Final 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

SEAX-202-00-E6P-1781184426

US Army Corps of Engineers ®
New England District

June 2026

This page intentionally left blank

Contents

Finding of No Significant Impacts (FONSI)

List of Tables and Figures

List of Acronyms

APCRP	Aquatic Plant Control Research Program
CET	Concentration-exposure time
CRIS	Cultural Resources Information System
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
DPH	Department of Public Health
DPS	Distinct population segments
FIRFA	Federal Insecticide, Fungicide, and Rodenticide Act
FONSI	Finding of No Significant Impact
USFWS	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
PTB	Puritan tiger beetle
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

This page intentionally left blank

FINDING OF NO SIGNIFICANT IMPACT
Connecticut River Hydrilla Control Research and Demonstration Project
in Lower Connecticut River, Connecticut
SEAX-202-00-E6P-1781184426

The U.S. Army Corps of Engineers (USACE), New England District, has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The Supplemental Environmental Assessment (SEA) dated 11 June 2026 for the Connecticut River Hydrilla Control Research and Demonstration Project evaluates additional treatment sites and additional herbicides beyond those previously addressed in the Environmental Assessment (EA) dated July 2024. The 2024 EA and the 2026 SEA are incorporated herein by reference. 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 Action is the same as the original action considered in the 2024 EA. The purpose 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 (*Hydrilla verticillata)* in varied water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. These environments are influenced by water exchange processes driven by gravity flow, tides, wind, and thermal circulation. These processes influence the length of exposure and can impact an herbicide's effectiveness (Getsinger & Netherland, 2018). The Proposed Action is needed to evaluate the effectiveness of the active ingredients in the additional herbicides to representative sites. Additional herbicides and representative treatment sites will allow the evaluation of different management tools and site scenarios. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time (CET) 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 2024 EA analyzed the potential environmental impacts of the Connecticut River Hydrilla Control Research and Demonstration Project. On 23 July 2024, the USACE signed a Finding of No Significant Impact (FONSI) and selected the Proposed Action (herbicide application alternative) for implementation. The USACE proposes to expand the existing Connecticut River Hydrilla Control Research and Demonstration Project by adding twelve additional treatment sites, which include additional herbicides, to the existing five treatment sites within the Lower Connecticut watershed.

These additional sites will allow for further demonstration of hydrilla control on varied environments, such as lakes and ponds, within the Connecticut River system. The 2026 SEA analyzes potential impacts of the proposed additional sites and herbicides.

The 2026 SEA evaluates two alternatives: the Proposed Action and the No Action alternative. The No Action alternative constitutes the herbicide application alternative evaluated in the 2024 FONSI, and the Proposed Action is the 2024 EA herbicide application alternative with additional treatment sites and herbicides selected to meet current project needs. The Proposed Action described in the 2026 SEA includes:

- Treatment of hydrilla at twelve additional treatment sites within the Lower Connecticut watershed: Chester Creek in Chester; Deep River in Deep River; (Hamburg Cove in Lyme; Joshua Creek in Lyme; Mattabesset River in Middletown; Parker's Point in Chester; an expanded Portland Boat Works in Portland; Post and Pratt Coves in Deep River; Salmon River in East Haddam; Selden Creek in Lyme; Lake Pocotopaug in East Hampton; and Pameacha Pond in Middletown.

- Use of herbicides diquat dibromide (diquat), dipotassium salt of endothall, imazamox, florpyrauxifen-benzyl, flumioxazin, fluridone, penoxsulam, or combinations thereof, at the proposed treatment sites.

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) Short- and long-term effects: The project will result in short-term impacts, such as a temporary decrease in dissolved oxygen from the decomposition of the hydrilla as well as indirect impacts to the density and availability of aquatic vegetation for fish and wildlife habitat. These short-term effects will not significantly affect the environment. Long-term impacts of the project include the control of hydrilla at proposed sites. Native species will likely reestablish the sites returning to a natural plant community, supporting native fish and wildlife.

(ii) Beneficial and adverse effects: The project will have long-term, beneficial impacts. The Proposed Action will improve the ecological and economic conditions of the proposed sites. It will allow recreational access to the waters for swimming, boating, and fishing, and help restore a more balanced ecological condition (i.e., increased aquatic plant diversity and evenness), benefiting the fish and wildlife that inhabit the river system. There may be temporary adverse effects to non-target native submerged aquatic vegetation by use of aquatic herbicides, but these are expected to be minimal and localized as the herbicides are largely selective, and native vegetation will regrow after treatment and in subsequent growing seasons. The benefits of controlling hydrilla to the human and natural environment offset any adverse effects of the project.

(iii) Effects on public health and safety: The project is expected to have a positive effect on public health and safety by investigating efficient and effective control of invasive hydrilla that will minimize the adverse impacts to navigation and recreation. It is not expected to provide unequal treatment of minority or economically disadvantaged populations.

(iv) Effects that would violate Federal, State, Tribal, or local law protecting the environment: The action will not violate Federal, state, tribal, or local laws protecting the environment.

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.

11 June 2026
_____
Date

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

This page intentionally left blank

1.0 Introduction

In 2024, the U.S. Army Corps of Engineers (USACE), New England District prepared an Environmental Assessment (EA) to evaluate the environmental impacts of applying herbicides to aquatic invasive plants in the lower Connecticut River. In 2024, the New England District Commander signed a Finding of No Significant Impact (FONSI) for the Connecticut River Hydrilla Control Research and Demonstration Project (USACE, 2024a). 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 USACE prepared this supplemental Environmental Assessment (SEA) to assess the potential environmental and cultural impacts of expanding the Connecticut River Hydrilla Control Research and Demonstration Project to twelve additional treatment sites and additional herbicides in the lower Connecticut River. These sites will expand the project to understand hydrilla control and 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 the 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, 2024a).

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).

