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Wetland and Aquatic Resources Delineation Report Clean Energy Collective – Yorktown A Solar Project



Prepared For:

Clean Energy Collective
361 Centennial Parkway #300
Louisville, CO 80027

Bergmann

2665 Corning Road
Horseheads, NY 14845



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1.0 Introduction

Bergmann was retained by Clean Energy Collective to conduct a delineation of Wetlands and other Waters of the United States within the Yorktown A Solar Farm project site (referred to as the "Study Area"). The proposed project involves the installation of ground mounted photovoltaic panels on 34.62 acres of vacant forested land in Yorktown, Westchester County, NY.

The purpose of this investigation was to identify and delineate wetlands and other surface waters that are classified as "waters of the United States" under the Federal Clean Water Act, 33 U.S.C. §§ 1251 *et. seq.* (CWA) and Section 10 of the Rivers and Harbors Act of 1899, 33 U.S.C. § 403 (RHA), that could potentially be regulated by the United States Army Corps of Engineers (Corps) and/or the New York State Department of Environmental Conservation (NYSDEC). A formal wetland delineation of the project site was conducted on September 15, 2017 by Rita Zack and Michael Robson, Ph. D. of Bergmann. The delineation was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987; "1987 Manual") and the corresponding *USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (USACE 2012, "Regional Supplement").



2.0 United States Army Corps of Engineers Methodology

As defined by the United States Army Corps of Engineers (Corps) and the Environmental Protection Agency (EPA), wetlands are *“those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances does not support, a prevalence of vegetation typically adapted for life in saturated soil conditions”* (Environmental Laboratory 1987). Wetlands can support critical environmental functions including but not limited to: groundwater recharge and discharge, water and sediment retention, nutrient and toxicant removal and flora and fauna habitat. One way in which these valuable ecosystems are protected is through governmental regulations under Section 404 of The Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. To provide an accurate and consistent way of identifying and delineating areas that meet the wetland definition, the Corps developed an approach that investigates the vegetation, soils and hydrology of an area. Locations that meet the Corps defined criteria of hydrophytic vegetation, hydric soils and wetland hydrology will be considered Corps-jurisdictional wetlands. A detailed methodology for wetland delineations was published in the Corps’ 1987 Manual and accompanying Regional Supplements that are specific to regions throughout the United States.

2.1 HYDROPHYTIC VEGETATION

The 1987 Manual considers hydrophytic vegetation as a community of macrophytic plants that occur in areas where inundation or soil saturation is permanent, or frequently occurs in durations sufficient enough to influence the growth of plant species. The 1987 Manual emphasizes the assemblage of various plant species rather than the occurrence of individual indicator species to determine the presence or absence of hydrophytic vegetation. It is present when a location is dominated by species that either thrive in, or require extended soil saturation or inundation during the growing season. A hydrophytic vegetation determination is made by comparing the present plant species to the federal wetland indicators determined by the Corps, listed in the National Wetland Plant Indicator List. The Regional Supplements recognize the following indicator statuses:

1. Obligate Wetland Plants (OBL): Species that commonly occur in wetlands (>99% of the time).
2. Facultative Wetland Plants (FACW): Species that occur usually in wetlands (67%-99% of the time), but may also occur in non-wetlands.
3. Facultative Plants: (FAC): Species that usually occur in wetlands and non-wetlands equally (34%-66% of the time).
4. Facultative Upland Plants (FACU): Species that occur usually occur in non-wetlands (67%-99% of the time) but may also occur in wetlands.
5. Upland Plants (UPL): Species that commonly occur in non-wetlands (>99% of the time).

Occasionally, plant species are listed as “NI”, indicating they have been reviewed but no regional indicator was assigned, or “NO” indicating no known occurrence in the region. If these instances present themselves the indicator status assigned to the closest adjacent Corps region should be used. If that region does not provide an indicator status, then the species in question is marked as “Not listed (NL)” and is not considered during the determination of hydrophytic vegetation.



2.2 HYDRIC SOILS

The United States Department of Agricultural (USDA) Natural Resource Conservation Service (NRCS) defines hydric soils as *"a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part"* (USDA 2006). Inundation and saturation of a soil, combined with microbial activity causes anaerobic conditions within the soil, leading to oxygen depletion, accumulation of organic matter and/or reducible elements, most notably, iron. To determine the hydric status of a soil, the results of chemical reactions within the soil profile resulting from anaerobic conditions, are investigated based on color. Soil color is determined using the Munsell Soil Color Chart (X-Rite 2009), to establish the Hue, Value and Chroma of a sample. Hydric soil indicators are divided based on the texture of the soil. Indicators designated as "S" are applicable to Sandy Soils, while indicators designated as "F" are applicable to Loamy and Clayey Soils. Indicators listed as "A" are appropriate for All Soils. Hydric soil indicators vary by Regional Supplement.

2.3 WETLAND HYDROLOGY

"The term 'wetland hydrology' encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface, at some time during the growing season" (Environmental Laboratory 1987).

Hydrology indicators provide insight to a locations long-term hydrologic regime. Some hydrology indicators are naturally seasonal. The absence of hydrologic indicators does not necessarily conclude that wetland hydrology is not present. If hydrology indicators are the only parameter not observed it is likely that the location has inundated or saturated soils at some point during the growing season, but not at the time of observation. If hydrophytic vegetation and hydric soils are observed on site, special considerations for the lack of hydrologic indicators should be considered and further information on the locations natural hydraulic regime may be necessary.



3.0 Office Assessment

The following sections describe the data and resources reviewed prior to the field visit.

3.1 TOPOGRAPHY

The Study Area is located in the United States Geological Survey (USGS) Mohegan Lake, NY 7.5' Topographic Quadrangle. Elevation of the site ranges from roughly 250 to 400 feet above sea level. The mapped perennial Mohegan Outlet is located in the central portion of the Study Area (refer to Figure 1, Site Location Map).

3.2 NATURAL RESOURCE CONSERVATION SERVICE SOIL SURVEY MAPPING

The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Soil Survey for Westchester County, New York was reviewed. The following soil types are mapped within the Study Area:

- Charlton fine sandy loam, 3-8% slopes (ChB)
- Charlton loam, 25-35% slopes (ChE)
- Leicester loam, 3-8% slopes, very stony (LeB)
- Paxton fine sandy loam, 8-15% slopes (PnC)
- Sutton loam, 3-8% slopes (SuB)

Leicester loam is listed as a hydric soil for Westchester County, New York (refer to Figure 4, NRCS Soils Map).

