MILONE & MACBROOM — Now part of SLR

November 12, 2020

Mr. Kevin Herrick
49 Bay Road
East Hampton, CT 06424

RE: Wetland and Watercourse Delineation
Proposed Bank Stabilization and Patio
49 Bay Road
East Hampton, Connecticut
MMI #141.17405.00001.0010

Dear Mr. Herrick:

At your request, I visited 49 Bay Road in East Hampton, Connecticut, to determine the presence or absence of wetlands and/or watercourses, to demarcate (flag) the boundaries of wetlands and watercourses identified, and to identify on-site soil types on the property. This letter includes the methods and results of the investigation, which was completed on November 6, 2020. In summary, wetlands on the property consist of the ordinary high water (OHW) line to Pocotopaug Lake, which bounds the southern extent of the property. No poorly drained, very poorly drained, or alluvial soils exist upgradient of the lake.

Regulatory Definitions

The Inland Wetlands and Watercourses Act (Connecticut General Statutes §22a-38) defines inland wetlands as "land, including submerged land...which consists of any soil types designated as poorly drained, very poorly drained, alluvial, and floodplain." Watercourses are defined in the act as "rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border upon the state or any portion thereof." The act defines intermittent watercourses as having a defined permanent channel and bank and the occurrence of two or more of the following characteristics: (A) evidence of scour or deposits of recent alluvium or detritus, (B) the presence of standing or flowing water for a duration longer than a particular storm incident, and (C) the presence of hydrophytic vegetation.

The Tidal Wetlands Act (Connecticut General Statutes §22a-28) defines wetlands as "those areas which border on or lie beneath tidal waters, such as, but not limited to banks, bogs, salt marsh, swamps, meadows, flats, or other low lands subject to tidal action, including those areas now or formerly connected to tidal waters and whose surface is at or below an elevation of 1 foot above local extreme high water; and upon which may grow or be capable of growing hydrophytic vegetation as identified in the Statutes."

Methodology

A second-order soil survey in accordance with the principles and practices noted in the United States Department of Agriculture (USDA) publication *Soil Survey Manual* (1993) was completed at the subject site. The classification system of the National Cooperative Soil Survey was used in this investigation. Soil map units identified at the project site generally correspond to those included in the *Soil Survey of the State of Connecticut* (USDA, 2005).

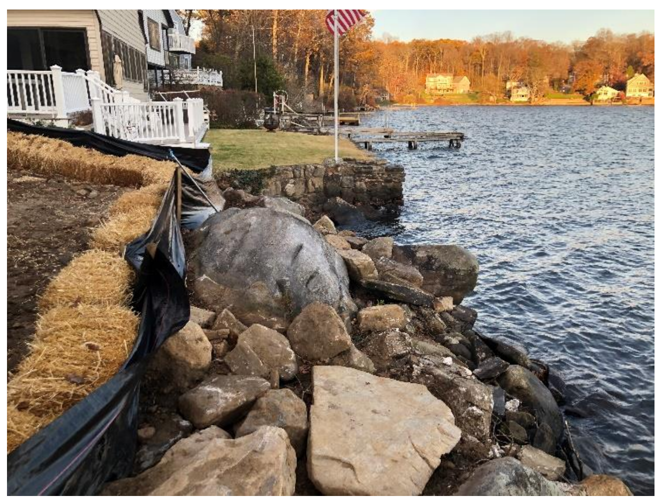
Wetland determinations were completed based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils and submerged land (e.g., a pond). Soil types were identified by observation of soil morphology (soil texture, color, structure, etc.). To observe the morphology of the property's soils, test pits and/or borings (maximum depth of 2 feet) were completed at the site.

Intermittent watercourse determinations were made based on the presence of a defined permanent channel and bank and the occurrence of two or more of the following characteristics: (A) evidence of scour or deposits of recent alluvium or detritus, (B) the presence of standing or flowing water for a duration longer than a particular storm incident, and (C) the presence of hydrophytic vegetation.

Wetland boundaries along the OHW line of the lake were demarcated (flagged) with blue surveyor's tape (hung from vegetation) or small flags (on wire stakes) that are generally spaced a maximum of every 50 feet. Complete boundaries are located along the lines that connect these sequentially numbered flags. The wetland boundaries are subject to change until adopted by local, state, or federal regulatory agencies. Wetland boundaries are depicted by flag series 1a through 4a.