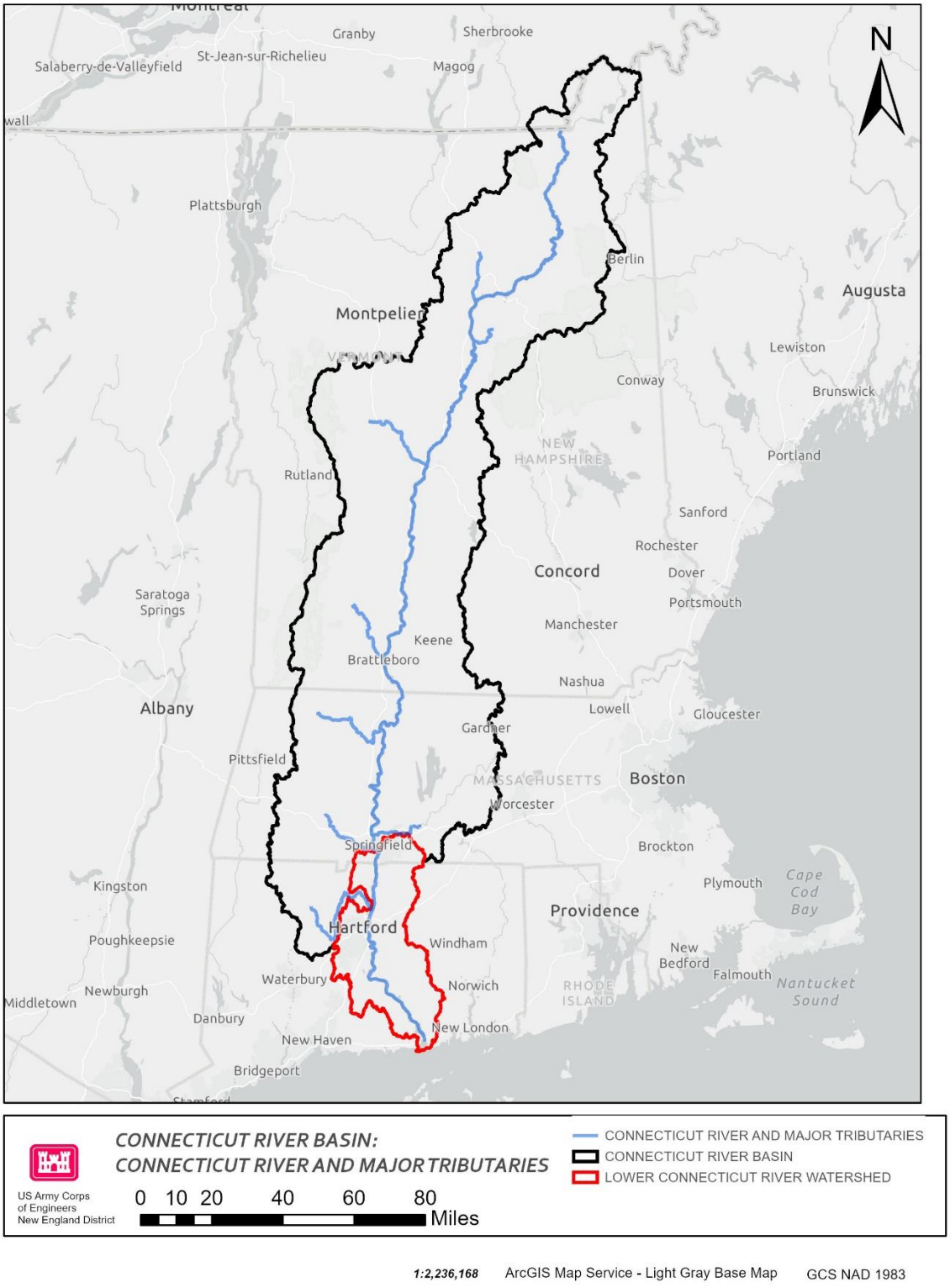

Figure 1. The Connecticut River basin and Lower Connecticut River watershed.

2.0 Purpose and Need

The purpose of the Proposed Action is as discussed in the 2024 EA. The purpose 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 varied water exchange environments, such as the tidal, riverine environment of the lower Connecticut River. These environments are influenced by water exchange processes driven by gravity flow, tides, wind, and thermal circulation. These processes influence the length of exposure and can impact an herbicide's effectiveness (Getsinger & Netherland, 2018). The Proposed Action is needed to evaluate the effectiveness of the active ingredients in the additional herbicides to representative sites. Additional herbicides and representative treatment sites will allow the evaluation of different management tools and site scenarios. The field demonstration will evaluate herbicide efficacy, optimal timing of treatment, non-target impacts, and herbicide concentration-exposure time (CET) requirements for effective control of hydrilla. The demonstration 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.

3.0 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 are discussed below in Section 3.3. These control methods, also considered in the 2024 EA, include mechanical, physical, and biological control.

3.1 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 at the additional 12 sites evaluated in the SEA. 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.

3.2 Proposed Action

3.2.1 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 demonstrations 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. The USFWS's National Wetlands Inventory online mapping tool (USFWS, 2025a) was used to identify the types of wetland systems present at the various treatment sites according to the Cowardin et al. (1979) classification system. Federal and state lands adjacent to the treatment sites are also described below (CT DEEP, 2025a). 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.

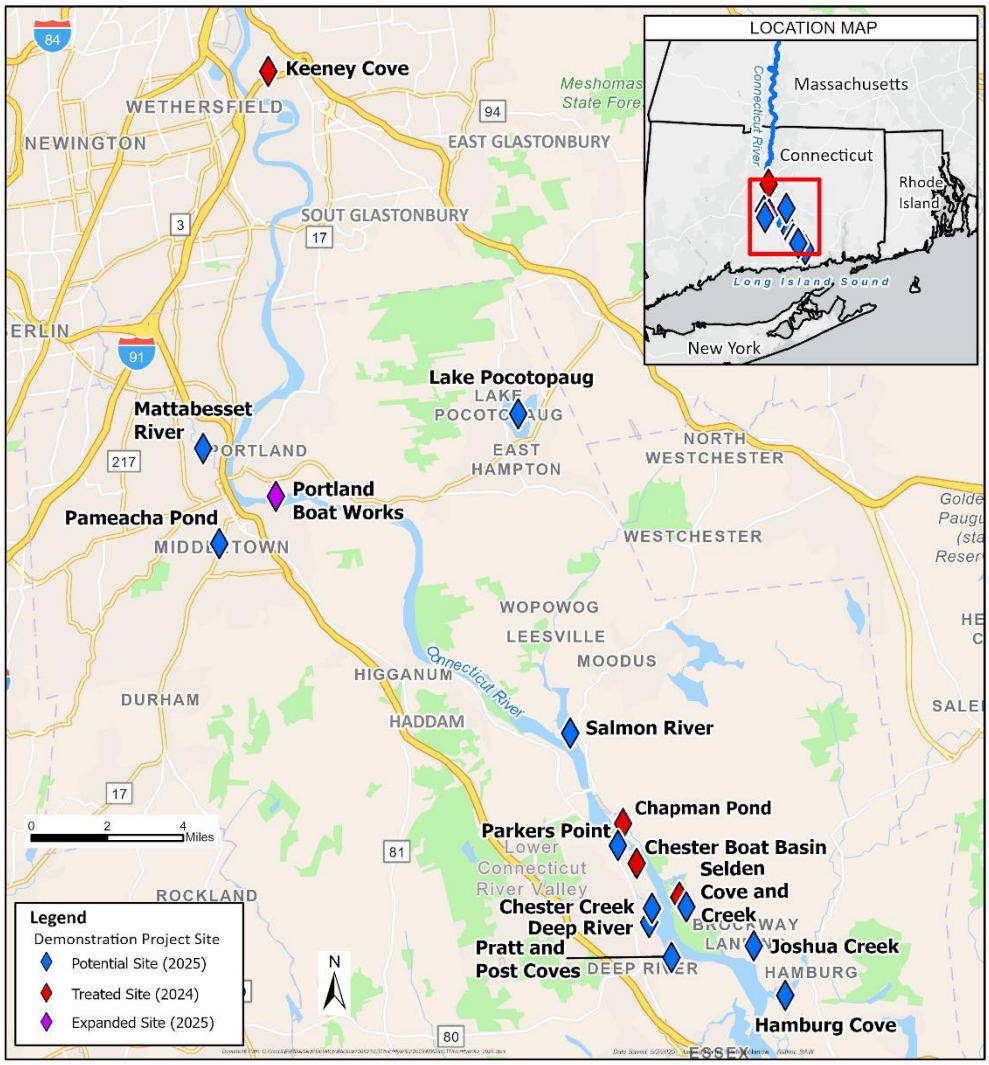

Figure 2. Prior research and demonstration treatment sites and proposed treatment sites within the Lower Connecticut River watershed