3.3 NATIONAL WETLANDS INVENTORY MAPPING

The United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Map of the Study Area was reviewed prior to the field delineation. A riverine, upper perennial, unconsolidated bottom, permanently flooded (R3UBH) wetland was found mapped in the Study Area, consistent with the Mohegan Outlet (refer to Figure 3, NWI Map). A palustrine, emergent, persistent, seasonally flooded (PEM1C) wetland is also mapped to the immediate southeast of the project site, however impacts are not anticipated from the preliminary site plans.

3.4 NYSDEC ENVIRONMENTAL RESOURCE MAPPER

The Study Area was reviewed using the New York State Department of Environmental Conservation (NYSDEC) Environmental Resource Mapper (ERM). One freshwater wetland check zone area is mapped within the Study Area (refer to Figure 5, NYSDEC FWW Map). The freshwater wetland A-28 check zone extends into the southeastern corner of the project site, indicating the potential for wetlands in the area. The Mohegan Outlet (Regulation 864-614) is also mapped as a NYSDEC classified stream within the Study Area. The Mohegan Outlet is mapped as a Class C / Standard C stream. The Study Area does not fall within the vicinity of "Rare Plants and Rare Animals" shown on the ERM. A copy of the ERM results are included in Appendix C.

3.5 THREATENED AND ENDANGERED SPECIES REVIEW

An online project review was conducted on the U.S. Fish and Wildlife Service (USFWS) IPaC website. An Official Species List for the project area was obtained on May 15, 2018 (Consultation Code: 05E1NY00-2018-SLI-1422). According to the Official Species List, the federally endangered Indiana Bat (*Myotis sodalis*) and the federally threatened Northern Long-



leaved Bat (*Myotis septentrionalis*) may occur within the project area, however there are no known critical habitats within the project area that would fall under the USFWS's jurisdiction. From the review of the NYSDEC ERM, the Study Area is not within the vicinity of any known state-listed species. A copy of the IPaC Official Species List and the NYSDEC ERM results are included in Appendix C.

3.6 CULTURAL RESOURCES

The National Register of Historic Places (NRHP) was reviewed for properties within Westchester County, New York and no structures, historic properties or other features of historic significance listed on the National Register were determined to be located within the vicinity of the project area. The site is also not located within an archaeologically sensitive area. A project review with the New York Office of Parks, Recreation and Historic Preservation (OPRHP) was submitted on May 1, 2018 using the OPRHP's online, GIS based Cultural Resource Information System (CRIS). A response from the OPRHP is currently pending.



4.0 Field Delineation

The field delineation was conducted on September 15, 2017 by Rita Zack and Mike Robson, Ph. D. of Bergmann. The procedures defined by the 1987 Manual and accompanying Northeast Northcentral Regional Supplement were used during the delineation. The boundaries of the delineated wetlands were flagged in the field using pink survey tape and located using a Trimble R1 GNSS receiver and a Yuma 2 tablet computer. Data forms associated with the delineated features are included in Appendix A.

4.1 WETLANDS AND AQUATIC RESOURCES

The field delineation resulted in the delineation of one (1) jurisdictional wetland and one (1) perennial stream within the Study Area.

Approximately 0.17 acres of Wetland 1 occurs within the Study Area, in the northern portion of the Study Area, to the east of the bend in the Mohegan Outlet. Wetland 1 is a palustrine forested wetland (PFO) and is a sparsely vegetated concave surface. Wetland 1 is dominated by American red maple (*Acer rubrum*), sensitive fern (*Onoclea sensibilis*), and orange jewelweed (*Impatiens capensis*). Visible indicators of wetland hydrology include saturation, water-stained leaves, surface soil cracks, and moss trim lines. The hydric soil investigation determined that soils within Wetland 1 met the histc epipedon indicator and decomposition was observed.

A perennial stream (Mohegan Outlet) was delineated as Stream 1. Stream 1 was observed to be roughly twenty to thirty feet wide flowing from the southeast corner of the site to the northwest. Banks of the stream were observed to be four (4) to six (6) feet deep within the channel with a steep gradient and a slight meander through the site. Bed materials were observed to be cobbles.

4.2 UPLANDS

The majority of the Study Area is occupied by vacant forested land. An upland data point was taken in the central portion of the Study Area, to the west of the Mohegan Outlet. This area was dominated by sugar maple (*Acer saccharum*), eastern hemlock (*Tsuga canadensis*), American beech (*Fagus grandifolia*), and American red maple (*Acer rubrum*). No wetland hydrology indicators were observed and no hydric soils occur in the upland areas of the project site.



