

February 16, 2016

Mr. Kyle Campbell
Oakwood Solar Farm, LLC
4150 Saint Johns Parkway
Suite 1000
Sanford, Florida 32771

Reference: Oakwood Solar Farm – Mace Site
6517 U.S. Highway 70
Mebane, Orange County, North Carolina
HEnv Project #201603

Dear Mr. Campbell:

Headwater Environmental, Inc. (HEnv) is pleased to provide the results of our wetland delineation. On February 8, 2015, Oakwood Solar Farm, LLC retained HEnv to perform a wetland delineation at the above referenced property. The purpose of this report is to document and locate the extent of wetlands and streams within the site boundary.

PROJECT INFORMATION

The approximate 53-acre site is located at 6517 U.S. Highway 70 in Mebane, North Carolina. According to the Orange County GIS, the site is identified as Parcel Identification Number (PIN) 9835-02-9137. The parcel is owned by Mr. Carl J. Mace. An existing access road extends north from Highway 70 to the subject site. The access road traverses land also owned by Mr. Mace.

The project area includes the limits of a proposed solar farm. The proposed solar farm is located on the central portion of the site. The approximate 25-acre project area is to be defined by Oakwood Solar Farm, LLC, their successors, or assigns.

Regulatory Summary

In order to identify wetlands at the site, HEnv utilized the “Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont”, issued April 2012. Identification of wetlands is based on a three-factor approach involving indicators of hydrophytic vegetation, hydric soil, and wetland hydrology.

Federal authority to regulate activities in wetlands is contained in Section 404 of the Clean Water Act (33 USC 1344) and Section 10 of the Rivers and Harbors Act (33 USC 403). These Acts established a program for regulating the discharge of dredged and fill material into the “Waters of the United States”, which includes wetlands and streams. Section 401 of the Clean Water Act authorizes States and Tribes to administer the water quality certification process to protect wetlands and other aquatic resources.

Based the *Rapanos v. United States* and *Carabell v. United State* Supreme Court cases in 2005/2006, the United States Army Corps of Engineers (USACE) and Environmental Protection Agency (EPA) issued guidance requiring that a significant nexus determination must be completed in order to identify the connectivity of wetlands to traditionally navigable waters. The Wilmington District of the USACE (Raleigh Field Office) in conjunction with the EPA, administers the federal wetlands program in this area. In addition, the North Carolina Department of Water Resources (DWR) administers the wetlands and stream buffer program for the State of North Carolina as per Section 401 of the Clean Water Act.

METHODOLOGY

Office Review

HEnv reviewed the 7.5-Minute series, United States Geological Survey (USGS), Efland, North Carolina Quadrangle (**Figure 1**), dated 2002. According to the topographic map, the site is situated between 660 and 710 feet above mean sea level (MSL). The site slopes downgradient towards the east, north, and west. Two unnamed streams (dashed blue line) are mapped on the northeast portion of the site and along the western boundary of the site, respectively. Several impoundments are mapped along the western stream. The two streams flows north towards Lake Michael. The confluence of the two streams is located approximately 450 feet north of the site. Lake Michael drains to Lower Back Creek (via Mill Creek), which is in the Cape Fear River basin.

HEnv reviewed the printed Soil Survey for Orange County, North Carolina provided by the United States Department of Agricultural, dated 1977 (**Figure 2**). Two intermittent streams are mapped on the northeast portion of the site and along the western boundary of the site, respectively. Three ponds are mapped along the western stream.

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS), there are four soil series mapped within the site boundary (**Figure 3**). Georgeville loam with 2 to 6% (GeB) slopes and 6 to 10% slopes (GeC) is mapped throughout the majority of the site. Tarrus silt loam (TaD) is mapped on the northeast portion of the site. Enon loam (Enc) is mapped on the northwest portion of the site.

Georgeville loam is a very well drained soil found on gently sloping to moderately steep Piedmont uplands. Soils of the Tarrus series are deep and well drained. These soils are on uplands of the Piedmont physiographic region. The Enon series consists of a very deep, well drained soil found on ridgetops and side slopes in the Piedmont.

HEnv reviewed the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Panel Number 3710983500J, dated February 2, 2007. According to the FEMA map, a stream is mapped on the northeast portion of the site. An approximate 200 foot wide area along the stream is within Zone AE, and area that is within the 100 year flood plain. The remainder of the site is mapped as being in unshaded Zone X, an area that is outside of the 500-year floodplain (**Figure 4**).

HEnv reviewed the Section 6.13 of the Orange County Unified Development Ordinance (UDO) to determine if the county has vegetative buffer requirements for surface waters. According to the UDO, buffer regulations are applicable to streams and water features depicted on the USGS map and/or printed soil survey. For slope values greater than 7.5%, an 85-foot buffer extends from the edge water, edge of floodplain, or edge of wetland, which ever extends farther from the stream centerline. For slope values less than 7.5% a 60-foot buffer extends from the edge water, edge of floodplain, or edge of wetland, which ever extends farther from the stream centerline.

The site drains to Lake Michael, which has been classified by the DWR as waters used for consumption (WS-II), nutrient sensitive waters (NSW), and a high quality watershed (HQW). Additional buffer regulations and stormwater requirements apply to sites in this watershed. The stream/pond buffers are based on the density of development and stormwater permitting requirements.