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 treatment site is surrounded by freshwater tidal wetlands associated with Chester Creek. These wetlands are predominately emergent wetlands. Other freshwater tidal wetlands include scrub-shrub and forested wetlands. In addition to wetland habitat, the tidal creek contains multiple marinas and a yacht club. There are two road crossings within the Chester Creek treatment area: Route 156 and a railroad bed associated with the Essex Steam Trail/Valley Railroad.

2. Deep River

Deep River is a tributary to the Connecticut River and is located in Deep River, 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 in a rural area surrounded by wetlands, low-density residential development, and marinas (e.g., Chester Point Marina) to the north. Freshwater tidal wetlands surround the northern areas of the Deep River treatment site. These wetlands include emergent, scrub-scrub, and forested wetlands. The railroad bed associated with the Essex Steam Trail/Valley Railroad also crosses the Deep River treatment site.

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 receives heavy recreational use, and includes numerous boat docks, a summer camp, two marinas, and a yacht club. There are limited amounts of freshwater tidal wetlands associated with Hamburg Cove. Land use surrounding the cove includes residential, with developed shorelines and boat docks, and upland forested habitat. Smaller wetland habitat consisting of forested/scrub-shrub wetlands occur in the southern portion of the cove. Emergent wetlands are found in the northern and eastern arms of Hamburg Cove, associated with the Eightmile River and Fuller Brook. Three road crossings occur within the Hamburg Cove treatment site: Cove road and Route 156 near the eastern arm of the cove, and Joshuatown road at the northern arm.

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. Surrounding land use includes terrestrial forest, residential, and wetlands. Freshwater tidal wetlands, dominated by freshwater emergent vegetation, are found near the lower pond. Pockets of estuarine intertidal wetlands are found at the confluence of Joshua Creek and the Connecticut River. In the upper pond, forested and scrub-shrub wetlands can be observed. 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. Surrounding land use is predominantly freshwater tidal wetlands, with lesser areas of upland forested habitat. Freshwater tidal wetlands are associated with the Mattabesset River and include emergent, scrub-shrub, and forested wetlands; emergent wetlands are prevalent throughout the treatment site. Areas of forested wetlands are found to the north and south of the treatment site. Surrounding land use includes the state's Cromwell Meadows Wildlife Management Area. There are two road crossing at the confluence of the Mattabesset and Connecticut Rivers: Route 9 and a CSX Transportation railroad.

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 2.4 acres with an estimated mean depth of six feet MHHW. The treatment area includes a boat launch facility and shoreline protection. Surrounding habitat is predominantly residential, with small areas of terrestrial forest and wetland forested habitat.

7. Portland Boat Works

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

The site was treated during the 2024 field demonstration, and the 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, which includes the original treatment site and adjacent areas. The treatment site has an estimated mean depth of five feet MHHW. Surrounding land use includes residential and boat docks for the various marinas. No vegetated wetlands are adjacent to the treatment site.

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. Surrounding habitat is predominantly freshwater tidal wetlands. There are also upland forested habitat, residential development, and impervious surfaces associated with a boat club. Freshwater tidal wetlands are predominantly emergent vegetation, with a small area of scrub-shrub forested wetlands. There is one road crossing at the south of Pratt Cove, that is associated with Essex Street. The Connecticut Valley Railroad is adjacent to Pratt Cove. Surrounding land use also consists of the state's Connecticut Valley Railroad State Park trail.

9. Salmon River

Salmon River is a tributary 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. Surrounding land use is largely undeveloped and includes freshwater tidal wetlands and upland forested habitat. There are residential areas near adjacent roads, as well as a utility corridor right-of-way. Freshwater tidal wetlands are dominant near the southern portion of Salmon River, where it confluences with the Connecticut River. These wetlands areas are predominantly scrub-scrub wetlands, with lesser areas of emergent vegetated wetlands. Other freshwater tidal wetlands are found near the north of the treatment site, near Dykas Brook, Pine Brook, and Leesville Pond. Surrounding lands also include the Connecticut Department of Energy and Environmental Protection (CT DEEP)'s Haddam Neck Wildlife Management Area and the Sunrise and Machimoodus State Parks, and the U.S. Fish and Wildlife Service (USFWS)'s Silvio O. Conte National Fish and Wildlife Refuge.

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. Surrounding land use includes freshwater tidal wetlands and upland forested habitat. Freshwater tidal wetlands include emergent, scrub-shrub, and forested wetlands. Selden Creek includes areas of the CT DEEP's Selden Neck State Park and the USFWS's Silvio O. Conte National Fish and Wildlife Refuge.

11. Lake Pocotopaug

Lake Pocotopaug is a large lake approximately 7.3 miles upstream of the Salmon River. It is located in East Haddam, Middlesex County, CT, and is centered at 41.595° N, 72.501° W. The treatment area is approximately 232 acres with an estimated mean depth of ten feet. The Pocotopaug Dam impounds Pocotopaug Creek (USACE, 2024b). The creek flows southwest and confluences with Pine Brook, a tributary to the Salmon River. Surrounding habitat is predominantly residential. The shoreline of Lake Pocotopaug has an urbanized waterfront comprised of single-family homes with boat docks.

12. Pameacha Pond

Pameacha Pond is located in Middletown, Middlesex County, CT and is centered at 41.544° N, 72.653°W. Pameacha Pond is impounded by the Pameacha Pond Dam (USACE, 2024b). The pond drains via Long Hill Brook and Sumner Brook flowing north before discharging to the Connecticut River. The treatment area is 18.8 acres with an estimated mean depth of 8.5 feet. Surrounding land use is highly developed, with commercial developments immediately abutting the eastern shore and residential communities to the west.

3.2.2 Herbicides

The proposed herbicides for the additional treatments sites include bispyribac-sodium, diquat dibromide (diquat), dipotassium salt of endothall, bispyribac-sodium, imazamox, florpyrauxifen-benzyl, flumioxazin, fluridone, penoxsulam, or combinations thereof. Diquat, dipotassium salt of endothall, and florpyrauxifen-benzyl, or combinations thereof were considered for the original treatment sites as discussed in Section 3.4 of the 2024 EA (USACE, 2024a).