5.0 References

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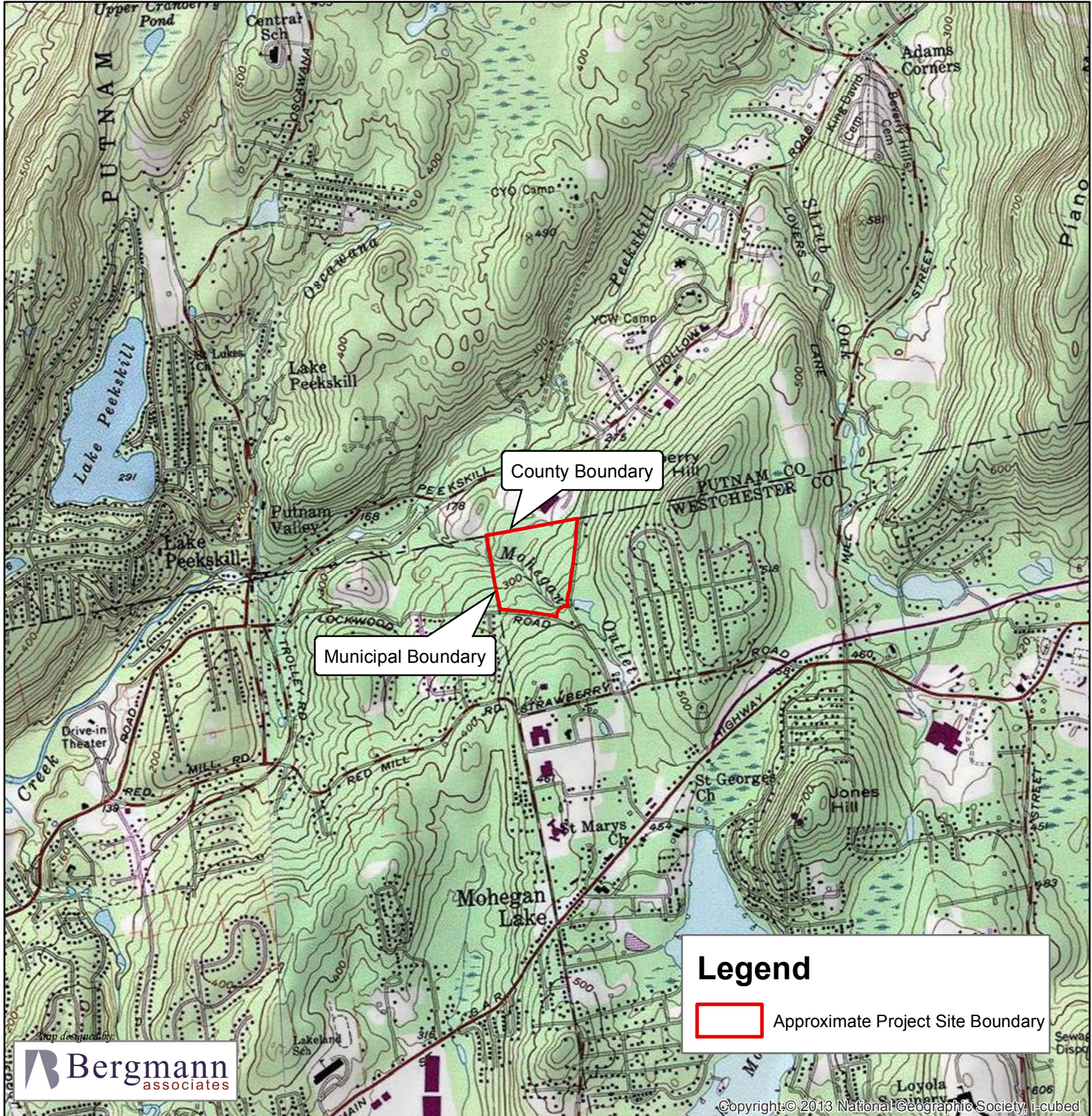
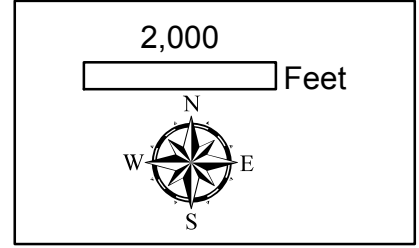
FIGURES

Clean Energy Collective Yorktown Solar Farm Solar Site Assessment

Town of Yorktown
Westchester County, New York

SITE LOCATION MAP

Fig. 1

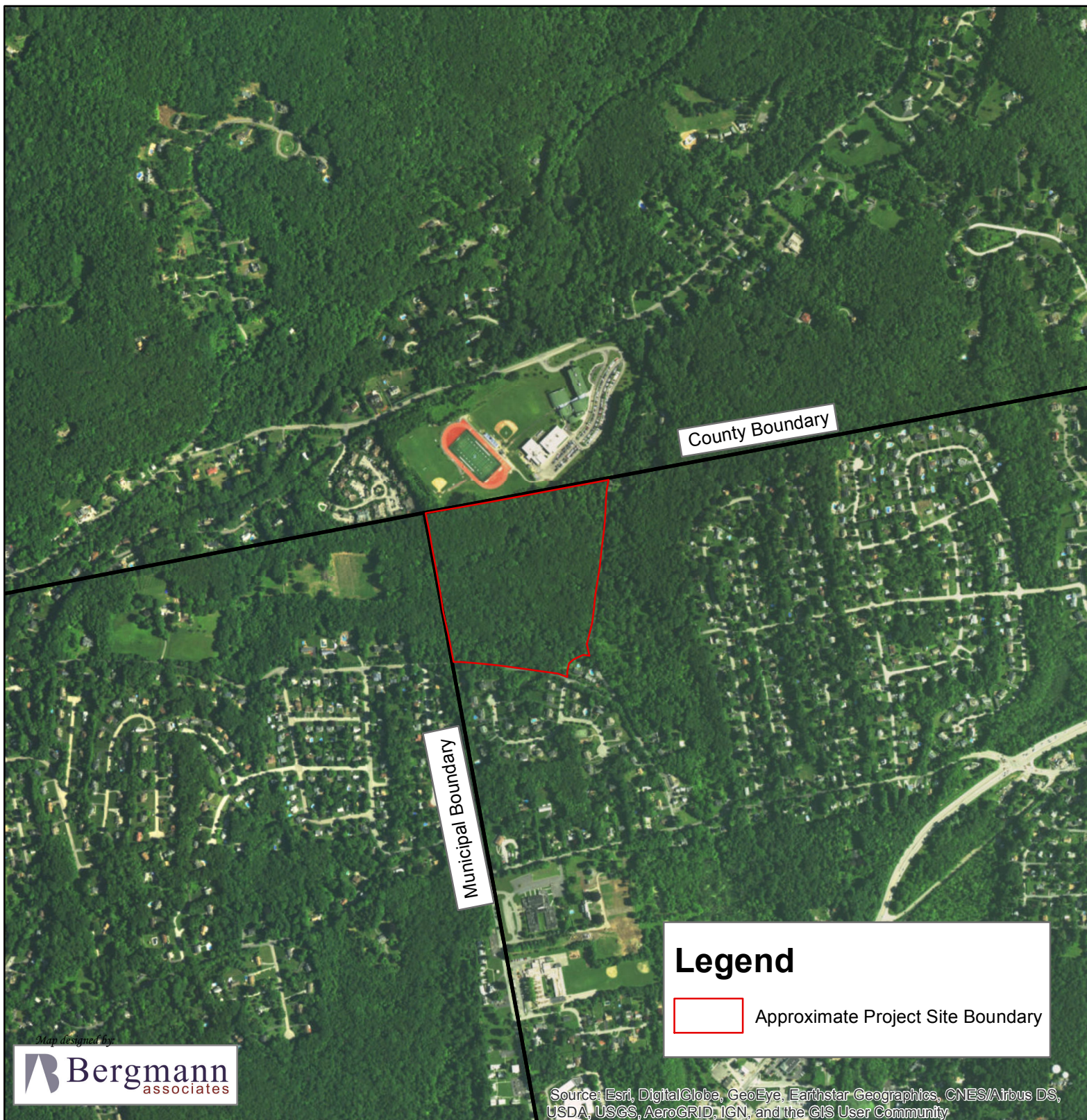
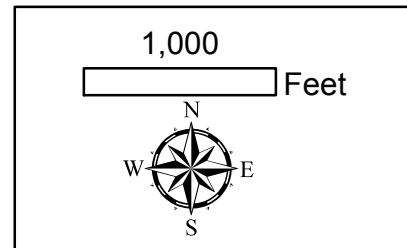