Site Reconnaissance

Following the office review, the site reconnaissance was conducted on February 11, 2015. The field review involved a general site inspection, wetland observations, and a wetland boundary delineation. The purpose of the site reconnaissance was to verify the published data, inspect the site for the presence of wetlands, and delineate (flag) the wetland/upland boundaries.

During the field review, examination of wetland characteristics was conducted. Data Points were established and enclosed with this report. The Data Points were used to record field data on vegetation, soils, and hydrology. Information collected at each data point includes the following:

Characterization of Vegetation

Vegetation at each Data Point was characterized as per the appropriate regional supplement to the USACE Wetland Delineation Manual for the following stratum (layer):

- A. **Trees:** Woody plants, excluding vines, approximately 20 feet or more in height and three inches or larger in diameter at breast height (DBH).
- B. **Saplings:** Woody plants, excluding vines, 20 feet or more in height and less than 3 inches DBH.
- C. **Shrubs:** Woody plants approximately 3 to 20 feet in height.
- D. **Herbs:** All, non-woody, herbaceous plants less than 3 feet in height.
- E. **Vines:** All woody vines, regardless of length or height.

Soil Characterization

Soil characteristics at each data point were reviewed through the use of a 2-inch diameter Dutch auger. Soil samples were obtained from ground surface to a depth necessary to identify hydric soil characteristics. The matrix color of each sample was identified and recorded using the standard Munsell Soil Color Chart. Other soil characteristics (i.e.: textures, concretions, structure) of each sample were also examined and recorded. Particular emphasis was placed on the identification of (or lack of) certain hydric soil indicators such as low chroma, and/or mottled soils.

Hydrology

Each data point was examined for evidence of surface and subsurface hydrology. Field indicators (i.e.: water stained leaves, oxidized root channels, morphological plant adaptations, etc.) were identified and recorded. Each point was evaluated for primary and secondary indications of wetlands hydrology.

FINDINGS AND OBSERVATIONS

The weather during the reconnaissance was in the high-30s (degrees Fahrenheit) with clear skies. HEnv was not accompanied during the delineation.

The majority of the site is comprised of scrub/shrub vegetation. The site was cleared for timber purposes 3 to 5 years ago. The southeast portion of the site is used as staging for Mace Grading Company. Two man-made ponds are located on the southern and northwestern portions of the site, respectively. A stream is located on the northeast portion of the site.

HEnv identified two wetland areas, two ponds, and two streams within the site boundary (**Figure 5**). Wetland Area A is located on the northeast portion of the site. Stream A flows north,

through Wetland Area A, towards Michael Creek. Based on observations in the field, Stream A appears to be perennial and is a buffered feature.

Pond B1 is located on the southern portion of the site. Pond B1 continues off-site to the west and drains to an unnamed stream (Stream B). There are no peripheral wetlands around Pond B1. There are two man-made ponds located west of the site along Stream B. Stream B enters the northwestern portion of the site and drains to Pond B2. Stream B appears to be intermittent. Wetland Area B is located around the peripheral of Pond B2. The ponds, stream, and wetlands along the western boundary of the site will likely have a vegetative buffer.

The soils in the wetland areas have low chroma and low value colors. The wetland areas are dominated by hydrophytic vegetation and exhibit wetland hydrology indicators. The vegetation in Wetland Area A is dominated by trees and saplings. The vegetation in Wetland Area B is dominated by herbaceous wetland species. Wetland Determination Data Forms Data Forms that support our findings are included as an attachment. DP-1 and DP-4 represent the upland conditions observed throughout the site. DP-2 and DP-3 represent the wetland conditions. HEnv marked the wetland boundaries with pink and orange surveyor tape. The wetland flag labeling scheme is depicted on Table 1.

Table 1

Wetland Identifier	Location	Flag Numbers
Wetland Area A	Northeast portion of the site	W-A1 to W-A36
Wetland Area B (encompasses Pond B2)	Northwest portion of the site	W-B1 to W-B29

HEnv observed the remainder of the site for the presence of surface waters or wetlands. HEnv traversed the perimeter boundaries and made several transects across the interior of the site. The soils in other areas of the site are bright and appear well drained. HEnv did not observe additional surface waters or wetlands on the site. Figure 5 shows the approximate locations of the ponds, streams, wetlands, data points, and flag numbers. Photographs of the on-site conditions are enclosed with this report.

CONCLUSIONS AND RECOMENDATIONS

- HEnv identified two wetland areas within the site boundary; Wetland Areas A and B. It is estimated that jurisdictional wetlands occupy 1 to 2 acres of the site. Jurisdictional wetlands are regulated by the USACE and the DWR. Additionally, Pond B1 and B2 appear to have been constructed along a former stream channel and will likely be deemed jurisdictional by the USACE. The ponds encompass approximately 4 to 5 acres.
- The jurisdictional wetland boundaries were preliminary flagged in the field and are depicted on Figure 5. As a preliminary drawing, the wetland boundary is subject to a field confirmation and a written jurisdictional determination (JD) from the USACE. Additionally, a Significant Nexus determination will need to be conducted during the JD process, to determine the limit of the USACE's jurisdiction.