On the day of the review, the weather was 70° Fahrenheit. The upland soil was dry. No poorly drained wetland soils were encountered in the study area.

Site and Wetlands Description



Bank stabilization at southern property boundary. Wetland boundary comprised of OHW line to Pocotopaug Lake.

The project area is comprised of a 0.32-acre residential property on Bay Road in East Hampton. Accessed to the south from Bay Road, the property slopes moderately to the south to Pocotopaug Lake, which comprises the southern property boundary. The property displays approximately 75 feet of frontage on Markham Bay in the northeast portion of the lake. The property is located in a densely settled residential neighborhood, and single-family residential dwellings abut the site to the west and east. Vertical stone retaining walls bound the lake edge at each abutting property.

Wetlands on the property consist of the OHW line to Pocotopaug Lake (Figure 2). Several feet of stones and small boulders currently stabilize the bank along the OHW line, and other sedimentation and erosion prevention measures are in place including a silt fence and straw bales to prevent soil loss from the unvegetated land upslope. The soils immediately adjacent to the lake behind the toe embankment were not poorly drained, very poorly drained, or alluvial, and no wetlands were delineated upslope of the lake.

The Pocotopaug Lake watershed drains approximately 15.5 square miles. Pocotopaug Lake drains south into Pocotopaug Creek, which confluences with Pine Brook approximately 1.7 miles downstream. Pine Brook confluences with Salmon River approximately 2.8 miles south and eventually joins the Connecticut River another 2.5 miles south in East Haddam.

Mapped Soils

To identify soils within the project area, a Natural Resources Conservation Service (NRCS) soil survey was conducted (Figure 3). Two upland soil map units were identified on the property, Canton and Charlton fine sandy loams (62C) and Charlton-Urban land complex (260D). Each map unit represents a specific area on the landscape and consists of one or more soils for which the unit is named. Other soils (inclusions that are generally too small to be delineated separately) may account for 10 to 15 percent of each map unit. The mapped units are by name, symbol, and typical characteristics (parent material, drainage class, high water table, depth to bedrock, and slope) (Table 1). These characteristics are generally the primary characteristics to be considered in land use planning and management. A description of each characteristic and its land use implications follows the table. A complete description of each soil map unit can be found in the *Soil Survey of the State of Connecticut* (USDA, 2005) and at http://soils.usda.gov.

TABLE 1
Soil Unit Properties

Map Unit		Parent Material	Slope (%)	Drainage Class	High Water Table			Depth To Bedrock (in)
Sym	**Name**				**Depth (ft)**	**Kind**	**Mos.**	
Upland Soil								
62C	Canton and Charlton	Coarse-loamy	3-15	Well drained	> 7	-	-	19-39
260D	Charlton-Urban	Coarse-loamy till	15-25	Well drained	> 7	-	-	> 70

Parent material is the unconsolidated organic and mineral material in which soil forms. Soil inherits characteristics, such as mineralogy and texture, from its parent material. Glacial till is unsorted while nonstratified glacial drift, consisting of clay, silt, sand, and boulders, is transported and deposited by glacial ice. Glacial outwash consists of gravel, sand, and silt, which are commonly stratified, deposited by glacial meltwater. Alluvium is material such as sand, silt, or clay, deposited on land by streams. Organic deposits consist of decomposed plant and animal parts.

A soil's texture affects the ease of digging, filling, and compacting and the permeability of a soil. Generally, sand and gravel soils, such as outwash soils, have higher permeability rates than most glacial till soils. Soil permeability affects the cost to design and construct subsurface sanitary disposal facilities and, if too slow or too fast, may preclude its use. Outwash soils are generally excellent sources of natural aggregates (sand and gravel) suitable for commercial use such as construction subbase material. Organic layers in soils can cause movement of structural footings. Compacted glacial till layers make excavating more difficult and may preclude the use of subsurface sanitary disposal systems or increase their design and construction costs if fill material is required.

Generally, soils with steeper slopes increase construction costs, increase the potential for erosion and sedimentation impacts, and reduce the feasibility of locating subsurface sanitary disposal facilities. Drainage class refers to the frequency and duration of periods of soil saturation or partial saturation during soil formation. There are seven natural drainage classes. They range from excessively drained, where water is removed from the soil very rapidly, to very poorly drained, where water is removed so slowly that free water remains at or near the soil surface during most of the growing season. Soil drainage affects the type and growth of plants found in an area. When landscaping or gardening, drainage class information can be used to assure that proposed plants are adapted to existing drainage conditions or that necessary alterations to drainage conditions (irrigation or drainage systems) are provided to assure plant survival.