Clean Energy Collective Yorktown Solar Farm Solar Site Assessment

Town of Yorktown
Westchester County, New York

AERIAL IMAGERY
MAP

Fig. 2

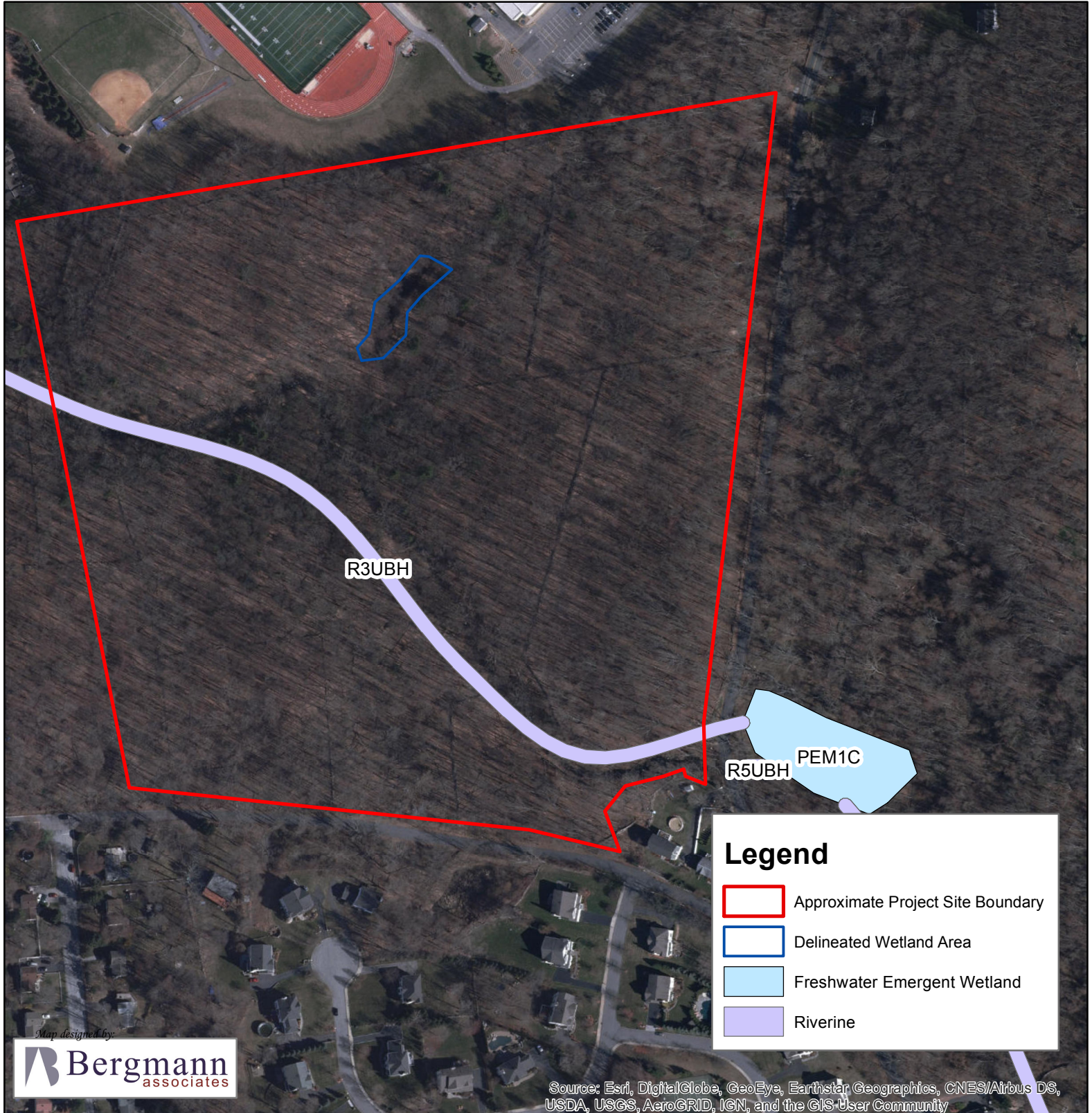
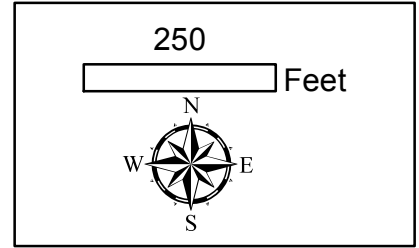