The use of each of these herbicides is anticipated to have a similar level of effect on the environment. The U.S. Environmental Protection Agency (EPA) regulates and registers herbicides under the Federal Insecticide, Fungicide, and Rodenticide Act (FIRFA) (7 U.S.C. §136 et seq.). EPA requires comprehensive human health and ecological testing to determine non-target risks to humans, wildlife, plants, surface water, and groundwater (Through approval, EPA determines that the product will perform its intended function without unreasonable adverse effects on the environment, and that, when used in accordance with widespread and commonly recognized practice, the product will not generally cause unreasonable adverse effects on the environment (40 CFR 152.112(e)). In addition to federal registration, the CT DEEP registers herbicides in accordance with the Connecticut Pesticide Control Act (CGS 22a-46 et seq.) and Section 24(c) of FIRFA (7 U.S.C. §136v). The proposed herbicides are registered for aquatic use by EPA and CT DEEP.

As described in Section 2.0, above, the Proposed Action will determine concentration-exposure time (CET) requirements for effective and species-specific hydrilla control. CET requirements are specific to each herbicide and target plant (hydrilla*),* and are dependent on various factors (i.e., application rate, mode of action, and environmental half-life) (Getsinger & Netherland, 1997). As described in the 2024 EA, the project has considered the use of diquat, dipotassium salt of endothall, and florpyrauxifen-benzyl at five sites. These herbicides have unique modes of action and include both contact and systemic herbicides. Contact herbicides are those which quickly absorb into exposed plant surfaces and kill aboveground plant material. While systemic herbicides are slow-acting and inhibit enzyme activity in target plants. The Proposed Action considers both contact (diquat, dipotassium salt of endothall, and flumioxazin) and systematic (bispyribac-sodium, imazamox, florpyrauxifen-benzyl, fluridone, and penoxsulam) herbicides.

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 EPA-approved label.

The proposed applications will occur in the summer of 2026 or in the summer of future years, no later than 2030. Treatments at Pameacha Pond and Lake Pocotopaug will occur after June 1 of each calendar year. Treatments at all other sites will occur after July 4 within each calendar year because of a time of year restriction to avoid potential impacts to diadromous fishes and northern pike (*Esox lucius*) spawning. No time of year restriction will occur at Pameacha Pond and Lake Pocotopaug due to the lack of diadromous fish passage from dams. All treatments will occur no later than October 14 within each calendar year. Each treatment site will be treated no more than once each calendar year, unless otherwise noted, and treatments will be completed in one or two days.

Herbicide application will occur once at all treatment sites, except for Pameacha Pond. As discussed in Section 5.1.2, Pameacha Pond will be treated in two phases with two half-treatments at least two weeks apart. The phased treatment will avoid potential impacts from treating the entire waterbody, which has limited water exchange compared to other treatment sites.

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 following each herbicide application. 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
Joshua Creek	20.7	Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl
Mattabesset River	65.6	Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl, Fluridone
Parker's Point	2.4	Diquat, Dipotassium salt of endothall, Florpyrauxifen-benzyl
Portland Boat Works	3.8	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
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[2]	18.8	Fluridone, Bispyribac-sodium, Dipotassium salt of endothall, Florpyrauxifen-benzyl

1 Herbicide(s) will be selected based on field conditions during summer demonstrations.
2 Application will occur in two phases to avoid potential dissolved oxygen impacts

Table 2. Proposed herbicides use rates

Potential Herbicide	Maximum Application Rate
Bispyribac-sodium	40 ppb
Diquat	370 ppb
Dipotassium salt of endothall	5000 ppb (5 ppm)
Florpyrauxifen-benzyl	48 ppb
Imazamox	500 ppb
Flumioxazin	400 ppb
Fluridone	15 ppb
Penoxsulam	150 ppb

3.3 Alternative Control Methods

The USACE considered the mechanical, physical, and biological control methods as alternatives to chemical control for the Connecticut River Hydrilla Control Research and Development Project in the 2024 EA. These alternatives were not carried forward in the 2024 EA as the control methods were not feasible alternatives. As discussed in this section, these alternative control methods are also not carried forward in this SEA because they are not feasible. Refer to Section 3.3 of the 2024 EA for a similar discussion for the treatment sites considered in the 2024 EA (USACE, 2024a).

3.3.1 Mechanical

Mechanical harvesting is the primary mechanical control for aquatic invasive species. This method includes the use of large power-driven equipment. Specialized harvester boats are used to cut vegetation, in which material is disposed of at an upland site (USACE, 2024a). Mechanical harvesting has been used on submersed aquatic invasives such as curlyleaf pondweed (*Potamogeton crispus*) and Eurasian watermilfoil (*Myriophyllum spicatum*) (Haller, 2020). This method was not considered for hydrilla control due to hydrilla growth characteristics and non-target impacts to native plants.

Mechanical harvesting would result in hydrilla fragmentation which promotes rapid hydrilla infestations. Clonal reproduction or regeneration is a type of asexual reproduction in which a plant produces clones using fragments such as stem, leaf, or root cuttings (Hartmann & Kester, 2011). Extremely small hydrilla fragments are able to reproduce and result in infestations (Langeland & Sutton, 1980). Mechanical harvesting would not result in control and would result in adverse effects associated with the spread of *Hydrilla*, as considered in the No Action Alternative. This method was not considered further as it would result in the spread of hydrilla within the Lower Connecticut River watershed.

Additionally, mechanical harvesting is not selective and can result in direct impacts to native species. Native vegetation would be removed alongside hydrilla. Additionally, mechanical removal may result in the catch of non-target organisms (by-catch) such as fish, snails, mussels, and frogs (Haller, 2020).

3.3.2 Physical

Physical control methods may include the use of hand pulling, benthic barriers, and water level drawdowns. These methods were not considered due to the extent of hydrilla within the Lower Connecticut River watershed and due to the riverine nature of the proposed treatment sites.

Hand pulling is a useful method for the immediate control of small populations (i.e., less than 0.5 acre), usually before a species has established a monoculture in any given environment. Given the densities at which hydrilla is found in the Connecticut River system, as well as the likelihood for fragmentation, hand pulling was not considered a feasible alternative.

In impounded waterbodies, water level drawdowns can be used to physically control aquatic invasive plant species. Water level manipulation is used to expose plants to air and dry them out, causing desiccation and freezing (UF/IFAS, 2025). This method requires impoundment of water by a dam or other water control structure that allows for water level manipulation. Pameacha Pond is the only proposed treatment site that is impounded. While drawdowns may be available at Pameacha Pond, they were not considered due to environmental impacts. Water level fluctuations can reduce the amount of habitat available for fish and wildlife and can result in impacts to downstream habitat. Often, hydrilla populations can resist the effects of drawdowns with underground turions and are able to recolonize (UF/IFAS, 2025). Additionally, the USACE does not manage any dams within the Lower Connecticut River watershed. Other proposed treatment sites are not impounded; therefore, drawdowns were not considered at these sites.