A JD is facilitated through a site visit with a USACE representative. During the site visit, the USACE and consultant review the wetland delineation. Subsequent changes to the wetland boundary are normally made at this time and wetland flags may be adjusted accordingly. Upon agreement of the wetland boundary in the field, the USACE consults with the EPA, and issues a JD. Development of the subject site should be pursued after a written JD is issued by the USACE.

After receiving a JD, the wetland delineation should be accurately located and mapped by a licensed North Carolina surveyor. Such a survey would show the exact location and amount of jurisdictional wetlands. The survey could serve as a preliminary site plan that could be also used for a permit application to the USACE and DWR. USACE and DWR authorization should be obtained prior to impacting jurisdictional wetlands.

- According to the UDO, buffer regulations are applicable to streams and water features depicted on the USGS map and/or printed soil survey. For slope values greater than 7.5%, an 85-foot buffer extends from the edge water, edge of floodplain, or edge of wetland, which ever extends farther from the stream centerline. For slope values less than 7.5% a 60-foot buffer extends from the edge water, edge of floodplain, or edge of wetland, which ever extends farther from the stream centerline.
- The site drains to Lake Michael, which has been classified by the DWR as waters used for consumption (WS-II), nutrient sensitive waters (NSW), and a high quality watershed (HQW). Additional buffer regulations and stormwater requirement apply to sites in this watershed. The stream/pond buffers are based on the density of development and stormwater permitting requirements.

LIMITATIONS

Observations, conclusions, and/or recommendations pertaining to the potential jurisdictional wetland areas and stream features within the subject site are limited to the conditions observed, and/or materials reviewed at the time this study was undertaken.

This report is provided for the exclusive use of Oakwood Solar Farm, LLC and ESA Renewables, LLC, and is not intended to be used or relied upon in connection with other projects or by other unidentified third parties. The use of this report by an undesignated third party or parties will be at such party's sole risk and HEnv disclaims liability for such third party use or reliance.

HEnv appreciates the opportunity to provide our environmental services for this project. If you have questions or need additional information, please contact us at (910) 777-3908.

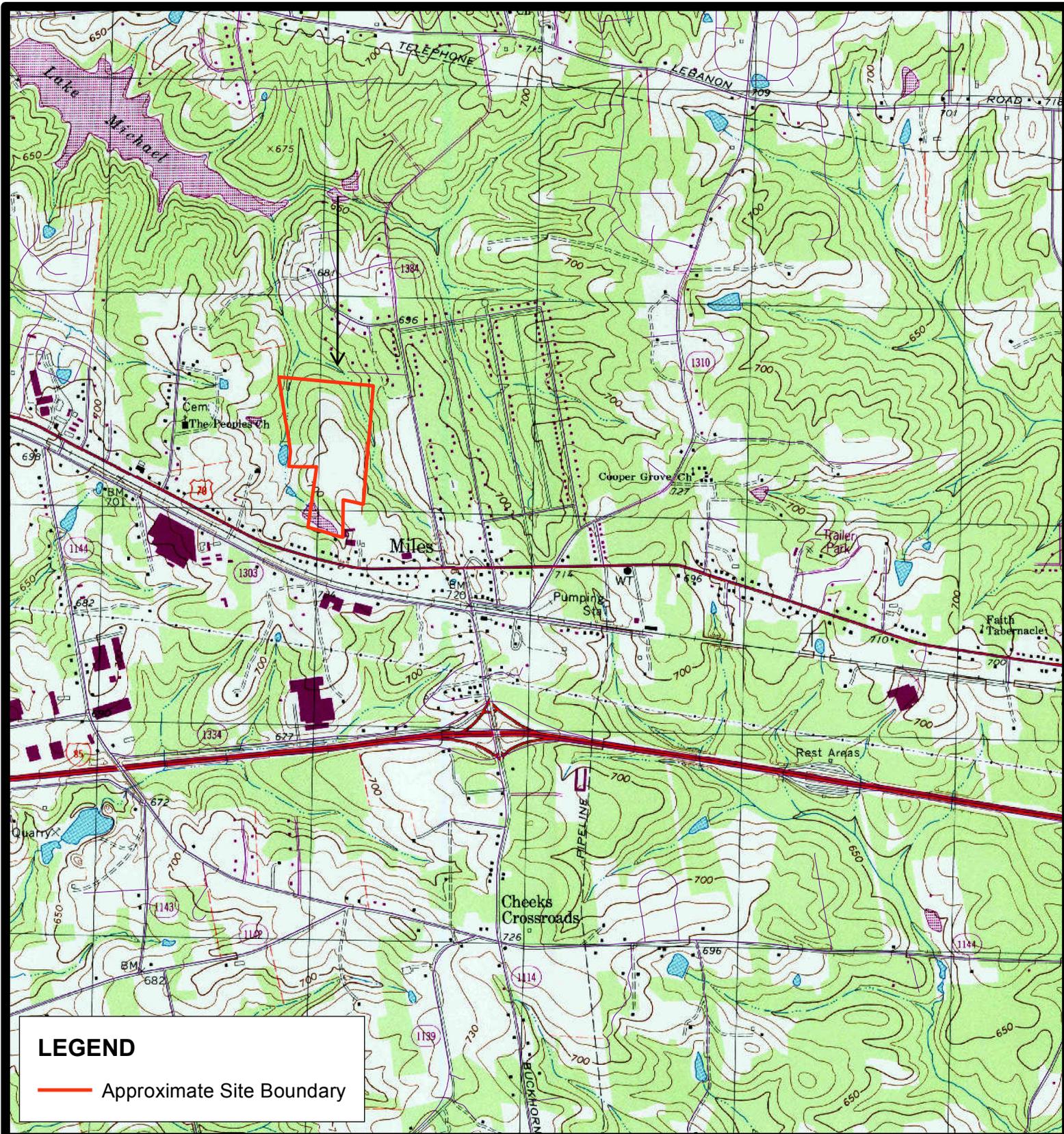
Respectfully submitted,

Headwater Environmental, Inc.