High water table is the highest level of a saturated zone in the soil in most years. The water table can affect the timing of excavations; the ease of excavating, constructing, and grading; and the supporting capacity of the soil. Shallow water tables may preclude the use of subsurface sanitary disposal systems or increase design and construction costs if fill material is required.

The depth to bedrock refers to the depth to fixed rock. Bedrock depth affects the ease and cost of construction such as digging, filling, compacting, and planting. Shallow depth bedrock may preclude the use of subsurface sanitary disposal systems or increase design and construction costs if fill material is required.

Wetland Functional Assessment

A functional evaluation of on-site wetlands based on Milone & MacBroom, Inc. (MMI) field observations is summarized below (Table 2). The first column lists the functions and values generally ascribed to wetlands while the second column summarizes the rationale used to determine whether these functions and values are being performed within the subject wetland and/or watercourse.

TABLE 2
Wetland Functions and Values Assessment – 49 Bay Road, Pocotopaug Lake

	Functions and Values	Comments
	Groundwater Recharge/Discharge	Yes – This wetland provides conveyance for groundwater discharge and recharge.
	Flood Flow Alteration (Storage & Desynchronization)	Yes – The wetland allows for minor localized flood flow alteration.
	Fish & Shellfish Habitat	Yes – The perennial hydrology of the lake may support fish or shellfish habitat.
	Sediment/Toxicant Retention	No – The narrow rocky, unvegetated shoreline does not capture significant amounts of sediment.
	Nutrient Removal/Retention/Transformation	No – The rocky and unvegetated nature of the shoreline does not contribute to this function.
	Production Export (Nutrient)	Yes – The perennial hydrology of the waterbody allows for production export.

	Sediment/Shoreline/Watercourse Bank Stabilization	Yes – The bank along the waterbody is stabilized with rocks and artificial materials.
	Wildlife Habitat	Yes – The open waterbody provides opportunities for habitat utilization.
	Recreation (Consumptive & Non-Consumptive	Yes – The nexus with open space allows for recreational opportunities.
	Educational Scientific Value	No – The wetland does not provide educational opportunities.
	Uniqueness/Heritage	No – This area does not present unique attributes.
	Visual Quality/Aesthetics	Yes – The wetland contains inherent visual quality or aesthetic value.
ES	Endangered Species	Yes – The wetland is within a mapped Natural Diversity Data Base (NDDB) area per June 2020 resource information.

The principal functions of the wetland include the following:

- Groundwater Recharge/Discharge
- Fish and Shellfish Habitat
- Production Export (Nutrient)
- Shoreline Bank Stabilization
- Wildlife Habitat
- Recreation
- Visual Quality/Aesthetics
- Endangered Species

Proposed Project and Impacts Assessment

The proposed improvements include the formalization of shoreline stabilization measures currently in place through the construction of a vertical stone wall. A patio is also proposed immediately upgradient of the wall. Minor vegetation removal to the west is proposed, which includes a few small saplings and shrubs. These activities are not anticipated to affect the existing wetland functions and values provided by Pocotopaug Lake. The shoreline stabilization measures will be consistent in scope and scale to those features abutting the site to the west and east. The current sedimentation and erosion prevention measures will remain in place throughout the construction of the patio and wall. The design reinforcement measures will increase shoreline stabilization in this area by limiting exposure and damage to this portion of shoreline. Furthermore, as this lakefront has seen prior modifications and is situated in a densely settled residential area, it is unlikely that this improvement will adversely impact the lake.

Conclusion

The wetland boundary at Pocotopaug Lake was delineated. The boundary consists of the OHW line to Pocotopaug Lake, with no hydric soils or vegetation occurring inland of this line. The proposed project will be carried out with measures to prevent sedimentation and erosion of the lakeshore and is not expected to impact wetlands.

Very truly yours,

MILONE & MACBROOM, INC.