Another method is the use of benthic barriers. Benthic barriers are mats made of plastic, fiberglass, or nylon that are placed over vegetation and anchored to block sunlight from reaching the river bottom. The restriction of light kills existing plant species and prevents the germination or growth of new plants (CCE, 2016). Benthic barriers are effective for smaller infestations (less than 0.25 acres) and are not usually useful for complete eradication. They are most effective in small areas or for early detection and rapid response to new populations. This method is an ineffective primary control method in flowing waters. Similar to mechanical control, benthic barriers lack selectivity and may impact non-target native plants. For these reasons, this method was not considered practical for control of hydrilla in the Connecticut River.

3.3.3 Biological

Several organisms are known to feed on hydrilla and have been used as a biological control (biocontrol) for the species in other parts of the country. These include various weevils (*Bagous* spp.), leaf mining flies (*Hydrellia* spp.), and triploid grass carp (*Ctenopharyngodon idella*). The Connecticut River ecotype is a monoecious strain that is genetically distinct from other ecotypes in North America (Tippery *et al*., 2020). Insect biocontrol has not been used for management of this hydrilla genotype for this reason and more research and experimentation is needed to determine an effective biocontrol insect. Triploid grass carp have not been considered for the Connecticut River system due to the river's size and connectivity to other waters (NEANS, 2020). Similar to other control methods, grass carp lack selectivity and consume significant amounts of native vegetation. Therefore, biological control is not currently an effective means of controlling hydrilla in the Connecticut River watershed (USACE, 2024a).

4.0 Affected Environment

The affected environment for the proposed twelve treatment sites located within the lower Connecticut River watershed is described below.

The general setting of the proposed treatment sites is the Connecticut River watershed. This is identical to the general setting discussed in the 2024 EA. Refer to Section 4.1 of the 2024 EA for a description of the Connecticut River watershed, its land use, and its federal navigation project.

The following resources were considered in Section 4 and Section 5 of the 2024 EA. The affected environment for these resources is the same for Proposed Action. The effects of the Proposed Action for the additional sites, which include additional herbicides, are similar in scope and effect as the 2024 EA. Therefore, impacts to these resources are not analyzed further in this SEA.

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

The resources listed below were considered in the 2024 EA and are also evaluated in detail in this SEA to the extent they contain site-specific environmental features that may be sensitive or unique to each location. The affected environment and environmental consequences to these site-specific features are discussed in this section under the appropriate resource subsection. The general affected environment and impacts as to these resources are analyzed in the 2024 EA.

- Water Quality
- Wetlands
- Fish and Wildlife
- Essential Fish Habitat
- Threatened and Endangered Species
- Historic and Archaeological Resources

4.2 [1]Physical Environment

4.2.2 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, 2024a; CT DEEP, 2011). Surface water quality of other inland waterbodies is also variable. Lake Pocotopaug is a Class A waterbody, with downstream surface waters 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, 2025b).

Public drinking water supplies were identified through the CT DEEP and CT Department of Public Health (DPH) Mappers. The CT DEEP's Connecticut Aquifer Protection Areas mapper was used to review Aquifer Protection Areas, which are areas contributing water to public water supply wells. No proposed treatment sites are located within Aquifer Protection Areas (CT DEEP, 2019). In addition, the CT DEEP and DPH Aquatic Pesticide Review Areas mapper includes watersheds with public drinking water reservoirs. Herbicide applications within public drinking supply watersheds are subject to CT DPH review to ensure no impacts to public drinking water resources. Lake Pocotopaug was identified as an Aquatic Pesticide Review Waterbody. The USACE will coordinate the herbicide application with CT DPH, and a CT DPH review will be completed before application.

The CT DPH Public Water Supply Mapping application identifies land parcels with private wells. No private well parcels are adjacent to Pameacha Pond. All other proposed treatment sites are adjacent to private well parcels (CT DPH, 2025).

[1] The sections discussed in the SEA are identical in name and in number to those in the 2024 EA. For further description of these resources, refer to the same section in the 2024 EA.

4.3 Biological Environment

4.3.1 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, 2024a; Ramsar, 1994). Riverine wetlands are associated with rivers and streams, while palustrine wetlands are associated 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 (USFWS, 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, 2024a; 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 (USFWS, 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 (USFWS, 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*	Tussocks sedge	*Carex stricta*
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.

4.3.5 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, 2024a; USFWS, 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 4. Common reptile and amphibian species in the Connecticut River

Common Name	Scientific Name
Snapping turtle	*Chelydra 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 terrapin*
Northern watersnake	*Nerodia sipedon*
Common musk turtle	*Sternotherus odoratus*
Dekay's brownsnake	*Storeria dekayi*
Common ribbonsnake	*Thamnophis sauritus*

Source: CT DEEP, 2023

4.4 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) plant species, as, that are 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 5. 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*).

4.5 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 includes the five 2024 treatment sites and the proposed additional 12 treatment sites, within the Connecticut River system, and their access routes. The U.S. Fish and Wildlife Service's (USFWS) 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 (USFWS, 2025b; NOAA, 2025). The Puritan tiger beetle (*Ellipsoptera puritana*) was identified during coordination with the USFWS as potentially occurring within the action area.

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 (USFWS, 2025c).

The TCB (*Perimyotis subflavus)* is a proposed endangered species. In September 2022, USFWS 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 bony beard lichen (*Usnea trichodea*). 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 (USFWS, 2025d).

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 (USFWS, 2025b).

Monarch butterfly

The monarch butterfly (*Danaus plexippus*) is a proposed threatened species. In December 2024, USFWS proposed the listing of the species under the ESA. The eastern North American population consists of migratory individuals that overwinter and breed in Central America. After overwintering, in the spring, the eastern population migrates from Central America to Canada. Individual dispersal is dependent on various factors such as available vegetation and climate. Adults require a diverse diet of floral resources for breeding and migration. In addition to diverse resources, monarch butterflies utilize their obligate host plant, milkweed (primarily *Asclepias* spp.) for various life phases (USFWS, 2024).

Puritan tiger beetle (PTB)

The PTB is a threatened species. The beetle's current range is restricted to the Chesapeake Bay, in Maryland, and along the Connecticut River, in Massachusetts and Connecticut. The Connecticut metapopulation includes four sites near Cromwell, Connecticut, with individuals moving between populations. Potential suitable sites have also been identified in northern New England. Reintroduction efforts in Connecticut have occurred at Dart Island (Middletown), Higganum Meadows (Haddam), and Windsor Island (Windsor). In Connecticut, the PTB is found on sandy islands and banks of rivers that have suitable substrate for larval burrows. The Connecticut River metapopulation prefers to lay eggs in damp sand adjacent to and below a beach's wrack line (USFWS, 2025e). The PTB undergoes a two-year larval period, followed by pupation in late spring. In Connecticut, adult emergence occurs around late June to early July. Adults are active during the day and night. Feeding occurs throughout the day near the wrack line (USFWS, 1993).

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 action 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, 2024a; 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, 2024a). 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 threatened or endangered that represent the USFWS's highest conservation priorities (USFWS, 2025b).