C. Paul Pascarosa
President

Enclosure: Figures
 Data Forms
 Photographs



LEGEND
 — Approximate Site Boundary

HEADWATER ENVIRONMENTAL, INC.
 512 Sweetbay Court
 Wilmington, North Carolina

Date:

02/9/2016

Prepared by:

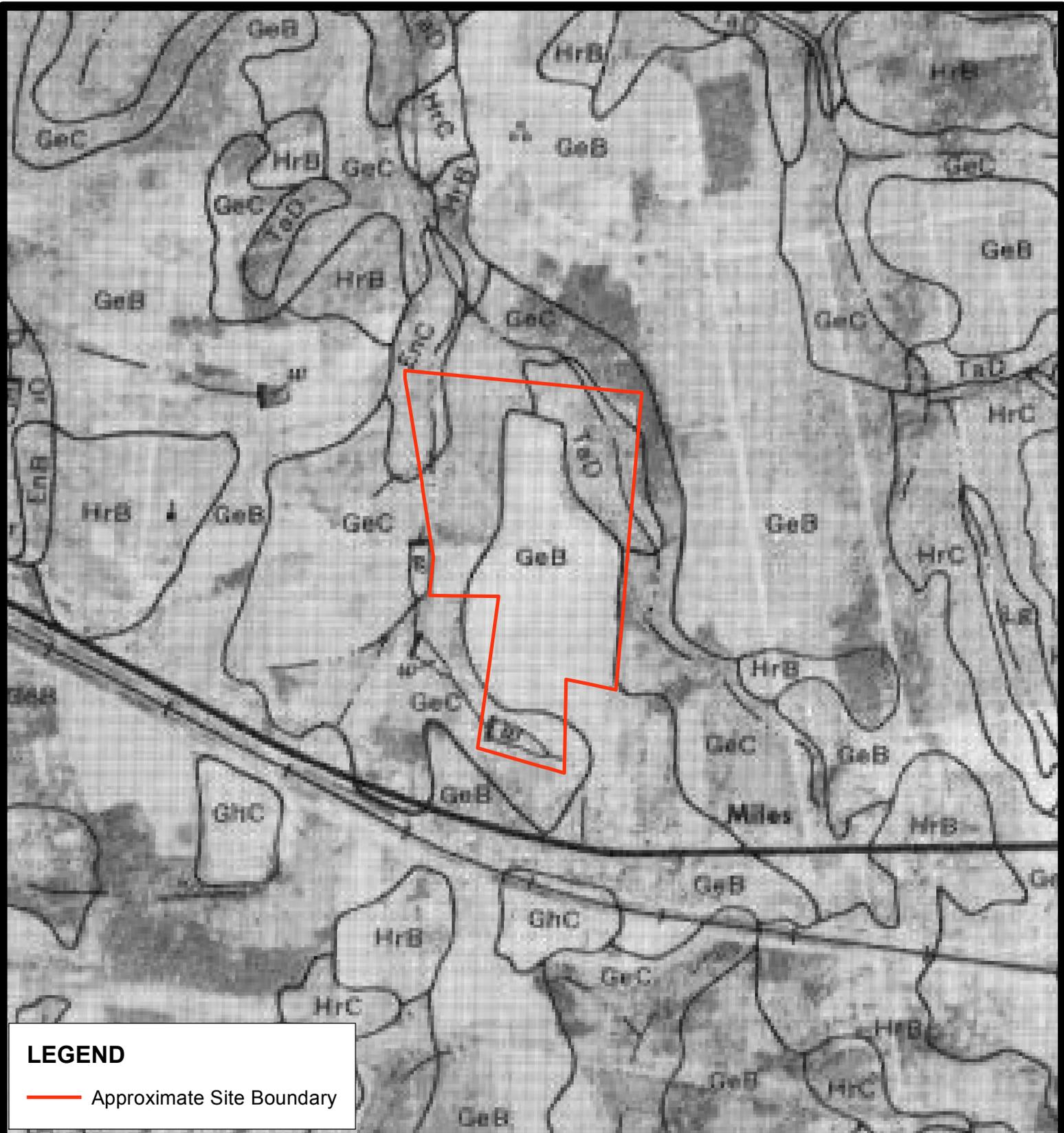
DFH

Source:
 USGS
 7.5-minute Topographic Quadrangle
 Efland, NC
 dated 2002
 Contour Interval = 10 feet



Scale 1"-2000'

FIGURE 1
LOCATION MAP
 Oakwood Solar Farm, LLC
 Mace Site
 6517 U.S. Highway 70
 Mebane, Orange County, NC
 Env Project #201603



LEGEND
 — Approximate Site Boundary

HEADWATER ENVIRONMENTAL, INC.
 512 Sweetbay Court
 Wilmington, North Carolina

Date:

