

CLA Engineers, Inc.

Civil • Structural • Survey

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Rev September 25, 2024

Waterford Conservation Commission
Attn: Maureen FitzGerald, Environmental Planner
15 Rope Ferry Rd
Waterford, CT 06385

Re: Town of Waterford
234 Bloomingdale Rd
Waterford, CT
CLA #7880

Dear Ms. FitzGerald:

On behalf of the applicant, CLA Engineers has performed a delineation and functional evaluation of the inland wetlands at the referenced site and assessed the site to provide a basis for determining the potential for impacts. The inland wetland boundary was delineated by Robert Russo, CSS and Molly Ahern, MESM on June 24, 2024. The wetland boundary and proposed development are shown on the plans prepared by CLA Engineers dated **DATE**. These data were augmented with additional online information from CTDEEP, USFWS, USGS, and the Town of Waterford.

Site Setting

The site is a 2.41 acre parcel located on the north side of Bloomingdale Rd just east of the intersection with Millers Pond Rd. Currently, the parcel is undeveloped and covered with forest. The southern and eastern edges of the parcel are forested. Hunts Brook runs southeast across the north end of the property and later joins the Thames River system. The wetland associated with Hunts Brook is identified as Wetland 3 on site plans. Additionally, two small wetland areas (identified as Wetland 1 and Wetland 2 on the plans) are located on the property.

The surrounding neighborhood is zoned residential (R-40) per 2022 update of the Town of Waterford Zoning Map and consists of low- to medium-density single family residential lots, most of which are developed.

Soils

The upland and wetland soils mapped by NRCS are listed in the table below. Additional descriptive details are provided in Appendix A.

Table 1 - Soil Types and Properties at the Bloomingdale Rd Site

<u>Soil Series</u>	<u>Parent Material</u>	<u>Drainage Class</u>	<u>Texture/Characteristics</u>
Agawam	Coarse-loamy eolian deposits	Well drained	Fine sandy loam
Rippowam*	Coarse-loamy alluvium	Poorly drained	Fine sandy loam
Canton and Charlton	Coarse-loamy over sandy melt-out till	Well drained	Fine sandy loam

*Hydric (wetland) soil type

The wetland soil unit mapped on this site consists of Rippowam fine sandy loam. The Rippowam series consists of very deep, well drained soils formed in sandy, water deposited materials. They are level to steep soils on outwash plains and high stream terraces.

The upland soil units mapped on this parcel are Agawam fine sandy loam and a unit of Canton and Charlton fine sandy loams. The Agawam series consists of very deep, poorly drained loamy soils formed in alluvial sediments. They are nearly level soils on flood plains subject to frequent flooding. The Canton series consists of very deep, well drained soils formed in a loamy mantle underlain by sandy till. They are on nearly level to very steep moraines, hills, and ridges. The Charlton series consists of very deep, well drained soils formed in loamy melt-out till. They are nearly level to very steep soils on moraines, hills, and ridges.

Wetland Characteristics

Classification

The National Wetlands Inventory (NWI <https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/>) shows the onsite wetlands as palustrine forested wetland (PFO1E). The description of that classification is provided below.

Classification code: PFO1E

System Palustrine (P): The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 ppt. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2.5 m (8.2 ft) at low water; and (4) salinity due to ocean-derived salts less than 0.5 ppt.

Class Forested (FO): Characterized by woody vegetation that is 6 m tall or taller.

Subclass Persistent (1): Dominated by species that normally remain standing at least until the beginning of the next growing season. This subclass is found only in the Estuarine and Palustrine systems.

Water Regime Seasonally Flooded/Saturated (E): Surface water is present for extended periods (generally for more than a month) during the growing season, but is absent by the end of the season in most years. When surface water is absent, the substrate typically remains saturated at or near the surface.

Wetland hydrology

Because no activities are planned within the 100-foot upland review area associated with Hunt's Brook (Wetland 3), the below functional assessment focuses only on the functions provided by Wetlands 1 and 2. Wetland 1 is a small, highly disturbed depression with seasonal inundation. Some evidence indicates that Wetland 1 may be a vernal pool (high water marks but no water present during August site investigation, deep depression, some amphibians present), but springtime assessment is required to confirm whether this is the case. CLA staff believe it is likely that Wetland 1 does not provide adequate habitat for spotted salamanders (*Ambystoma maculatum*) due to its proximity to the surrounding existing residential development. However, because Wetland 1 is not far from Hunt's Brook and its associated riparian forest, it has potential to function as habitat for wood frogs (*Rana sylvatica*). Wetland 2 is a small forested swamp dominated by *Acer rubrum* in the tree stratum. The wetland is seasonally saturated.

