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Planning & Development
Town of Waterford, CT

CLA Engineers, Inc.
Civil • Structural • Survey

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April 14, 2025

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

Re: Town of Waterford
18 Cinderella Lane
Waterford, CT 06385
CLA #7517

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 in the spring of 2024. The wetland boundary and proposed development are shown on the plans prepared by CLA Engineers dated March 28, 2025. These data were augmented with additional online information from CTDEEP, USFWS, USGS, and the Town of Waterford.

Site Setting

The site is a 2.61 acre parcel located on the south side of Cinderella Lane. Currently, the parcel is mostly undeveloped and covered with forest, and there are some small auxiliary structures on the property (a shed and a pad). The western side of the property contains a tract of forested wetland. The wetland is not associated with any permanent stream channel, but it likely contributes to the Thames River system.

The surrounding neighborhood is zoned residential (R-20 and RU-120) per 2022 update of the Town of Waterford Zoning Map and consists of low- to medium-density single family residential lots. Some of the abutting properties are large (>30ac) and undeveloped, giving the wetland area a large, forested buffer on the southern and western edges.

Soils

The soils mapped on the property by NRCS are listed in the table below. Additional descriptive details are provided in Appendix A.

Table 1 - Soil Types and Properties at the Cinderella Lane Site

Soil Series	Parent Material	Drainage Class	Texture/Characteristics
Charlton-Chatfield complex	Coarse-loamy melt-out till	Well drained	Fine sandy loam to gravelly fine sandy loam
Narragansett-Hollis complex	Coarse-loamy eolian deposits over melt-out till	Well drained to somewhat excessively drained	Silt loam to gravelly fine sandy loam

*Hydric (wetland) soil type on site is Ridgebury Leicester Whitman

No wetland soils are mapped on this site by USDA's Web Soil Survey. The four upland soils mapped on the property include Charlton fine sandy loam, Chatfield fine sandy loam, Narragansett silt loam, and Hollis gravelly fine sandy loam. 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. The Chatfield series consists of well drained soils formed in loamy melt-out till. They are moderately deep to bedrock. The Narragansett series consists of very deep, well drained loamy soils formed in a mantle of medium-textured deposits overlying till. The Hollis series consists of well drained and somewhat excessively drained soils formed in a thin mantle of till. They are shallow to bedrock.

Wetland Characteristics

Classification

The National Wetlands Inventory (NWI https ://fwsprimary.wim.usgs.gov/ wetlands/apps/wetlands-mapper/) does not document the onsite wetlands. However, based on field observations and available aerial imagery, CLA Engineers would classify the area as a 17,372 square foot (0.40 acre) 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

The wetland appears to be seasonally flooded based on field observations such as water-stained leaves and morphological adaptations to vegetation, particularly buttressed tree roots. The wetland is not directly associated with a watercourse, but field observations and available GIS data indicate that the wetland likely shares groundwater connectivity with other wetlands and watercourses in the Thames River system. The wetland has no surface tributaries or outlets, and is densely vegetated across all five Army Corps strata (tree, sapling, shrub, herb, and woody vine). A detailed plant species list is included in Appendix C.

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 wetland hydrology does not appear to support finfish or shellfish habitat, but it likely shares groundwater connectivity with the Thames River system, which supports fish.
3. The local zoning is residential (R-20, RU-120) per the Town GIS, and the surrounding parcels appear to be used for single-family residences and forested open space.
4. The wetlands have coarse-loamy alluvial and melt-out till soils within per available online mapping.
5. The wetland does not share surface connectivity with other wetlands or watercourses.
6. The wetland is densely vegetated across all strata.

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 in Appendix C and it revealed that the wetlands have the following principal functions:

1. Floodflow alteration – on a very local level
2. Sediment and toxicant retention
3. Nutrient removal
4. Wildlife habitat

Potential for Impacts

As shown on the project plans, no activities are planned in the wetland. However, some activities are proposed to take place within the 100-foot upland review zone. These activities are as follows:

1. Installation of a septic system suitable for a three-bedroom home with one primary leaching system and one reserve area.
2. Provision of erosion and sedimentation control measures (silt fence, hay bales) where appropriate to prevent sediment deposition into the wetland.
3. Slight grading to accommodate for the septic system.