02/10/2016

Prepared by:

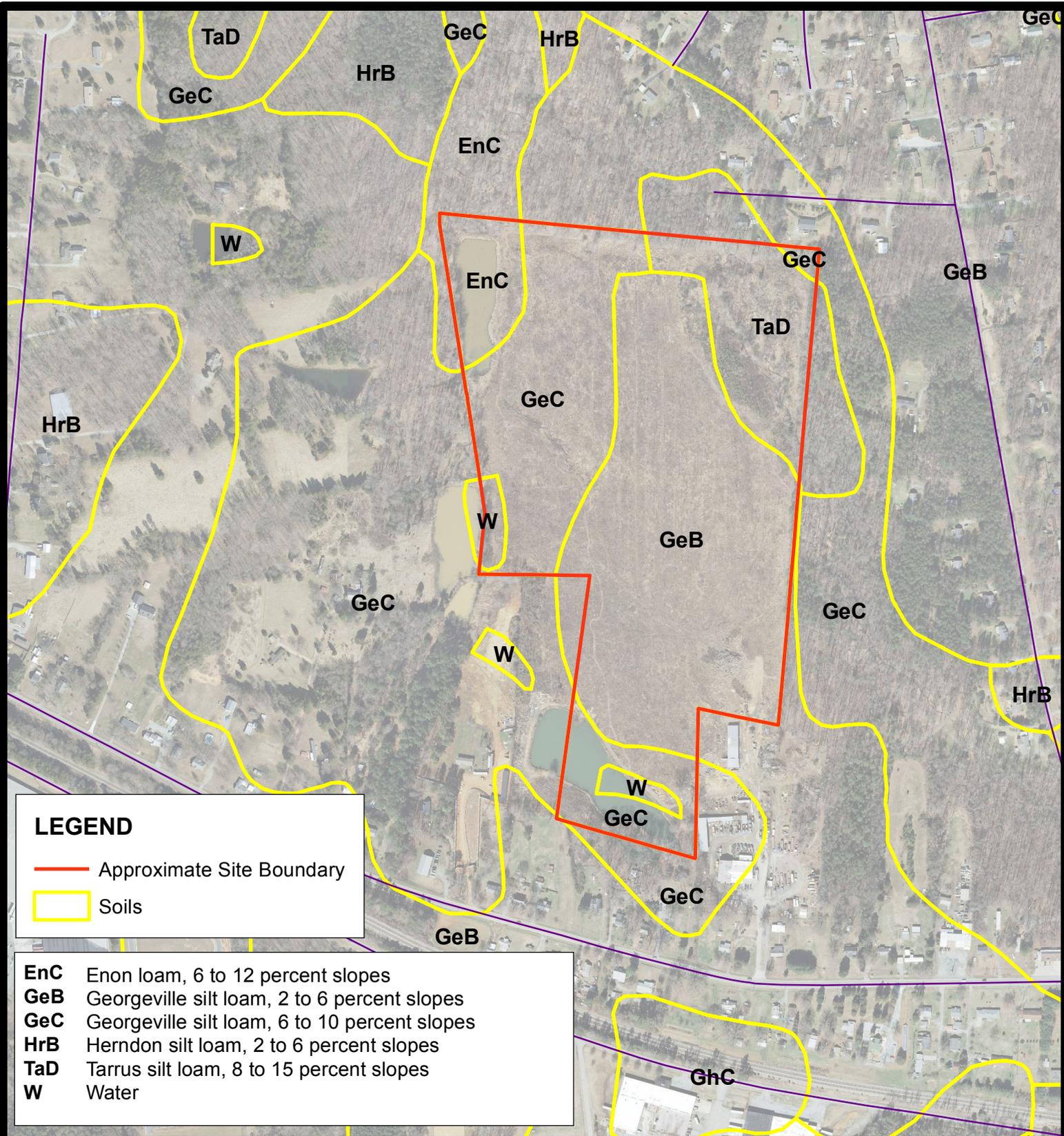
DFH

Source:
 Natural Resources Conservation
 Service (NRCS),
 Archived Soil Survey, dated 1977



Scale 1"-800'

FIGURE 2
ARCHIVED SOIL MAP
 Oakwood Solar Farm, LLC
 Mace Site
 6517 U.S. Highway 70
 Mebane, Orange County, NC
 Env Project #201603



HEADWATER ENVIRONMENTAL, INC.
 512 Sweetbay Court
 Wilmington, North Carolina

Date:

02/10/2016

Prepared by:

DFH

Source:
 Natural Resources Conservation Service (NRCS),
 Web Soil Survey (WSS).
 Accessed February 2016

 Scale 1"-500'