Clean Energy Collective Yorktown Solar Farm Solar Site Assessment

Town of Yorktown
Westchester County, New York

NATIONAL WETLANDS
INVENTORY MAP

Fig. 3

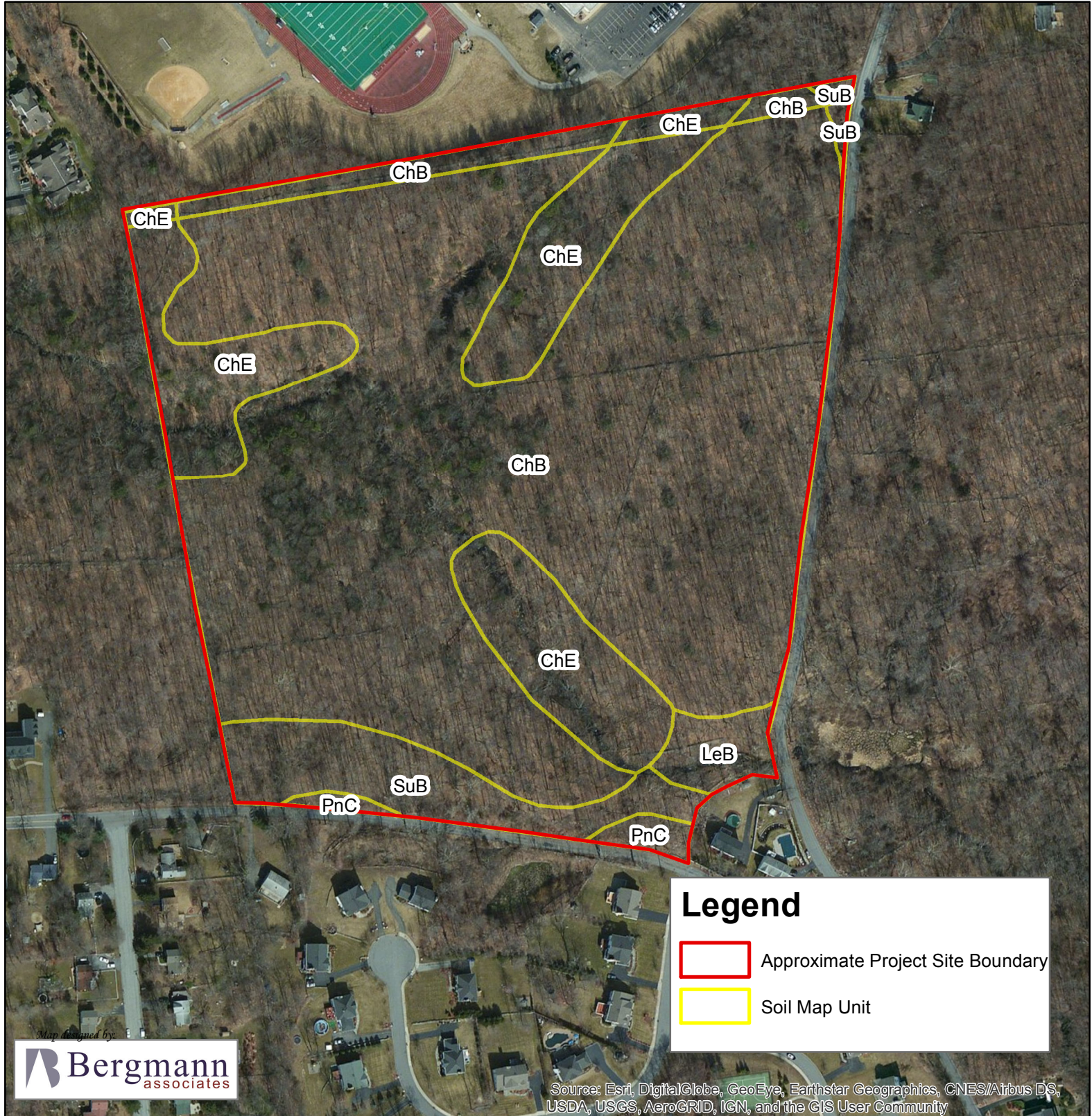
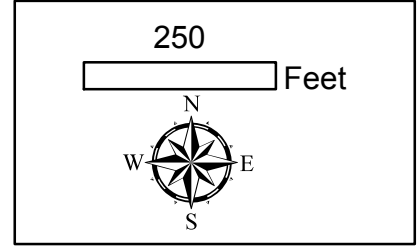


Clean Energy Collective Yorktown Solar Farm Solar Site Assessment

Town of Yorktown
Westchester County, New York

NRCS SOIL
SURVEY MAP

Fig. 4



Legend

-  Approximate Project Site Boundary
-  Soil Map Unit

Map designed by
Bergmann
associates

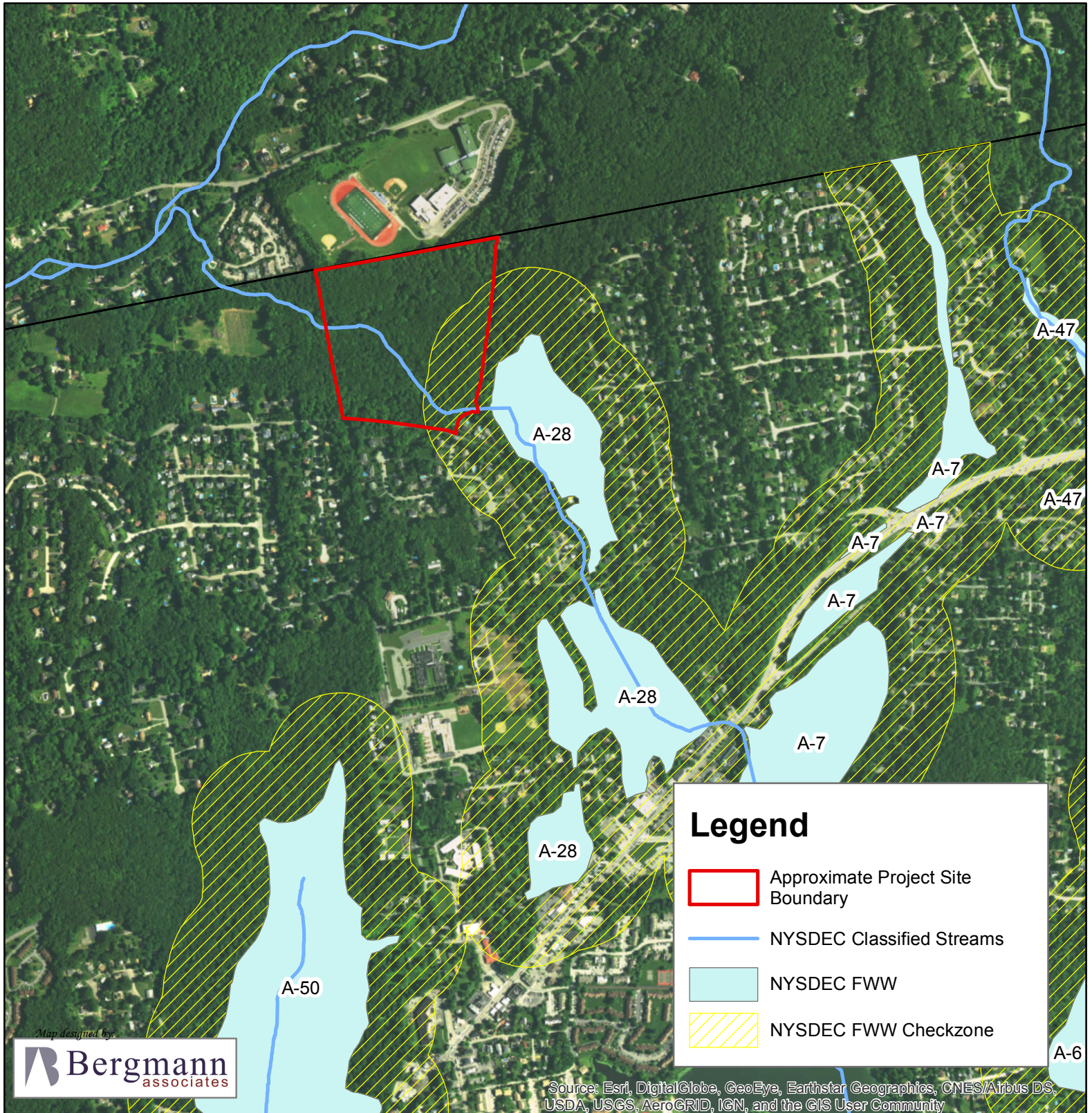
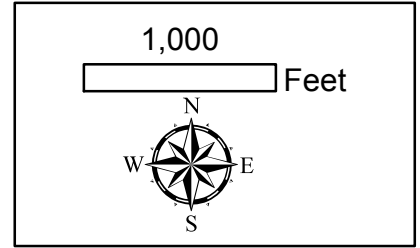
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Clean Energy Collective Yorktown Solar Farm Solar Site Assessment