Table 6. 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: USFWS, 2025

4.5.5 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 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 7. 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

Taxa	Common Name	Scientific Name	Status
	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
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

4.6 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 project to twelve additional sites, including an increased treatment area at the Portland Boat Works location. The Connecticut Cultural Resources Information System 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.

The USACE consulted with the Connecticut State Historic Preservation Officer (SHPO) and the Tribal governments. Letters were sent to the SHPO and the following Tribal governments, as described in Section 5.5, 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 8. 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; 061-011 – Old County Rockshelter; 026-005 – Banning Shore; 026-006 – Cahill Site; 036-001 – Pratt Cove Sandpit; 036-003 – River Street.	Knollenberg House and Chester-Hadlyme Ferry in Chester; Deep River Depot; Deep River Landing; Deep River Freight Station; Deep River Freight Station Railroad Switches; Doris Sailing Yacht; James Dennison House; 1797 Cape Cod Style House at 83 River Road; and the Lurana Arnold Homestead in Deep River
Hamburg Cove	Lyme	075-007 – Hamburg Cove Site; 075-083 – Joshuatown Prehistoric Site; 075-100 – Cooper Bench Prehistoric Site; 075-101 – Cooper Hilltop Prehistoric	Ely House (circa 1790) at Joshuatown Road at the mouth of Hamburg Cove.

		Site; 075-056 – Coopers Boat House.	
Selden Creek and Joshua Creek	Lyme, bordering the Selden Neck State Park	075-001 – Selden Island; 075-002 – Selden Island South; 075-005 – Cold Spring Rockshelter; 075-006 – Coudert Ledge; 075-022 – Cold Spring; 075-023 – Unnamed (Selden Neck State Park) 075-024 – Unnamed Rockshelter (State Park); 075-025 – Unnamed Selden Neck State Park; 075-027 – Selden Neck Southwest Shore; 075-043 – Selden Neck Northwest Shore; 075-049 – Brockway Landing 075-065 – Coudert Ledge #2 Site; 075-066 - Selden Neck Quarry/Camp; 075-067 – Island Quarry; 075-095 Joshuatown Road Prehistoric Site (L1-36).	<u>Brockway Ferry Road along Joshua Creek</u> Captain William Brockway House-Barn (circa 1900); Captain William Brockway House (circa 1740); Brockway Cemetery; Levi Luther House (1730); William Brockway House (circa 1779); 53 Brockway Ferry Road, Building 1 (circa 1701); 53 Brockway Ferry Road, Building 2 (circa 1767); 55 Brockway Ferry Road (1750); 59 Brockway Ferry Road (1909); 68 Brockway Ferry Road (1854); 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 the 2024 EA)	near Pecausett Pond outlet; Grove & Riverview Streets	113-027 – Cornwall (Post-Contact).	Joseph Kellop House (circa 1780); Henry McCleve House (circa 1875); and the John McCleve House (circa 1795).

Salmon River	East Haddam (east & west banks of CT River)	061-114 – Haddam Sand Pits; 061-115 – Peninsula 1 Site; 061-116 – Peninsula 2 Site; 061-117 – Midway Marina; 061-034 – Duffy Site; 061-035 – Unnamed; 061-040 – Lang and Butler Site; 061-055 – Brainard Homestead State Park.	Camp Bethel National Register District; and East Haddam Historic District
Lake Pocotopaug	East Hampton	042-027 – P. Derby Site; 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).

5.0 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.

5.1 Physical Environment

5.1.2 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 are 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.

No impacts are anticipated to private and public drinking waters are anticipated, at all twelve sites, as a result of the Proposed Action. As described in Section 3.2.2, the EPA registers herbicides under the FIRFA (7 U.S.C. §136 et seq.). The registration process considers the risk of surface and groundwater contamination. The proposed herbicides are currently registered for aquatic use, and no impacts are anticipated to private and public drinking waters. In addition, as described in Section 4.2.2, a CT DPH review will occur for Lake Pocotopaug, in which public drinking water resources were identified.

5.2 Biological Environment

5.2.1 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, 2024a).

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 alter wetland integrity. The proposed herbicide treatment, conducted in accordance with product label and state use restrictions, is 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 same or following growing seasons. Vegetation within the treatment areas will be monitored after treatment to determine impacts to non-target submerged and emergent vegetation.

5.2.5 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. 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 discussed in Section 3.2.2, above, the proposed herbicides have passed comprehensive EPA risk assessments during the registration process (EPA, 2017; 2014; 2011; 2010; 2008; 2005a; 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 same or following 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.

5.3 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 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.

5.4 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, TCBs, or monarch butterflies 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 provide 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.

The USACE determined the Proposed Action may affect, but is not likely to adversely affect, NLEB and TCB. No adverse 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. The USACE reinitiated consultation for the project on February 4, 2026, in which the USACE determined that Proposed Action, would not adversely affect the NLEB and TCB. A biological evaluation and enclosures were prepared for the Proposed Action, to support the USACE's determination for the NLEB and TCB. Appendix E includes the biological evaluation and enclosures, to include: maps of the action area, official species lists, and previous consultation materials. The USFWS concurred with the USACE's determination on June 9, 2026. (Appendix A).

The USACE has determined that the Proposed Action would result in no effect to the PTB. No adverse impacts to the PTB are anticipated, as the PTB is not known to occur within the proposed treatment sites, and the proposed treatment sites do not provide suitable habitat for the PTB. The Connecticut metapopulation includes sites near Cromwell, Connecticut, with reintroduction efforts at Dart Island, Higganum Meadows, and Windsor Island. The Proposed Action includes two treatment sites near Cromwell: Mattabesset River and Portland Boat Works. No impacts are expected from application at these sites as the proposed herbicides are not expected to drift outside of the proposed treatment sites.

The USACE has determined that the Proposed Action is not likely to jeopardize the continued existence of the monarch butterfly. No impacts are anticipated to the monarch butterfly. Herbicide application would utilize subsurface injection methods to minimize non-target risks, including exposure risk to the monarch butterfly. No indirect impacts from floral resources or host plant exposure are anticipated. No direct risks are anticipated from subsurface application methods.

The USACE determined that the original action, the application of herbicides at five treatment sites, may affect, but is not likely to adversely affect, Atlantic and shortnose sturgeons. Letters of concurrence were received for the determination on July 11, 2024. The USACE reviewed the original determination and its biological evaluation for the Proposed Action, with additional treatment sites and herbicides. The USACE determined that the Proposed Action would not result in new effects to these species or their critical habitat, and determined that re-initiation of consultation was not required, per 50 CFR 402.16. The USACE coordinated with NMFS on May 29, 2025, on its decision to not re-initiation consultation and the NMFS did not object.

5.4.3 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, 2005b; 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 F). A CT DEEP Fisheries consultation was completed for state-listed fish species and other fisheries impacts. The USACE is coordinating with CT NDDB in regard 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.

