.S. Environmental Protection Agency (EPA). 2008. Notice of Pesticide Registration (EPA Reg. Number 241-437) for Clearcast Herbicide. Accessed from https://www3.epa.gov/pesticides/chem_search/ppls/000241-00437-20080320.pdf.

U.S. Environmental Protection Agency (EPA). 2005. Reregistration Eligibility Decision for Endothall. Accessed from https://archive.epa.gov/pesticides/reregistration/web/pdf/endothall_red.pdf.

U.S. Environmental Protection Agency (EPA). 1995. Registration Eligibility Decision (RED) Diquat Dibromide. Accessed from https://nepis.epa.gov/Exe/ZyPDF.cgi/20000GJY.PDF?Dockey=20000GJY.PDF.

U.S. Environmental Protection Agency (EPA). 1986. Sonar A.S. ID 5947. Accessed from https://ordspub.epa.gov/ords/pesticides/f?p=PPLS:8:::::P8_PUID,P8_RINUM:22208,67690-4.

U.S. Fish and Wildlife Service (FWS). 2025a. Information and Planning and Consultation Tool. Accessed on April 8, 2025 from https://ipac.ecosphere.fws.gov/.

U.S. Fish and Wildlife Service (FWS). 2025b. Northern Long-Eared Bat (*Myotis septentrionalis*). Accessed on April 8, 2025 from https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis.

U.S. Fish and Wildlife Service (FWS). 2025c. Tricolored Bat (*Perimyotis subflavus*). Accessed on April 8, 2025 from https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus.

U.S. Fish and Wildlife Service (FWS). 2025d. National Wetlands Inventory Mapper. Accessed on April 10, 2025 from https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/.

U.S. Fish and Wildlife Service (FWS). n.d. Connecticut River Fish and Wildlife Conservation Office Projects and Research. Accessed April 28, 2025 from https://www.fws.gov/office/connecticut-river-fish-and-wildlife-conservation/what-we-do/projects-research.