Factors important to functional assessment

The following observations are important to the functional assessment and are listed here to provide context to the later discussion of functions and values.

1. Connecticut protected species are not known to be present on the site per the June 2024 update of the CTDEEP NDDB. The full NDDB map is included as Appendix B.
2. The stream present on the northern end of the property, Hunts Brook, has a known fish and macroinvertebrate community per CTDEEP research. Detailed species lists are provided in Appendix C. No activity is proposed in proximity of Hunts Brook or its associated wetland (Wetland 3).
3. The local zoning is residential (R-40) per the Town GIS, and the surrounding parcels appear to be used for single-family residences.
4. The wetlands have coarse-loamy alluvial and eolian soils within per available online mapping.
5. Wetlands 1 and 2 are not part of a larger watercourse system, but are close to the Thames River system.
6. The wetlands appear to be highly disturbed but functional.

Principal functions

The functional assessment was conducted using the USCAE Highway Methodology (<https://www.nae.usace.army.mil/Portals/74/docs/regulatory/Forms/HighwaySupplement6Apr2015.pdf>). The assessment is included as Appendix C and it revealed that the wetlands have the following principal functions:

1. Sediment and toxicant retention
2. Nutrient removal
3. Wildlife habitat

Potential for Impacts

As shown on the project plans, no regulated activities are planned in any of the three wetlands identified on site. Additionally, no work is proposed within the 100-foot upland review zone for Hunt's Brook (Wetland 3) because that watercourse is deemed to be more valuable than isolated forested wetlands elsewhere on site. Some of the proposed activities will take place within the 100-foot upland review zone for Wetlands 1 and 2, with the nearest activity taking place 50 feet from Wetland 1. These activities are as follows:

1. Installation of a septic system featuring a 1,500-gallon tank and one 12x48' leaching trench suitable for the planned 4-bedroom home
2. Clearing of upland vegetation
3. Grading soil for the house and septic system
4. Installation of erosion and sedimentation control measures such as silt fence and hay bales where appropriate as indicated on plans

Additionally, we propose the restoration of Wetland 1 by means of clearing the wetland of debris under supervision of a wetland scientist. If Wetland 1 is in fact a vernal pool, this will likely make the wetland safer and more habitable for reptiles and amphibians which rely on critical vernal breeding habitat.

The proposed activities outlined above may impact the wetland's principal functions in the following ways:

1. Sediment and Toxicant Retention: If Wetland 1 is cleaned and restored to its original state (i.e. before it became degraded), then it will still be able to effectively perform its sediment and toxicant retention function, improving water quality.
2. Nutrient Removal: Because poorly drained and very poorly drained soils are known to exist both in and around the wetland, the wetland will remain able to remove nutrients after septic system installation.
3. Wildlife Habitat: As long as proper erosion control measures are in place per the attached site plans, there is no reason for the installation and use of a septic system of the proposed size to interfere with the wetlands' ability to serve as a wildlife habitat.

Summary

In short, the installation of a septic system suitable for a four-bedroom home in the upland review area surrounding Wetlands 1 and 2 is not expected to decrease the wetlands' functionality in retaining toxicants, removing nutrients, and serving as a unique wildlife habitat.

Based on our suspicion that Wetland 1 could function as a vernal breeding habitat, we recommend that the wetland be cleared of debris and restored to its original condition. This process is to be overseen by a wetland scientist.