5.5 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 at the proposed treatment sites, 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. In 2024, the USACE determined that the original project would have no effects to historic properties and received concurrence from the CT State Historic Preservation Officer (SHPO) on 3 May 2024.

Similar to 2024, no effects to historic properties are anticipated from the Proposed Action. In accordance with Section 106 of the NHPA, the USACE initiated consultation

with the CT SHPO and the tribes on June 12, 2025, on its determination. A statutory 30-day consultation window occurred, in which no comments were received from the CT SHPO and the tribes. Therefore, the USACE has fulfilled its responsibilities under Section 106 of the NHPA. Refer to Appendix A for copies of state and tribal coordination letters.

5.6 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 4.0 of the SEA, which describes existing or baseline conditions.

6.0 Actions Taken to Minimize Impacts

1. Application of aquatic herbicides will not occur between March 1st to July 4th for all sites, except for Lake Pocotopaug and Pameacha Pond, to avoid the spawning season for diadromous fish species, such as alewife and blueback herring, and for northern pike. Application would occur after June 1st at Lake Pocotopaug and Pameacha Pond due to the lack of diadromous fish passage from dams.
2. All herbicide applications will adhere to the EPA-approved 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.

7.0 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. The draft SEA was released to federal, state, and tribal entities on June 10, 2025, for a 30-day comment period. Received comments were incorporated into the final SEA. Refer to Appendix A for copies of 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 Officer
Connecticut Office of Aquatic Invasive Species

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

The entire project has been coordinated with the public. Public coordination for the 2024 treatment (including public meetings) began in 2023 and continued in 2024, as described in Section 7 of the 2024 EA. Further public coordination occurred for the 2026 SEA, as described below. Public meetings included a hybrid/virtual connection option, and recordings are available on the Connecticut River Hydrilla Control Research and Demonstration Project website (USACE, 2025).

An initial public meeting was held on June 29, 2023, to introduce the Connecticut River Hydrilla Control Research and Demonstration Project to the public at the Middletown Municipal Building in Middletown, CT. As described in Section 7 of the 2024 EA, a 30-day public notice was published on April 4, 2024, to allow for public comment on the 2024 EA.

In addition, a public notice was released on May 22, 2024, to notify the public of three public meetings held on:

1) May 29, 2024, at the Goodwin University in East Hartford, CT
2) June 4, 2024, at the Middletown Municipal Building in Middletown, CT
3) And June 27, 2024, at the East Haddam Municipal Office Complex in Moodus, CT.

The project was coordinated with the Eightmile River's Wild & Scenic Coordinating Committee for Hamburg Cove, with meetings held in 2024 and 2025. On December 10, 2024, a virtual meeting was held for Hamburg Cove stakeholders with the coordinating committee. On April 23, 2025, an additional hybrid public meeting was held at Lyme Town Hall in Lyme, CT.

The project was also coordinated with the Salmon River Watershed Partnership. A virtual stakeholder meeting occurred on December 16, 2024. The Salmon River Watershed Partnership includes various agencies and organizations, including town representatives, The Nature Conservancy, CT DEEP, Trout Unlimited, the Colchester Land Trust, and the USFWS Silvio O. Conti Refuge.

On April 28, 2025, an initial public meeting about expanding the project to twelve additional sites and with additional herbicides was held at the Longmeadow Highschool in Longmeadow, MA. The draft SEA for the expanded project was released for public comment on June 11, 2025. A 30-day public notice was published to allow for public comment. The public comment period was open from June 11th to July 13th, 2025, in which 274 comments were received. Refer to Appendix H for a copy of public comments received and USACE's responses. Following the release of the draft SEA for public comment, a virtual public meeting was held on August 6, 2025.

8.0 Environmental Compliance

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

8.1 Federal Statutes

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

   Compliance: Not applicable.

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

   Compliance: The project was coordinated with the CT SHPO. A coordination letter was sent to CT SHPO on June 12, 2025. No response was received from the 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 the project was coordinated with EPA.

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 general 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: A CZM consistency determination was provided to the CT DEEP Land and Water Resource Division 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. A letter of concurrence was received from CT DEEP on August 13, 2025.

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:

    The USACE determined that the Proposed Action may affect, but is not likely to adversely affect the NLEB and TCB through IPaC. The USACE reinitiation consultation on February 5, 2026, and a letter of concurrence was received from USFWS on June 9, 2026. The USACE determined that the Proposed Action would have no effect to the puritan tiger beetle, and is not likely to jeopardize the continued existence of the monarch butterfly

    Coordination with the National Marine Fisheries Service (NMFS) was completed in 2024 for the 2024 treatment. 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, from NMFS. USACE and NMFS met on May 29, 2025, to discuss the Proposed Action and the potential need for a reinitiation of ESA consultation. As the effects of the Proposed Action are covered within the project's 2024 biological assessment and letter of concurrence received on July 11, 2024, the Proposed Action would not result in effects not previously considered in the 2024 consultation, no new ESA-listed species or designated critical habitat exist in the action area, and no take of ESA-listed species will occur, the USACE determined that reinitiation of consultation with NMFS is not per 50 CFR 402.16. The NMFS did not object with the USACE's determination.

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

    Compliance: Not applicable.

12. *Farmland Protection Act, 7 U.S.C. 4201 et seq.*

    Compliance: Not applicable

13. *Federal Water Project Recreation Act, 16 U.S.C. 460l-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 USFWS, NMFS, and state fish and wildlife agencies signifies compliance with the Fish and Wildlife Coordination Act. A copy of the draft SEA was sent to the state and federal fish and wildlife agencies on June 10, 2025. One comment regarding a time-of-year recommendation was received from NMFS under the Fish and Wildlife Coordination Act. USACE concurred with the recommendation.

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: USACE determined that the Proposed Action will have no effect upon historic properties pursuant to Section 106 of the National Historic Preservation Act. USACE consulted with the CT SHPO, Mohegan Tribe, Mashantucket Pequot Tribe, Narragansett Indian Tribe, and Wampanoag Tribe of Gay Head (Aquinnah) on June 12, 2025, on its determination. No comments were received within 30 days of the initiation of consultation; therefore, USACE's Section 106 consultation responsibilities are fulfilled.

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: Hamburg Cove is a part of the Eightmile river, which is designated under the Wild and Scenic Rivers Act (WSRA). The proposed project is not a water resources project (36 CFR 297.3); therefore, no Section 7 determination is required under the WSRA.

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

    Compliance: USACE determined that the project may adversely affect EFH, and requested abbreviated consultation with NMFS on June 10, 2025. NMFS notified USACE that no EFH conservation recommendations are required on July 9, 2025.

25. *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.

26. *Noise Control Act of 1972, 42 U.S.C. 4901 et seq.*

    Compliance: The project would result in noise levels from application equipment and monitoring vessels. Application equipment would be present for a day or two and will not exceed 100 decibels. Monitoring vessels' noise levels would be similar to recreational vessels in the area.

27. *Rivers and Harbors Act of 1899, 33 U.S.C. 401 et seq.*

    Compliance: Not Applicable.