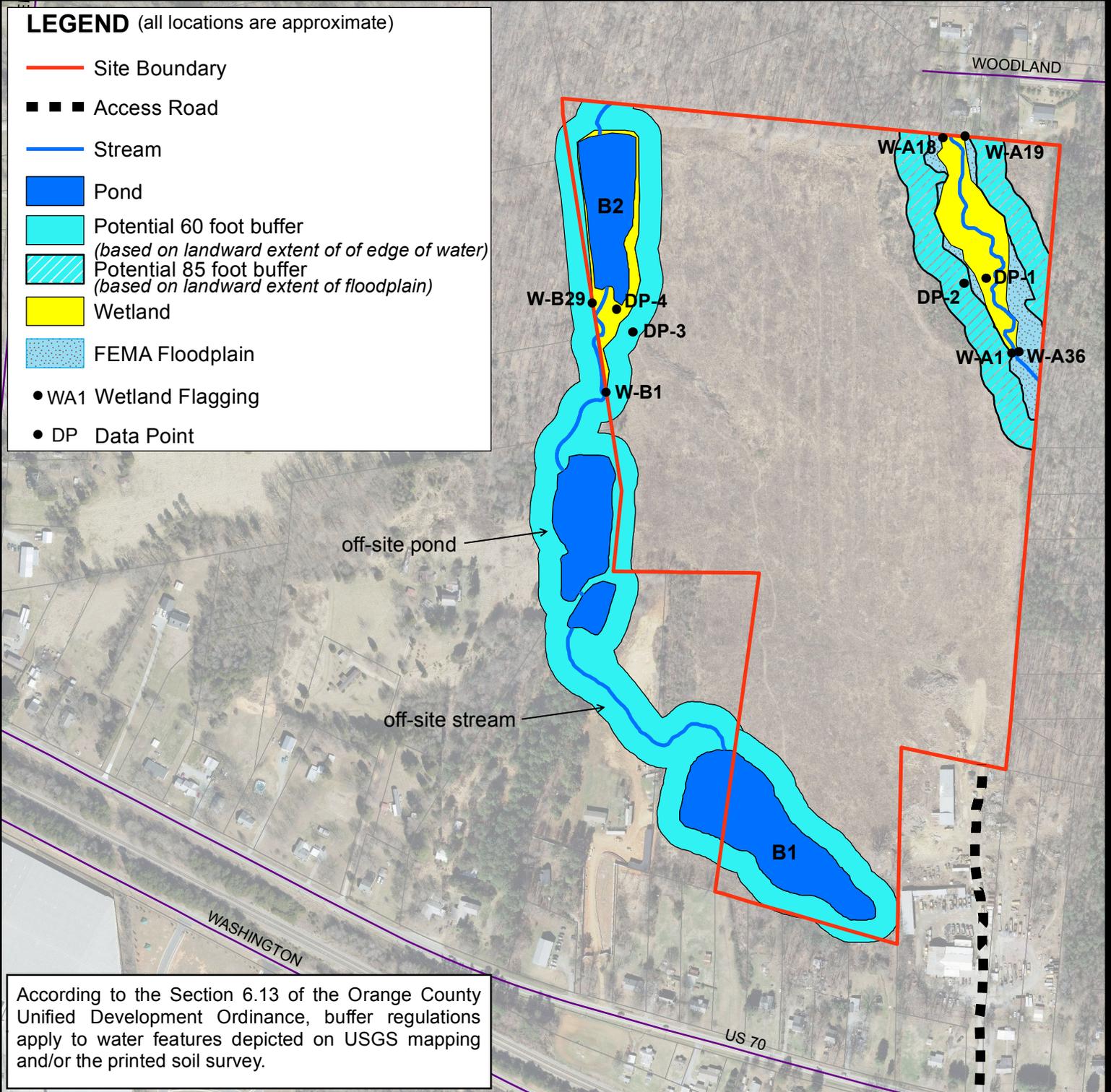
**FIGURE 3
 SOIL MAP**

Oakwood Solar Farm, LLC
 Mace Site
 6517 U.S. Highway 70
 Mebane, Orange County, NC
 Env Project #201603

This is not a survey. All locations depicted on this figure are approximate. This Wetland Delineation was conducted by Headwater Environmental, Inc. (HEnv) on February 11, 2016. HEnv recommends coordinating with the U.S. Army Corps of Engineers prior to development of this site.

LEGEND (all locations are approximate)

- Site Boundary
- ■ ■ Access Road
- Stream
- Pond
- Potential 60 foot buffer
(based on landward extent of edge of water)
- Potential 85 foot buffer
(based on landward extent of floodplain)
- Wetland
- FEMA Floodplain
- WA1 Wetland Flagging
- DP Data Point



According to the Section 6.13 of the Orange County Unified Development Ordinance, buffer regulations apply to water features depicted on USGS mapping and/or the printed soil survey.

HEADWATER ENVIRONMENTAL, INC.
 512 Sweetbay Court
 Wilmington, North Carolina

Date: 02/13/2015

Prepared by: DFH

Source:
 ESRI
 World Base Map Imagery
 Mebane, NC

Scale 1" = 400'



FIGURE 5
WETLAND DELINEATION

Oakwood Solar Farm, LLC
 Mace Site
 6517 U.S. Highway 70
 Mebane, Orange County, NC
 Env Project #201603

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Mace Site City/County: Orange County Sampling Date: Feb 11, 2016
 Applicant/Owner: Mr. Carl J. Mace State: North Carolina Sampling Point: DP-1
 Investigator(s): Paul Pascarosa Section, Township, Range: Mebane
 Landform (hillslope, terrace, etc.) Floodplain Local relief (concave, convex, none): flat
 Slope (%): flat Lat: 36°5'34.1" N Long: 79°13'53.4" W Datum: NAD83
 Soil Map Unit Name: Tarrus silt loam NWI Classification: --

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u> X </u> No <u> </u> Hydric Soil Present? Yes <u> X </u> No <u> </u> Wetland Hydrology Present? Yes <u> X </u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u> X </u> No <u> </u>
Remarks: DP-1 is located in a floodplain wetland. A perennial stream is located approximately 30 feet north.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" 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 checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <u> </u> No <u> X </u> Depth (inches): <u>n/a</u> Water Table Present? Yes <u> </u> No <u> X </u> Depth (inches): <u>>16"</u> Saturation Present? Yes <u> </u> No <u> X </u> Depth (inches): <u>>16"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u> X </u> No <u> </u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Wetland hydrology is present at DP-1. There are pockets of standing water located within the floodplain, but outside the data point.