Sincerely,

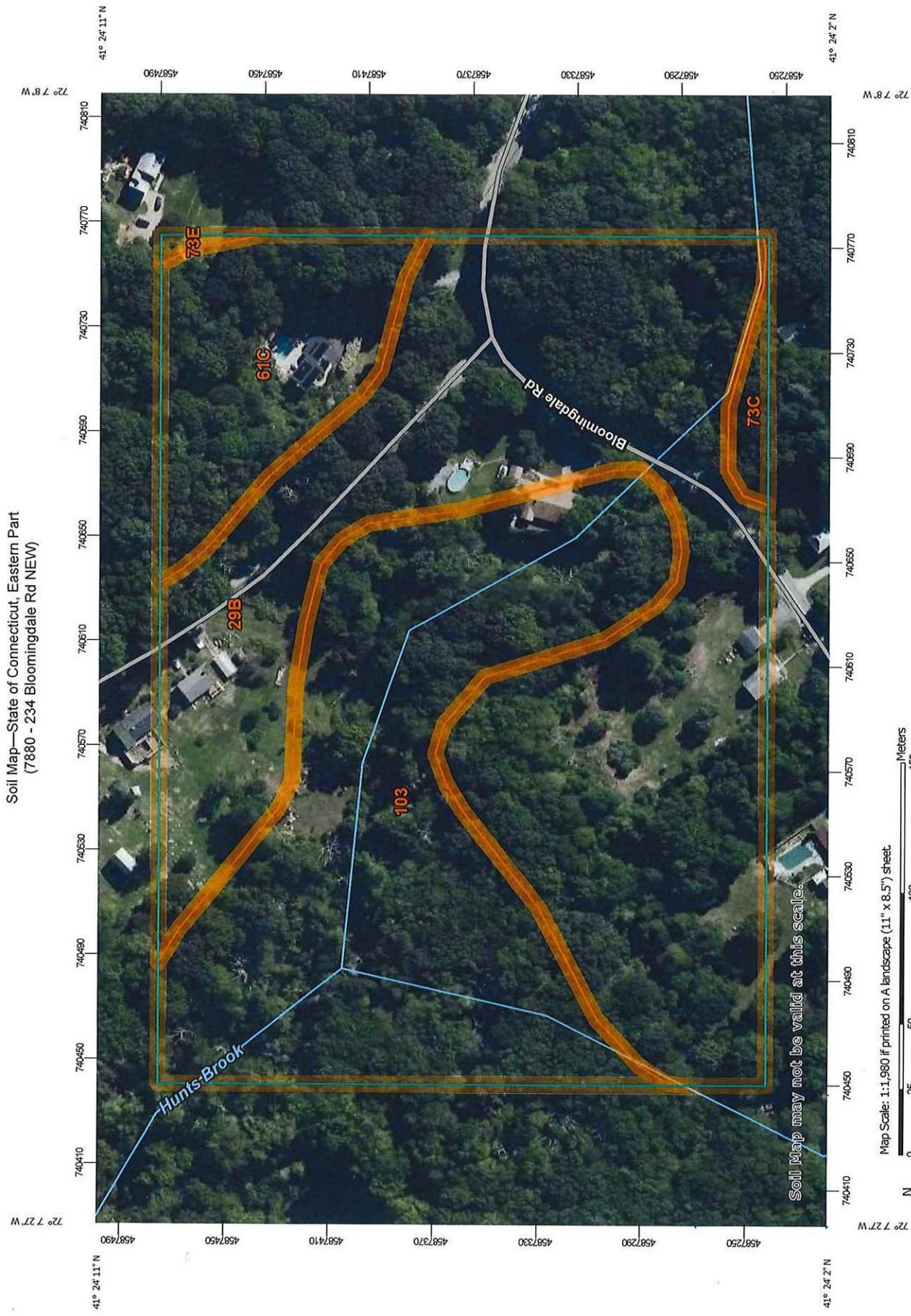


Molly K. Ahern, MESM
Soil Scientist, CLA Engineers
Norwich, CT

Appendix A: Soil Map

Adapted from Web Soil Survey, U.S. Geological Survey, U.S. Department of Agriculture

Soil Map—State of Connecticut Eastern Part
(7880 - 234 Bloomingdale Rd NEW)



MAP LEGEND

 Area of Interest (AOI)	 Spoil Area
 Soils	 Stony Spot
 Soil Map Unit Polygons	 Very Stony Spot
 Soil Map Unit Lines	 Wet Spot
 Soil Map Unit Points	 Other
 Special Point Features	 Special Line Features
 Blowout	 Water Features
 Borrow Pit	 Streams and Canals
 Clay Spot	 Transportation
 Closed Depression	 Rails
 Gravel Pit	 Interstate Highways
 Gravelly Spot	 US Routes
 Landfill	 Major Roads
 Lava Flow	 Local Roads
 Marsh or swamp	 Background
 Mine or Quarry	 Aerial Photography
 Miscellaneous Water	
 Perennial Water	
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
Sinkhole	
Slide or Slip	
Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut, Eastern Part
Survey Area Data: Version 1, Sep 15, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
29B	Agawam fine sandy loam, 3 to 8 percent slopes	9.9	53.0%
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	2.0	10.8%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	0.2	1.2%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	0.0	0.2%
103	Rippowam fine sandy loam	6.5	34.8%
Totals for Area of Interest		18.8	100.0%