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

1. **Floodflow Alteration**: Since the septic system is designed to be oriented parallel to the wetland with approximately a 14' difference in elevation, it is unlikely that the installation and usage of such a system will influence the wetland's ability to manage flooding.
2. **Sediment and Toxicant Retention**: This function is considered a primary function because of the wetland's location relative to areas of potential sediment flow upslope (there is a steep hill between the wetland and the proposed activity area). If the septic system is properly maintained as outlined on the attached plan set, CLA does not anticipate impacts to the wetland's sediment retention function.
3. **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.
4. **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 three-bedroom home in the upland review area surrounding the wetland is not expected to decrease the wetland's functionality in reducing flooding, retaining toxicants, removing nutrients, and serving as a wildlife habitat.

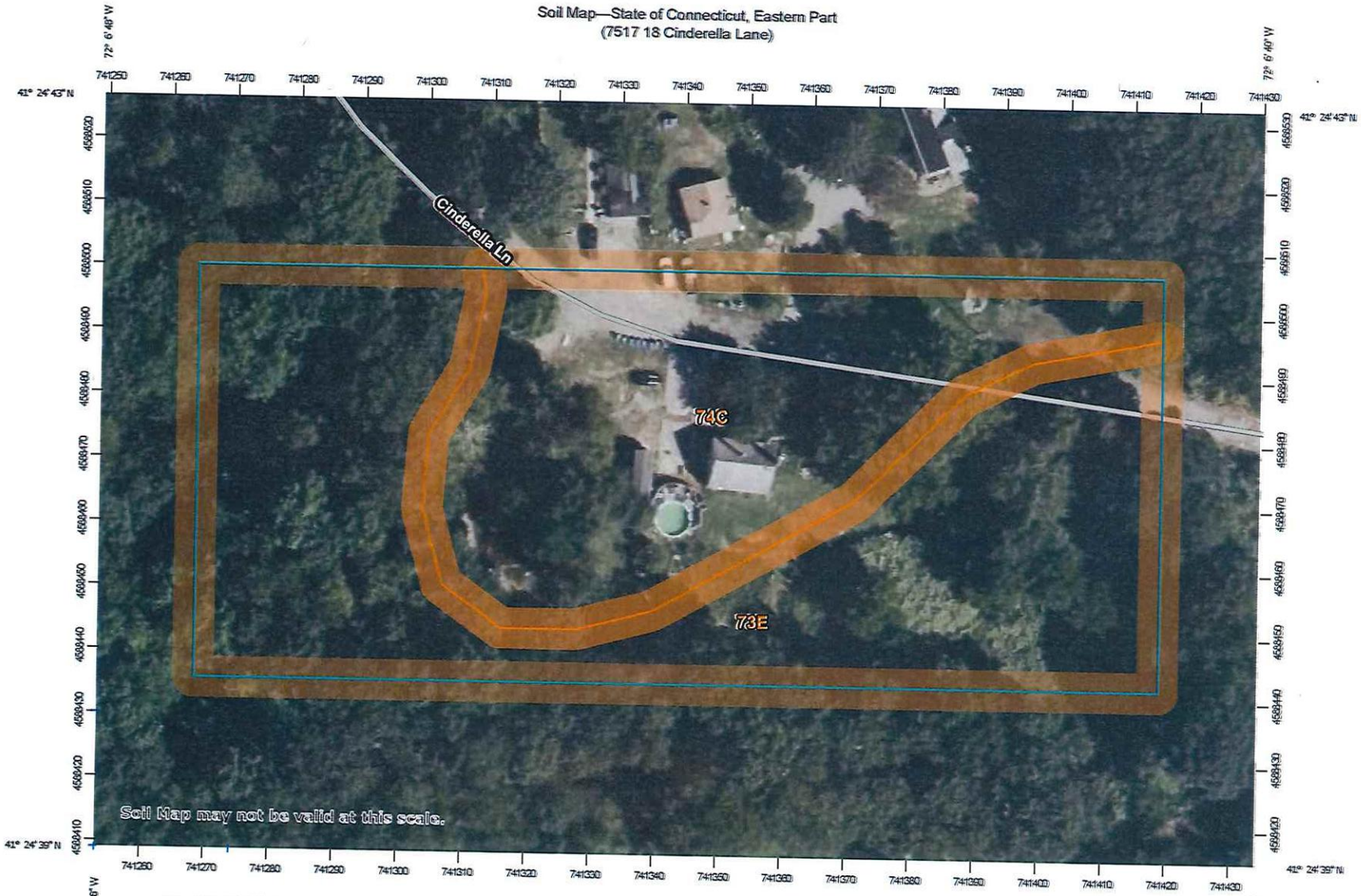
Sincerely,

Robert C, Russo
CSS, 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
(7517 18 Cinderella Lane)