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point DP-1

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: <u>30'</u>)					
1. <u>Acer rubrum (Maple,red)</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
2. <u>Liquidambar styraciflua (Gum,sweet)</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>		
3. <u>Ulmus americana (Elm,american)</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>		
4. <u>Quercus pagoda (Oak,cherry-bark)</u>	<u>5</u>		<u>FAC</u>		
5. _____				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 = _____	
6. _____					
7. _____					
8. _____					
	<u>95</u>	= Total Cover			
Sapling/Shrub Stratum (Plot size: <u>30'</u>)					
1. <u>Acer rubrum (Maple,red)</u>	<u>25</u>	<u>Y</u>	<u>FAC</u>		
2. <u>Liquidambar styraciflua (Gum,sweet)</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>		
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
	<u>45</u>	= Total Cover			
Herb Stratum (Plot size: _____)					
1. _____				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is > 50% ___ 3 - Prevalence Test is ≤ 3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u>dormant</u>					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
12. _____					
	<u>0</u>	= Total Cover			
Woody Vine Stratum (Plot size: <u>30'</u>)					
1. <u>Lonicera japonica (Honeysuckle,japanese)</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>	Definitions of Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 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 vine – All woody vines greater than 3.28 ft in height.	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
	<u>5</u>	= Total Cover			

Remarks: (Include photo numbers here or on a separate sheet.)
 Hydrophytic vegetation is present. Unidentified grasses present and dormant herbaceous species not listed.

Hydrophytic Vegetation Present? Yes X No _____

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Mace Site City/County: Orange County Sampling Date: Feb 11, 2016
 Applicant/Owner: Mr. Carl J. Mace State: North Carolina Sampling Point: DP-2
 Investigator(s): Paul Pascarosa Section, Township, Range: Mebane
 Landform (hillslope, terrace, etc.) hillslope Local relief (concave, convex, none): sloped
 Slope (%): 5% Lat: 36°5'34.1" N Long: 79°13'54.5" W Datum: NAD 83
 Soil Map Unit Name: Tarrus silt loam NWI Classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
 Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u> No ____ Hydric Soil Present? Yes ____ No <u>X</u> Wetland Hydrology Present? Yes ____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes ____ No <u>X</u>
Remarks: DP-2 is located in an upland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <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)
Field Observations: Surface Water Present? Yes ____ No <u>X</u> Depth (inches): <u>n/a</u> Water Table Present? Yes ____ No <u>X</u> Depth (inches): <u>>20"</u> Saturation Present? Yes ____ No <u>X</u> Depth (inches): <u>>20"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes ____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: Non-hydric soils present	

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point DP-2

Tree Stratum _____ (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Fagus grandifolia (Beech)</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>
2. <u>Acer rubrum (Maple,red)</u>	<u>15</u>		<u>FAC</u>
3. <u>Juniperus virginiana (Cedar,eastern red)</u>	<u>15</u>		<u>FACU</u>
4. <u>Quercus alba (Oak,white)</u>	<u>10</u>		<u>FACU</u>
5. _____			
6. _____			
7. _____			
8. _____			
	<u>80</u>	= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>30'</u>)			
1. <u>Fagus grandifolia (Beech)</u>	<u>25</u>	<u>Y</u>	<u>FAC</u>
2. <u>Acer rubrum (Maple,red)</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
3. <u>Liquidambar styraciflua (Gum,sweet)</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
4. <u>Pinus taeda (Pine,loblolly)</u>	<u>5</u>		<u>FAC</u>
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
	<u>65</u>	= Total Cover	
Herb Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
12. _____			
	<u>0</u>	= Total Cover	
Woody Vine Stratum (Plot size: <u>30'</u>)			
1. <u>Smilax rotundifolia (Greenbrier,common)</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
2. <u>Lonicera japonica (Honeysuckle,japanese)</u>	<u>2</u>		<u>FAC</u>
3. _____			
4. _____			
5. _____			
6. _____			
	<u>12</u>	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

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 = _____

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Test is ≤ 3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 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 vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

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

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Mace Site City/County: Orange County Sampling Date: Feb 11, 2016
 Applicant/Owner: Mr. Carl J. Mace State: North Carolina Sampling Point: DP-3
 Investigator(s): Paul Pascarosa Section, Township, Range: Mebane
 Landform (hillslope, terrace, etc.) Gentle hillslope Local relief (concave, convex, none): none
 Slope (%): 2-5% Lat: 36°5'33" N Long: 79°14'6" W Datum: NAD 83
 Soil Map Unit Name: Georgeville NWI Classification: --

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u> No <u> </u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Remarks: DP-3 is located in an upland.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) </td> <td style="width: 50%; border: none;"> <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) </td> </tr> </table>	<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	Secondary Indicators (minimum of two required) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <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) </td> <td style="width: 50%; border: none;"> <input type="checkbox"/> FAC-Neutral Test (D5) </td> </tr> </table>	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <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"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)				
<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <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)				
Field Observations: Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>n/a</u> Water Table Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>18"</u> Saturation Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>18"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u> </u> No <u>X</u>				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:					
Remarks: Wetland hydrology is not present.					