Town of Yorktown
Westchester County, New York

NYSDEC FRESHWATER
WETLANDS MAP

Fig. 5



Legend

- Approximate Project Site Boundary
- NYSDEC Classified Streams
- NYSDEC FWW
- NYSDEC FWW Checkzone

Map designed by:
Bergmann
associates

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



APPENDIX A

Field Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yorktown City/County: Yorktown / Westchester Co. Sampling Date: 9/15/17
 Applicant/Owner: Clean Energy Collective State: NY Sampling Point: W 1-1
 Investigator(s): Rita Zack, Mike Robson Ph.D. - Bergmann Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): _____
 Subregion (LRR or MLRA): LRR - R Lat: 41.333922 Long: -73.859676 Datum: NAD 83
 Soil Map Unit Name: Charlton Loam 2-8% Slopes (ChB) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: <u>Wetland 1</u>
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one is required; check all that apply)</p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> Surface Water (A1)</td> <td><input checked="" type="checkbox"/> Water-Stained Leaves (B9)</td> </tr> <tr> <td><input type="checkbox"/> High Water Table (A2)</td> <td><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturation (A3)</td> <td><input type="checkbox"/> Marl Deposits (B15)</td> </tr> <tr> <td><input type="checkbox"/> Water Marks (B1)</td> <td><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><input type="checkbox"/> Sediment Deposits (B2)</td> <td><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</td> </tr> <tr> <td><input type="checkbox"/> Drift Deposits (B3)</td> <td><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Algal Mat or Crust (B4)</td> <td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><input type="checkbox"/> Iron Deposits (B5)</td> <td><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<p>Secondary Indicators (minimum of two required)</p> <table style="width:100%;"> <tr> <td><input checked="" type="checkbox"/> Surface Soil Cracks (B6)</td> </tr> <tr> <td><input type="checkbox"/> Drainage Patterns (B10)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Moss Trim Lines (B16)</td> </tr> <tr> <td><input type="checkbox"/> Dry-Season Water Table (C2)</td> </tr> <tr> <td><input type="checkbox"/> Crayfish Burrows (C8)</td> </tr> <tr> <td><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td> </tr> <tr> <td><input type="checkbox"/> Stunted or Stressed Plants (D1)</td> </tr> <tr> <td><input type="checkbox"/> Geomorphic Position (D2)</td> </tr> <tr> <td><input type="checkbox"/> Shallow Aquitard (D3)</td> </tr> <tr> <td><input type="checkbox"/> Microtopographic Relief (D4)</td> </tr> <tr> <td><input type="checkbox"/> FAC-Neutral Test (D5)</td> </tr> </table>	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Drainage Patterns (B10)	<input checked="" type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-Neutral Test (D5)
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<p>Field Observations:</p> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>3 in</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																															
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:																																
Remarks:																																

VEGETATION – Use scientific names of plants.

Sampling Point: W 1-1

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Acer rubrum</u>	<u>40</u>	<u>yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
<u>40</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
Sapling/Shrub Stratum (Plot size: <u>15' x 15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Acer rubrum</u>	<u>10</u>	<u>yes</u>	<u>FAC</u>		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>Lindera benzoin</u>	<u>3</u>	<u>yes</u>	<u>FACW</u>		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
<u>13</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.	
Herb Stratum (Plot size: <u>5' x 5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Onoclea sensibilis</u>	<u>10</u>	<u>yes</u>	<u>FACW</u>		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. <u>Impatiens capensis</u>	<u>7</u>	<u>yes</u>	<u>FACW</u>		
3. <u>Osmunda spectabilis</u>	<u>2</u>	<u>no</u>	<u>OBL</u>		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
<u>19</u> = Total Cover					
Woody Vine Stratum (Plot size: <u>15' x 15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
_____ = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet.) Sparsely vegetated					

Linear Waters of the U.S. Field Classification Form

Whenever an ephemeral stream, intermittent stream, or perennial stream is identified on a project site, use this form to document field observations in support of the field interpreted stream classification.