Appendix B: NDDDB Map for Waterford, CT

Updated June 2024

Natural Diversity Data Base Areas WATERFORD, CT June 2024

-  State and Federal Listed Species
-  Critical Habitat
-  Town Boundary

NOTE: This map shows known locations of State and Federal Listed Species and Critical Habitats. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDDB) from a variety of data sources. Exact locations of species have been buffered to produce the generalized locations.

This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas. If the project is within a hatched area there may be a potential conflict with a listed species. For more information, use DEEP ezFile <https://filings.deep.ct.gov/DEEPPortal/> to submit a Request for Natural Diversity Data Base State Listed Species Review or Site Assessment. More detailed instructions are provided along with the request form on our website.

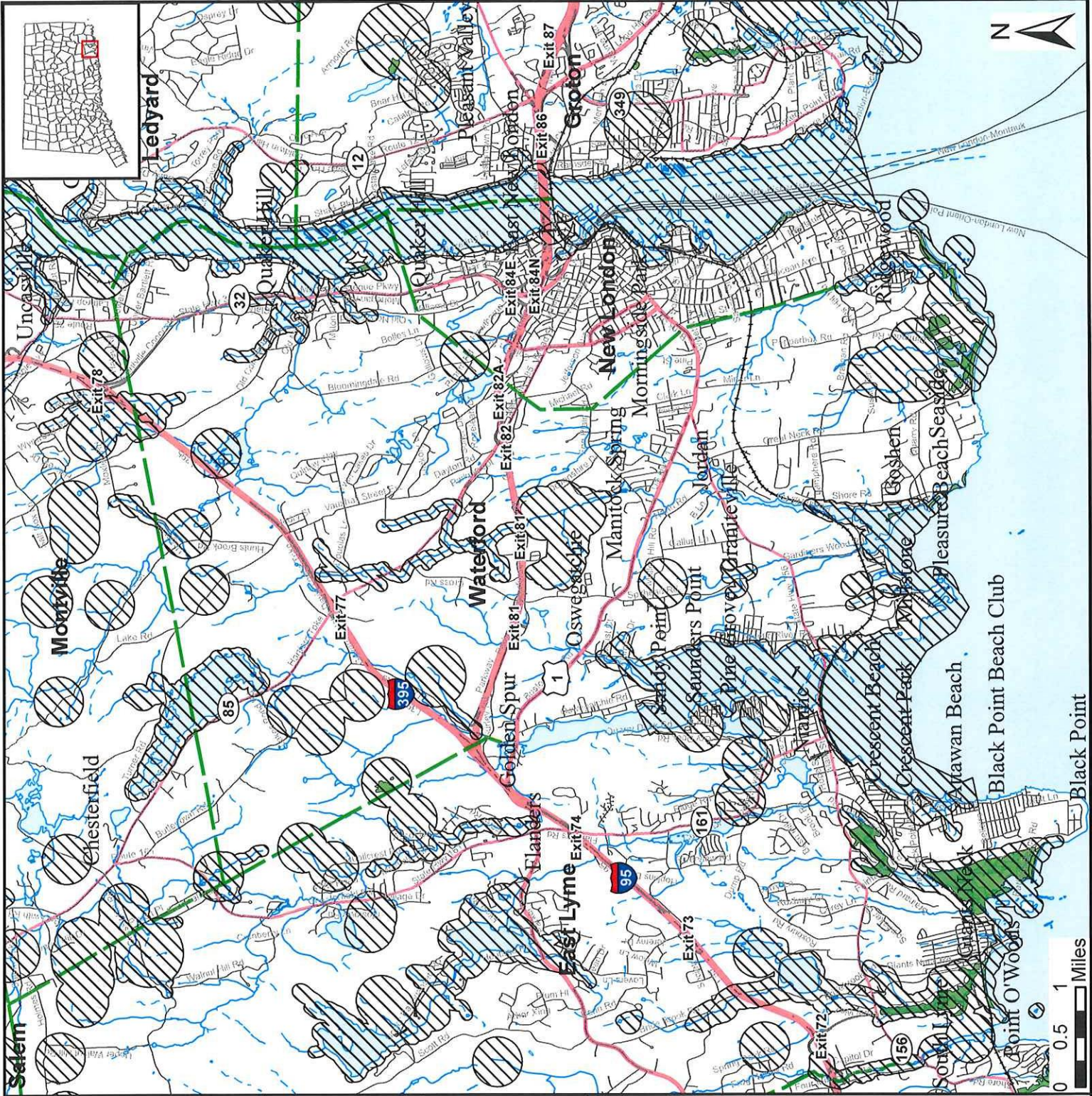
<https://portal.ct.gov/deep-nddbrequest>