Megan B. Raymond, MS, PWS, CFM
Senior Project Manager, Environmental Science

Enclosures

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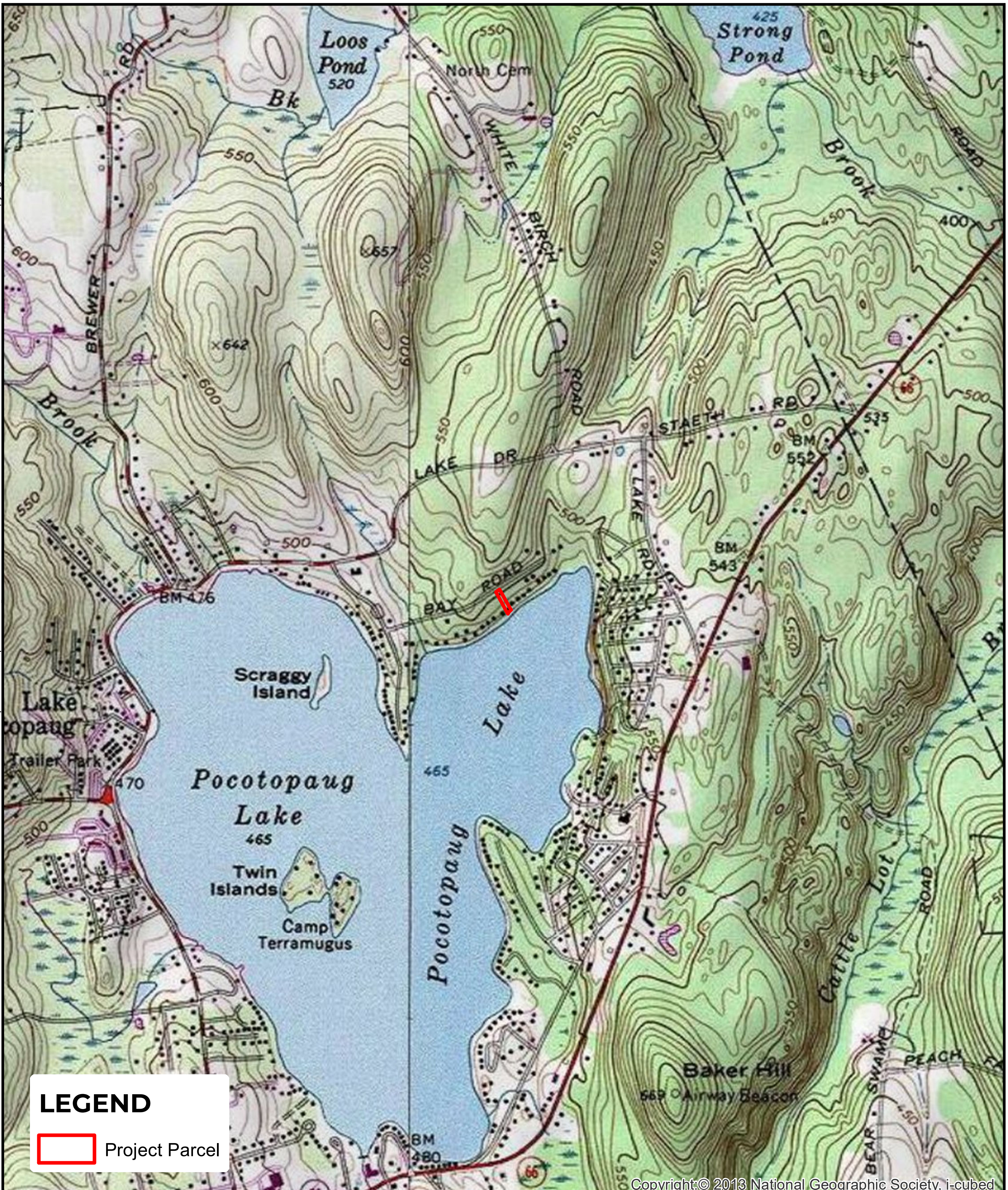

MILONE & MACBROOM

99 REALTY DRIVE
CHESHIRE, CT 06410
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WWW.MMINC.COM

USGS LOCUS MAP

INLAND WETLAND PERMITTING ASSISTANCE
HERRICK RESIDENCE
49 BAY ROAD
EAST HAMPTON, CONNECTICUT

N

0 500 1,000
Feet

SCALE 1 " = 2,000 '