Stream Feature: Mohegan Outlet **Watershed:** Hudson River

Field Observations (check all that apply and describe if applicable):

- Surface water flow within a defined channel Southeast to northwest
- Presence of Ordinary High Water Mark
(If OHWM is present, place a stake to mark its location) _____
- Water seeping from banks (or ice along banks in winter) _____
- Channel has a floodplain or observable bankfull bench _____
- Presence of fish or macroinvertebrates _____
- Primarily erosive features _____
- Recent sediment deposits or accumulations in channel Gravel bar near Foothill St culvert
- Algae growing on bed materials _____
- Rooted plants growing in channel bed At Foothill St culvert
- Hydric soils in sides of channel _____

Provide a detailed description for each (use additional space in remarks section if necessary):

Antecedent weather conditions ~ 70 degrees, sun

Position of channel within the drainage basin (high, middle, low)? low

Gradient of the channel (steep, moderately sloping, flat)? steep

Channel morphology (linear/meandering)? slight meander

Width of channel? 20' - 30' Height of bank? 4'-6'

Interpreted water table position above or below defined channel? Below

Bed materials (provide description of bed materials and indicate if different from surrounding ground surface):
Cobbles

Topographic map designation? Intermittent Perennial Not Mapped

Describe off-site conditions:

Is there development upgradient of channel? Residential

Any artificial structures (i.e. culvert, detention basin) regulating flow?
Foothill st culvert

Remarks:

DEC mapped wetland east of Foothill St. Culvert directing flow from wetland into Mohegan outlet

Based on observations, characterize the stream type (check one):

Ephemeral Stream Intermittent Stream Perennial Stream

Project Name: Clean Energy - Yorktown Date of Field Review: 09/15/17

Project Number: 12413.05 Field Reviewer: RZ, MR

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Yorktown City/County: Yorktown / Westchester Co. Sampling Date: 9/15/17
 Applicant/Owner: Clean Energy Collective State: NY Sampling Point: UPDP-1
 Investigator(s): Rita Zack, Mike Robson Ph.D. - Bergmann Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): None Slope (%): _____
 Subregion (LRR or MLRA): LRR - R Lat: 41.332846 Long: -73.861208 Datum: NAD 83
 Soil Map Unit Name: Charlton Loam 2-8% Slopes (ChB) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> <table style="width:100%;"> <tr> <td><input type="checkbox"/> Surface Water (A1)</td> <td><input type="checkbox"/> Water-Stained Leaves (B9)</td> </tr> <tr> <td><input type="checkbox"/> High Water Table (A2)</td> <td><input type="checkbox"/> Aquatic Fauna (B13)</td> </tr> <tr> <td><input type="checkbox"/> Saturation (A3)</td> <td><input type="checkbox"/> Marl Deposits (B15)</td> </tr> <tr> <td><input type="checkbox"/> Water Marks (B1)</td> <td><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</td> </tr> <tr> <td><input type="checkbox"/> Sediment Deposits (B2)</td> <td><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</td> </tr> <tr> <td><input type="checkbox"/> Drift Deposits (B3)</td> <td><input type="checkbox"/> Presence of Reduced Iron (C4)</td> </tr> <tr> <td><input type="checkbox"/> Algal Mat or Crust (B4)</td> <td><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</td> </tr> <tr> <td><input type="checkbox"/> Iron Deposits (B5)</td> <td><input type="checkbox"/> Thin Muck Surface (C7)</td> </tr> <tr> <td><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</td> <td><input type="checkbox"/> Other (Explain in Remarks)</td> </tr> <tr> <td><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</td> <td></td> </tr> </table>	<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<p><u>Secondary Indicators (minimum of two required)</u></p> <table style="width:100%;"> <tr><td><input type="checkbox"/> Surface Soil Cracks (B6)</td></tr> <tr><td><input type="checkbox"/> Drainage Patterns (B10)</td></tr> <tr><td><input type="checkbox"/> Moss Trim Lines (B16)</td></tr> <tr><td><input type="checkbox"/> Dry-Season Water Table (C2)</td></tr> <tr><td><input type="checkbox"/> Crayfish Burrows (C8)</td></tr> <tr><td><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</td></tr> <tr><td><input type="checkbox"/> Stunted or Stressed Plants (D1)</td></tr> <tr><td><input type="checkbox"/> Geomorphic Position (D2)</td></tr> <tr><td><input type="checkbox"/> Shallow Aquitard (D3)</td></tr> <tr><td><input type="checkbox"/> Microtopographic Relief (D4)</td></tr> <tr><td><input type="checkbox"/> FAC-Neutral Test (D5)</td></tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Drainage Patterns (B10)	<input type="checkbox"/> Moss Trim Lines (B16)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Geomorphic Position (D2)	<input type="checkbox"/> Shallow Aquitard (D3)	<input type="checkbox"/> Microtopographic Relief (D4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)																															
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<input type="checkbox"/> Microtopographic Relief (D4)																																
<input type="checkbox"/> FAC-Neutral Test (D5)																																
<p>Field Observations:</p> Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	<p>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>																															
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:																																
Remarks:																																

VEGETATION – Use scientific names of plants.

Sampling Point: UPDP-1

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Acer saccharum</u>	<u>38</u>	<u>yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)														
2. <u>Tsuga canadensis</u>	<u>25</u>	<u>yes</u>	<u>FACU</u>															
3. <u>Acer rubrum</u>	<u>12</u>	<u>no</u>	<u>FAC</u>															
4. <u>Fagus grandifolia</u>	<u>7</u>	<u>no</u>	<u>FACU</u>															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>82</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>12</u></td> <td>x 3 = <u>36</u></td> </tr> <tr> <td>FACU species <u>90</u></td> <td>x 4 = <u>360</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>102</u> (A)</td> <td><u>396</u> (B)</td> </tr> </table> <p style="text-align:center;">Prevalence Index = B/A = <u>3.88</u></p>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>12</u>	x 3 = <u>36</u>	FACU species <u>90</u>	x 4 = <u>360</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>102</u> (A)	<u>396</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>0</u>	x 2 = <u>0</u>																	
FAC species <u>12</u>	x 3 = <u>36</u>																	
FACU species <u>90</u>	x 4 = <u>360</u>																	
UPL species <u>0</u>	x 5 = <u>0</u>																	
Column Totals: <u>102</u> (A)	<u>396</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15' x 15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Fagus grandifolia</u>	<u>15</u>	<u>yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)														
2. <u>Acer saccharum</u>	<u>5</u>	<u>yes</u>	<u>FACU</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>20</u> = Total Cover				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
Herb Stratum (Plot size: <u>5' x 5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____		Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>													
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>19</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>15' x 15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover																		

Remarks: (Include photo numbers here or on a separate sheet.)