8.2 Executive Orders

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

   Compliance: The project was coordinated with the CT SHPO. A coordination letter was sent to CT SHPO on June 12, 2025.

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 was released to the tribes. No comments were received from the tribes.

10. *Executive Order 13186, Protection of Migratory Birds, 10 January 2001*

    Compliance: The project will not impact migratory birds or their nests.

8.3 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.

8.4 Responsible Official Certification

I certify that the resulting SEA represents the following: USACE's good-faith effort to prioritize documentation of the most important considerations and factors required by NEPA; that this document is consistent with page limits pursuant to 42 U.S.C. 4336a(e) and deadlines pursuant to 42 U.S.C. 4336a(g) or shall be reported according to 42 U.S.C. 4336a(g)2.; that this prioritization reflects USACE's expert judgment; the document is substantially complete; that any considerations addressed briefly or left unaddressed were, in USACE's judgment, comparatively not of a substantive nature that meaningfully informed the consideration of environmental effects and the resulting decision on how to proceed; and that in USACE's judgment the analysis contained therein is adequate to inform and reasonably explain USACE's final decision regarding the proposed federal action.

9.0 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.

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). 2025a. Advanced Mapper Viewer, Version 2. Accessed on February 5, 2025, from https://maps.cteco.uconn.edu/viewers/

CTDEEP. 2025b. Connecticut Water Quality Classifications. Accessed on April 10, 2025, from https://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=a23ad81358e749aab86342aed4c2dfe7

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

CT DEEP. 2019. Connecticut Aquifer Protection Areas. Accessed on September 3, 2025, from https://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=6b33fc05fcce4c5286fafae1b2cccbfb

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.

CT DEEP. 2011. Water Quality Standards. Accessed May 12, 2023, from https://portal.ct.gov/-/media/DEEP/water/water_quality_standards/WQS-Final-Adopted-February-25-2011.pdf.

Connecticut Department of Public Health (CT DPH). 2025. Public Water Supply Mapping Application. Accessed on September 9, 2025, from https://portal.ct.gov/dph/drinking-water/dws/public-water-supply-map/

Cornell Cooperative Extension (CCE). 2016. Management Options: Benthic Barriers. Accessed on August 18, 2025, from https://monroe.cce.cornell.edu/environment/invasive-nuisance-species/aquaticinvasives/hydrilla/management-options/benthic-barriers.

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/.

Getsinger, K.D. & Netherland, M.D. (2018). Use of herbicides in areas of high water exchange: Practical considerations. Journal of Aquatic Plant Management, 56s: 39-43.

Haller, W.T. 2020. Mechanical control of aquatic weeds. In Gettys, L.A., Haller, W.T., & Petty, D.G, *Biology and Control of Aquatic Plants, A Best Management Practices Handbook (*4th ed.). (pp. 133-138). Aquatic Ecosystem Restoration Foundation.

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

Hartmann, H.T., Kester, D.E., Davies, F.T. Jr, & Geneve, R.L. 2011. *Hartmann & Kester’s Plant Propagation: Principles and Practices* (8th ed.). Pearson Education Inc.

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.

Langland, K.A. & Sutton, D.L. 1980. Regrowth of Hydrilla from Axillary Buds. *Journal of Aquatic Plant Management*, 18, 27-29.

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 & Tiner, R.W. 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 August 8, 2023, from https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/601c2a8640e97b119cecdbcd/1612458639776/SF+Commercial+Issues+Amendment+FEIS_FINAL.pdf.

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

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.

Northeast Aquatic Nuisance Species Panel (NEANS). 2020. Connecticut River Hydrilla Control Project Five-Year Management Plan. Accessed on August 19, 2025, from https://www.northeastans.org/wp-content/uploads/2021/02/CT-River-Hydrilla-Project-Five-Year-Management-Plan-FINAL.pdf

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.

Schad, A.N & Dick, G.O. 2018. Aquatic vegetation community structure response to hydrilla management with triploid grass carp, herbicide, and native vegetation planting. Lake and Reservoir Management, 34:4, 417-425.

SePRO Corporation (SePRO). 2017a. Safety Data Sheet for ProcellaCOR EC Version 1.0 EPA Registration No. 67690-80.

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 distinct 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). 2025. *Connecticut River Hydrilla*. Accessed on September 10, 2025 from https://www.nae.usace.army.mil/Missions/Projects-Topics/Connecticut-River-Hydrilla/

USACE. 2024a. 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.

USACE. 2025b. National Inventory of Dams (NID). Accessed from https://catalog.data.gov/dataset/national-inventory-of-dams-nid

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.

EPA. 2017b. The 2017 EPA Environmental Fate and Ecological Risk Assessment for Florpyrauxifen-Benzyl. Accessed from https://www.regulations.gov/document/EPA-HQ-OPP-2016-0560-0011

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

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

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

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.

EPA. 2005a. Reregistration Eligibility Decision for Endothall. Accessed from https://archive.epa.gov/pesticides/reregistration/web/pdf/endothall_red.pdf.

EPA. 2005b. Environmental Fate and Ecological Risk Assessment of Endothall – Revised. Accessed from https://www.regulations.gov/document/EPA-HQ-OPP-2004-0370-0005

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

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 (USFWS). 2025a. National Wetlands Inventory Mapper. Accessed on April 10, 2025, from https://USFWSprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/.

USFWS. 2025b. Information and Planning and Consultation Tool. Accessed on April 8, 2025, from https://ipac.ecosphere.USFWS.gov/.

USFWS. 2025c. Northern Long-Eared Bat (*Myotis septentrionalis*). Accessed on April 8, 2025, from https://www.USFWS.gov/species/northern-long-eared-bat-myotis-septentrionalis.

USFWS. 2025d. Tricolored Bat (*Perimyotis subflavus*). Accessed on April 8, 2025, from https://www.USFWS.gov/species/tricolored-bat-perimyotis-subflavus.

USFWS. 2025e. Puritan Tiger Beetle (*Ellipsoptera puritana*) 5-Year Review: Summary and Evaluation. Chesapeake Bay Field Office.

USFWS. 2024. Monarch Butterfly (*Danaus plexippus*) Species Status Assessment Report. Version 2.3. Midwest Regional Office.

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

USFWS. 1993. Puritan Tiger Beetle (*Cicindela puritana*) Recovery Plan.

University of Florida Institute of Food and Agricultural Sciences (UF/IFAS). 2020. Hand Pulling. Accessed on August 19, 2025 from https://plants.ifas.ufl.edu/management-plans/physical-control-considerations/hand-pulling/

UF/IFAS. 2025. Water Level Manipulation. Accessed on August 19, 2025 from https://plants.ifas.ufl.edu/management-plans/physical-control-considerations/water-level-manipulation/

Van Driesche, R., Blossey, B., Hoddle, M., Lyon, S., & Reardon, R. 2002. Biological Control of Invasive Plants in the Eastern United States, USDA Forest Service Publication FHTET2002-04, 413 p.