DATE 11/9/2020

17405.00001
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FIG. 1

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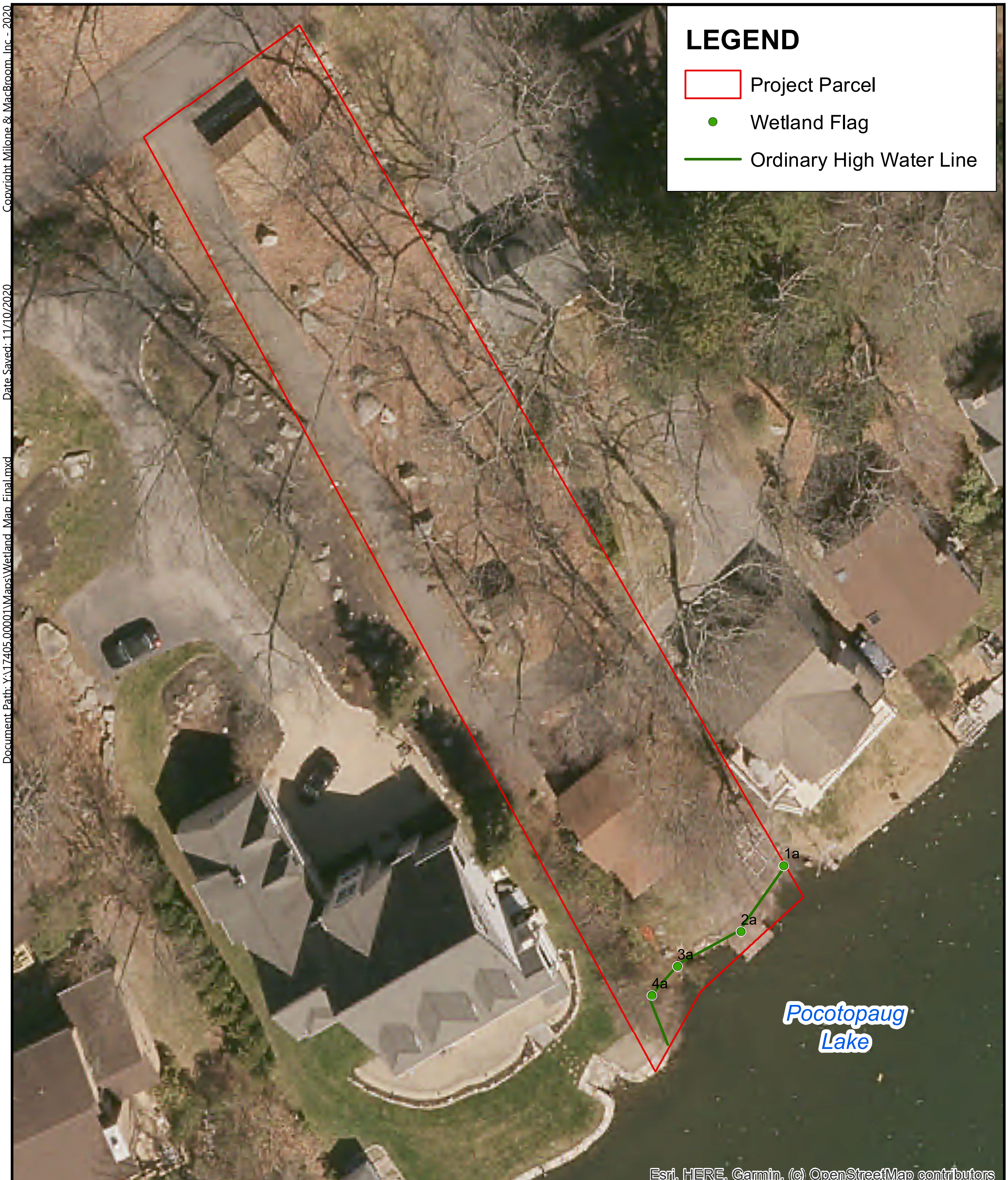

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WETLAND AND WATERCOURSE DELINEATION

INLAND WETLAND PERMITTING ASSISTANCE
HERRICK RESIDENCE
49 BAY ROAD
EAST HAMPTON, CONNECTICUT

N

0 40
Feet

SCALE 1 " = 46 '

DATE 11/10/2020

17405.00001
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FIG. 2

MILONE & MACBROOM
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NRCS SOIL MAP

INLAND WETLAND PERMITTING ASSISTANCE
HERRICK RESIDENCE

49 BAY ROAD
EAST HAMPTON, CONNECTICUT

SOURCE: 2004 AERIAL PHOTO, CTDEEP, 2006

DATE: NOVEMBER 4, 2020		
SCALE: 1"=50'		
PROJ. NO.: 17405.00001		
DESIGNED ATB	DRAWN ATB	CHECKED MBR
DRAWING NAME: FIG. 3		