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point DP-3

Tree Stratum _____ (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>4</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)	
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
	<u>0</u>	= Total Cover			
Sapling/Shrub Stratum (Plot size: <u>30'</u>)				Prevalence Index worksheet:	
1. <u>Acer rubrum</u> (Maple,red)	20	Y	FAC	Total % Cover of:	Multiply by:
2. <u>Baccharis halimifolia</u> (False-willow,eastern)	15	Y	FAC	OBL species _____	x 1 = _____
3. <u>Rosa multiflora</u> (Rose,multiflora)	15	Y	UPL	FACW species _____	X 2 = _____
4. <u>Liriodendron tulipifera</u> (Tree,tulip)	10	_____	FAC	FAC species _____	X 3 = _____
5. <u>Quercus falcata</u> (Oak,southern red)	10	_____	FACU	FACU species _____	X 4 = _____
6. <u>Juniperus virginiana</u> (Cedar,eastern red)	5	_____	FACU	UPL species _____	X 5 = _____
7. <u>Liquidambar styraciflua</u> (Gum,sweet)	5	_____	FAC	Column Totals: _____	(A) _____ (B)
8. <u>Pinus taeda</u> (Pine,loblolly)	5	_____	FAC	Prevalence Index = B/A = _____	
9. _____	_____	_____	_____	Hydrophytic Vegetation Indicators:	
10. _____	_____	_____	_____	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is > 50% <input type="checkbox"/> 3 - Prevalence Test 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)	
	<u>85</u>	= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Herb Stratum (Plot size: _____)				Definitions of Vegetation Strata:	
1. _____	_____	_____	_____	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.	
2. _____	_____	_____	_____	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
3. _____	_____	_____	_____	Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.	
4. _____	_____	_____	_____	Woody vine – All woody vines greater than 3.28 ft in height.	
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
	<u>0</u>	= Total Cover			
Woody Vine Stratum (Plot size: <u>30'</u>)				Hydrophytic Vegetation Present?	
1. <u>Lonicera japonica</u> (Honeysuckle,japanese)	15	Y	FAC	Yes	<input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
	<u>15</u>	= Total Cover			
Remarks: (Include photo numbers here or on a separate sheet.) No trees present from previous timbering activity.					

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Mace Site City/County: Orange County Sampling Date: Feb 11, 2016
 Applicant/Owner: Mr. Carl J. Mace State: North Carolina Sampling Point: DP-4
 Investigator(s): Paul Pascarosa Section, Township, Range: Mebane
 Landform (hillslope, terrace, etc.) Wetland fringe Local relief (concave, convex, none): none
 Slope (%): flat Lat: 36°5'33.7" N Long: 79°14'6.4" W Datum: NAD 83
 Soil Map Unit Name: Georgeville NWI Classification: --

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X 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 <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: Wetland Area B is located around the peripheral of a man-made pond, that is inhabited with an active beaver population. There is a series of man-made ponds and beaver impoundments along a stream on the western boundary of the site.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" 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 checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>~1"</u> Water Table Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>@ surface</u> Saturation Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>@ surface</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Wetland hydrology is present. The beaver dams and man-made impoundments have resulted in areas of standing water which would normally be absent.

VEGETATION (Four Strata) - Use scientific names of plants.

Sampling Point DP-4

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: <u>30'</u>)					
1. <u>Platanus occidentalis (Sycamore,american)</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
	<u>15</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>30'</u>)					
1. <u>Acer rubrum (Maple,red)</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>		
2. <u>Liquidambar styraciflua (Gum,sweet)</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>		
3. <u>Platanus occidentalis (Sycamore,american)</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
	<u>15</u>	= Total Cover			
Herb Stratum (Plot size: <u>30'</u>)					
1. <u>Juncus effusus (Rush,soft)</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is > 50% ___ 3 - Prevalence Test is ≤ 3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u>Scirpus validus (Bulrush,soft-stem)</u>	<u>15</u>	<u>Y</u>	<u>OBL</u>		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
	<u>35</u>	= Total Cover			
Woody Vine Stratum (Plot size: _____)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
	<u>0</u>	= Total Cover			
Definitions of Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 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 vine – All woody vines greater than 3.28 ft in height.					
Hydrophytic Vegetation Present? Yes <u>X</u> No _____					
Remarks: (Include photo numbers here or on a separate sheet.) Hydrophytic vegetation present.					

*Oakwood Solar Farm
Wetland Delineation
Photographs: February 11, 2016*



Facing north along Stream A, within Wetland Area A.



Wetland Area A. The sloping uplands are depicted on the left side of the image.

*Oakwood Solar Farm
Wetland Delineation
Photographs: February 11, 2016*



Facing west along the north side of Pond B1.



Pond B2 with associated wetland fringe (Wetland Area B).