Use the CTECO Interactive Map Viewers at <http://cteco.uconn.edu> to more precisely search for and locate a site and to view aerial imagery with NDDDB Areas.

QUESTIONS: Department of Energy and Environmental Protection (DEEP)
79 Elm St, Hartford, CT 06106
email: deep.nddbrequest@ct.gov
Phone: (860) 424-3011



Connecticut
Department of Energy &
Environmental Protection



Appendix C: Fish Surveys

Adapted from CTECO DEEP Community Fisheries Data

Samples collected downstream of the property Hunts Brook

Sample Year	2013
Sample ID	151362013
American Eel	16
Blacknose Dace	2
White Sucker	3
Sample Year	1993
Sample ID	151361993
Aeshnidae	1
Athericidae	1
Baetidae	1
Brachycentridae	1
Chironomidae	1
Corydalidae	1
Elmidae	1
Glossosomatidae	1
Gomphidae	1
Heptageniidae	1
Hydropsychidae	1
Isonychiidae	1
Leptophlebiidae	1
Leuctridae	1
Limnephilidae	1
Perlidae	1
Philopotamidae	1
Pyralidae	1
Rhyacophilidae	1

Appendix D: Species List

Plant species found in Wetland 1:

Onoclea sensibilis

Rosa multiflora

Parthenocissus quinquefolia

Smilax rotundifolia

Ruba sp.

Plant species found in Wetland 2:

Onoclea sensibilis

Rosa multiflora

Parthenocissus quinquefolia

Smilax rotundifolia

Ruba sp.

Acer rubrum

Toxicodendron radicans

Clethra alnifolia

Rubus phoenicolasius

Plant species found in Wetland 3:

Smilax rotundifolia

Osmundastrum cinnamomeum

Quercus bicolor

Acer rubrum

Osmunda regalis

Onoclea sensibilis

Parthenocissus quinquefolia

Spartina sp.

Symphyotrichum lateriflorum

Wetland Function-Value Evaluation Form

Total area of wetland 32,784^{ft}² Human made? NO Is wetland part of a wildlife corridor? NO or a "habitat island"? NO
 Adjacent land use residential Distance to nearest roadway or other development _____

Dominant wetland systems present PFOLE Contiguous undeveloped buffer zone present yes

Is the wetland a separate hydraulic system? yes If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland ID: 7880-WL-1/2
 Latitude 41.401 Longitude -72.121
 Prepared by: MA Date 8/28/24
 Wetland Impact:
 Type none Area _____
 Evaluation based on:
 Office ☒ Field ☒
 Corps manual wetland delineation
 completed? Y ☐ N ☒

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			not associated w/ watercourse
Floodflow Alteration	N			small area, no watercourse
Fish and Shellfish Habitat	N			unavoidable for fish
Sediment/Toxicant Retention	Y	1,2,3,4,5	Y	evidence of pollution found in WL
Nutrient Removal	Y	3,4,5,7,8,10	Y	poorly drained soils abundant
Production Export	N			little evidence of production
Sediment/Shoreline Stabilization	N			no real "shoreline" due to WL size
Wildlife Habitat	Y	3,4,5,7,8,10,18,20	Y	evidence of deer presence nearby, ^{potential} vernal pool
Recreation	N			non-public land
Educational/Scientific Value	N			inaccessible to schools/public
Uniqueness/Heritage	N			no public wetland access
Visual Quality/Aesthetics	Y	1,3,5,8,12		no public access
ES Endangered Species Habitat	N			no state listed species found (NDBB)
Other				

Notes:

* Refer to backup list of numbered considerations.

Appendix E: Photographs

Collected 9/23/2024 by M. Ahern



Photograph 1: Wetland 1



Photograph 2: Wetland 2



Photograph 3: Wetland 3