Map Scale: 1:828 if printed on A landscape (11" x 8.5") sheet.

Meters: 0 10 20 40 60

Feet: 0 40 80 160 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

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

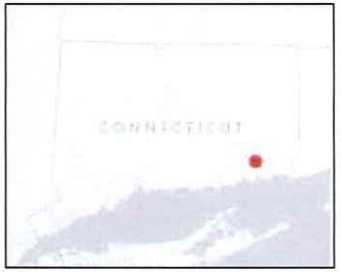
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	1.4	58.7%
74C	Narragansett-Hollis complex, 3 to 15 percent slopes, very rocky	1.0	41.3%
Totals for Area of Interest		**2.4**	**100.0%**

Appendix B: NDDB Map for Waterford, CT

Updated June 2024

CT Environmental Conditions Online

Map Title



Legend

- Natural Diversity Database Are
- Light Gray Canvas Base

Notes

0.6 0 0.28 0.6 Miles

© Connecticut Environmental Conditions Online

THIS MAP IS NOT TO BE USED FOR NAVIGATION

This map is intended for general planning, management, education, and research purposes only. Data shown on this map may not be complete or current. The data shown may have been compiled at different times and at different map scales, which may not match the scale at which the data is shown on this map.

Wetland Function-Value Evaluation Form

Total area of wetland 0.40ac Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use residential, forested Distance to nearest roadway or other development 0' → Cinderella Lane

Dominant wetland systems present PFO1E Contiguous undeveloped buffer zone present ≈80%

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

How many tributaries contribute to the wetland? no Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 7517-18 Cinderella Ln

Latitude 41.4115 Longitude -72.1128

Prepared by: MA Date 9/4/24

Wetland Impact:
Type none Area N/A

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	Y	4, 6, 15		may have GW connectivity w/ other streams
Floodflow Alteration	Y	1, 2, 7, 9, 11, 12, 18	✓	likely GW connection w/ Thames R. System
Fish and Shellfish Habitat	N			may have impact on fish habitat elsewhere
Sediment/Toxicant Retention	Y	1, 2, 3, 4, 7, 8, 9	✓	Narragansett silt loam present
Nutrient Removal	Y	1, 3, 5, 8, 9, 10, 11	✓	vegetation of all strata present
Production Export	Y	1, 4, 7, 12		very densely vegetated, wildlife use present
Sediment/Shoreline Stabilization	Y	2, 3, 6, 12, 14, 15		not assoc. w/ a watercourse
Wildlife Habitat	Y	1, 3, 4, 5, 7, 9, 11, 13, 21	✓	dense vegetation and evidence of animal use
Recreation	N			private property
Educational/Scientific Value	N			private property
Uniqueness/Heritage	N			private property
Visual Quality/Aesthetics	N			private property
ES Endangered Species Habitat	N			no NDDB area on the property
Other				

Notes:

* Refer to backup list of numbered considerations.

Appendix C: Army Corps Wetland Assessment Sheet and Species List

Plant Species found in Wetland on September 3, 2024

Rubus phoenicolasius

Celastrus orbiculatus

Reynotria japonica

Rosa multiflora

Acer rubrum

Parthenocissus quinquefolia

Lindera benzoin

Osmundastrum cinnamomeum

Thelypteris simulata

Clethra alnifolia

Toxicodendron radicans

Impatiens capensis

Onoclea sensibilis

Sphagnum sp.

Artemisia vulgaris

Kalmia latifolia

Epilobium coloratum

Vitis sp.

Eurybia divaricate

Microstegium vimineum

Appendix D: Photographs

Collected September 3, 2024 by M. Ahern

Photograph 1

Photograph 2

Photograph 3