Heavy deer browsing



APPENDIX B

Representative Photographs



Facing North on Foothill St



Facing South on Foothill St





Rusted culvert with sediment found in North-Eastern corner of property



Old rock walls within the subject property





Northwest corner of the subject property, looking south.



Man-made trails throughout subject property





Northwest corner of the subject property, facing north.



Northwest corner of the subject property, facing south





Northwest corner of the subject property, looking south.



Woods throughout subject property.





Within subject property



Wetlands within subject property





Wetlands within subject property



Mohegan Outlet





Mohegan Outlet



Mohegan Outlet





Culvert within Mohegan Outlet



Mohegan Outlet





Mohegan Outlet, southeast edge of property looking north



Mohegan Outlet, southeast edge of property looking south





Facing West in Lockwood Road



Facing East in Lockwood Road





APPENDIX C

Threatened and Endangered Species Research



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385

Phone: (607) 753-9334 Fax: (607) 753-9699

<http://www.fws.gov/northeast/nyfo/es/section7.htm>

In Reply Refer To:

May 15, 2018

Consultation Code: 05E1NY00-2018-SLI-2074

Event Code: 05E1NY00-2018-E-06393

Project Name: Yorktown A Solar Farm

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: <http://www.fws.gov/northeast/nyfo/es/section7.htm>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (<http://www.fws.gov/windenergy/>)

[eagle_guidance.html](#)). Additionally, wind energy projects should follow the Services wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office

3817 Luker Road

Cortland, NY 13045-9385

(607) 753-9334

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Long Island Ecological Services Field Office

340 Smith Road

Shirley, NY 11967-2258

(631) 286-0485

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.



Environmental Resource Mapper

Base Map: Topographical Using this map

Search

Tools

Layers and Legend

- All Layers
- Unique Geological Features
- Waterbody Classifications for Rivers/Streams i
- Waterbody Classifications for Lakes
- State Regulated Freshwater Wetlands
- State Regulated Wetland Checkzone i
- Significant Natural Communities
- Natural Communities Near This Location i
- Rare Plants or Animals

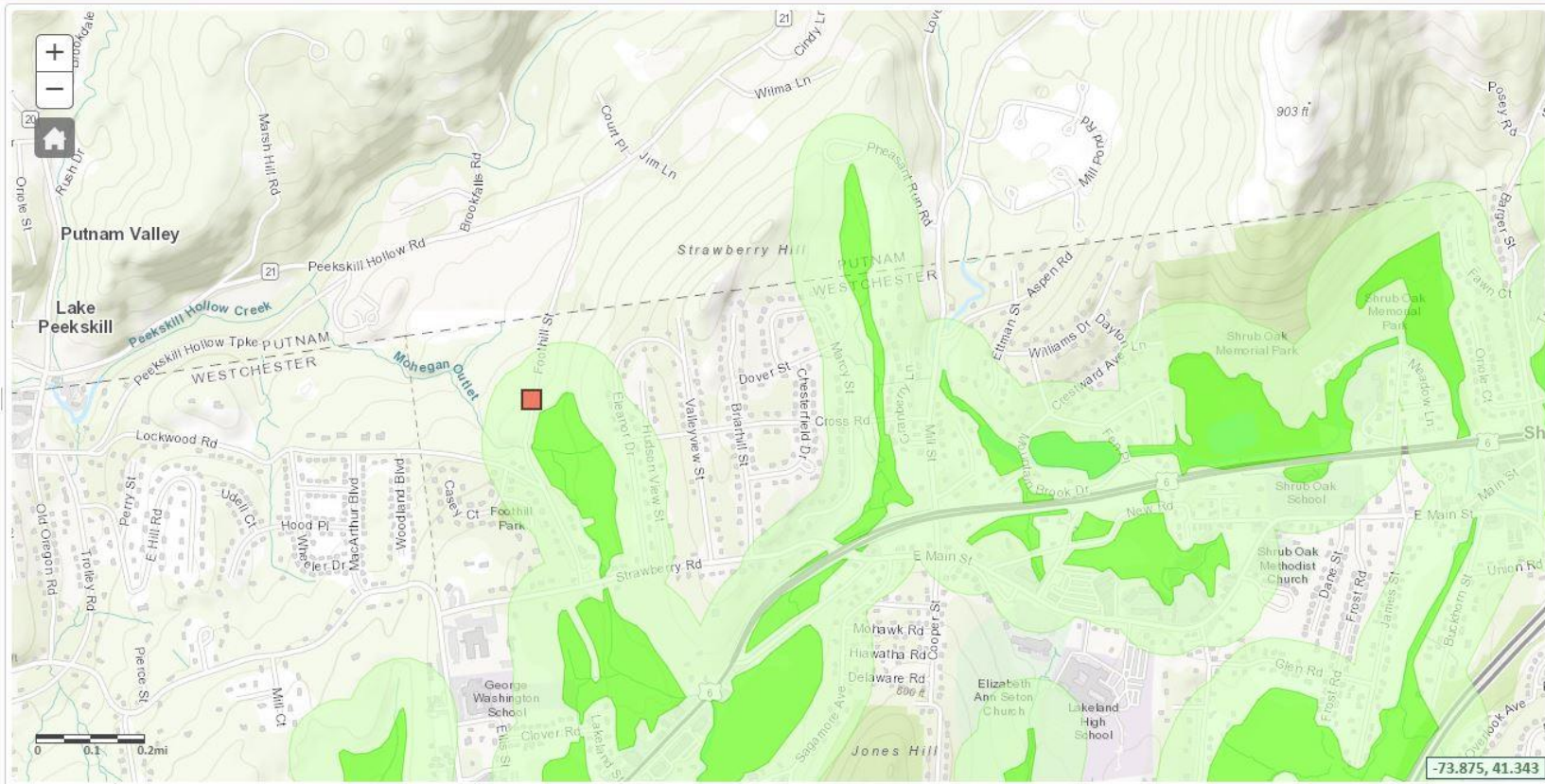
Other Wetland Layers

Reference Layers

Tell Me More...

Need A Permit?

Contacts



Agencies
Services

App Directory

Counties

Events

Programs