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Appendix AC – Wetland Delineation Report

COP Appendix AC contains a compilation of the following wetland and watercourse delineation reports developed for the Project.

File 1 of 3 contains:

- Oyster Creek Wetland and Watercourse Delineation Report
    - Oyster Creek and Oyster Creek Generating Station - Block 100, Lot 1.05; Block 1001, Lot 4.02; Block 1001, Lot 4.06; Block 1001, Lot 4.05; Block 41, Lot 43; Block 63, Lot 7; Block 100, Lot 1.05; Block 1000, Lot 1; and Block 61.01, Lot 1
    - Island Beach State Park - Block 1750, Lot 1
- BL England Wetland and Watercourse Delineation Report
    - BL England and Roosevelt Boulevard- Block 1750, Lot 1, Block 3350.01, Lot 17, Block 3350.01, Lot 17.01

File 2 of 3 contains:

- Photologs for Oyster Creek and BL England

File 3 of 3 contains:

- Supplemental Wetland Reports
    - Oyster Creek Supplemental Wetland and Watercourse Delineation Report
        - Oyster Creek Export Cable Route Alternatives- Block 97, Lot 4; Block 97, Lot 3; Block 41, Lot 40.02; Block 41, Lot 2; Block 141, Lot 4.02; Block 99, Lot 3; Lighthouse Drive road ROW
    - B.L. England Substation Wetland Supplemental Delineation Report
        - Tax Block 479, Lot 76
    - Island Beach State Park Wetland Delineation Memo

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Wetland Delineation Reports

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Ocean Wind - Oyster Creek

Wetland and Watercourse Delineation Report

***Oyster Creek and Oyster Creek Generating Station- Block 100, Lot 1.05; Block 1001, Lot 4.02; Block 1001, Lot 4.06; Block 1001, Lot 4.05; Block 41, Lot 43; Block 63, Lot 7; Block 100, Lot 1.05; Block 1000, Lot 1; and Block 61.01, Lot 1*;**

Island Beach State Park- Block 1750, Lot 1

Document Version

File Name	Preparer	Editor	Checker	Accepter	Approver
OCW01_Oyster Creek Delineation Report_2022_01_21	DV, JC	ALD	KV, DB		

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1. Project Description

Ocean Wind LLC (Ocean Wind), a subsidiary of Ørsted Wind Power North America LLC (Ørsted) [formerly Dong Energy Wind Power (U.S.) Inc.] is developing the Ocean Wind Offshore Wind Farm Project (OCW01) pursuant to the Bureau of Ocean Energy Management (BOEM) requirements for the commercial lease of submerged lands for renewable energy development on the outer continental shelf (Lease Area OCS-A-0498). Ocean Wind intends to develop, build, operate, and own (through one or more affiliated special purpose entities) a utility-scale offshore wind farm located approximately 15 miles off the coast of New Jersey within the OCS-A 0498 Lease area (the “Project”) (**Figure 1-1**).

As a part of Project development, Ocean Wind is looking to best utilize the available points of interconnection to the onshore grid. One potential point of interconnection “Oyster Creek” which includes the Oyster Creek Generating Station (OCGS), where the proposed Onshore Substation Location is located. To support the evaluation of this site as a potential interconnection location, a wetland/watercourse delineation and ecological community assessment was completed within the WRA for the Oyster Creek Landing (herein after referred to as the OC WRA). The OC WRA includes two distinct areas on both sides of State Route 9, in Lacey Township, Ocean County, NJ (**Figure 1-1**). The total area assessed was 1,112.2 acres. The OC WRA is located within two parcels currently owned by Holtec (formerly Exelon). The Holtec parcels extend from Barnegat Bay west past Route 9 (Block 100, Lot 1.05 and Block 1001, Lot 4.02) (**Figure 1-1**). The western portion of the WRA includes the southern portion of the Holtec parcel (Block 1001, Lot 4.02) associated with the OCGS. This area is bounded by the OCGS to the north and west, Oyster Creek to the south, and Route 9 to the east (**Figure 1-1**). The eastern portion of the OC WRA is located on the southern portion of Block 100, Lot 1.05. This area lies bounded by mixed pine barrens/oak-dominated forests to the north, Oyster Creek to the south and east, and Route 9 to the west.

The OC WRA includes parcels associated or adjacent to the OCGS that are within a 200-foot buffer from the proposed onshore export cable route. These collective parcels will be referred to as the “OCGS Site” for the remainder of this report. The OCGS Site lies bounded by the Forked River to the north and Oyster Creek to the south, lands owned by Holtec and residential development to the east, and Garden State Parkway to the west (**Figure 1-1**). Forested and undeveloped land bound the western section of the OCGS Site to the north and south. Route 9 extends north to south through the middle of the OCGS Site. The OCGS is situated on approximately 800 acres of land in the coastal pine barrens of New Jersey. The industrial complex of the OCGS is located west of Route 9 and consists of electrical transmission switching facilities, warehouse storage facilities, and outdoor storage areas, with undeveloped buffer areas. Construction of the OCGS took place from 1964 to 1969 and included dredging of a canal 60 feet beyond the mouth of Oyster Creek (JCP&L, 1972). A manmade intake channel is located north of the OCGS and a manmade discharge channel to the south that connects to Oyster Creek and Forked River to the north. The surrounding terrain is naturally flat with a mix of vacant lands, agricultural lands, and woodlands.

The property at OCGS has multiple private landowners including Holtec (formerly Exelon), Jersey Central Power & Light Company, and Forked River II, LLC. - The Holtec property extends from Barnegat Bay west past Route 9 (Block 100, Lot 1.05; Block 63, Lot 7; Block 41, Lot 43; Block 1001, Lot 4.02). Jersey Central Power & Light Company is the owner of a large parcel west of the Holtec property that extends to the Garden State parkway (Block 1001, Lot 4.06), and Forked River II, LLC owns a parcel located on the southeastern portion of the JCP&L property (Block 1001, Lot 4.05). A wetland delineation was previously completed during August 2016 by AKRF on the Forked River II, LLC property and NJDEP issued a Letter of Interpretation (LOI) on August 15, 2017 (LOI File #1512-17-0013.1) (**Attachment C**). The LOI will expire on August 15, 2022. The western portion of the Wetland Review Area also includes a parcel owned by the Township of Lacey (Block

1000, Lot 1) located on the western edge of U.S. 9 from its intersection with Beach Boulevard south to the southerly edge of Oyster Creek. Also included is a bike path located south of the Holtec property on the western side of Route 9 owned by Ocean Township (Block 61.01, Lot 1).

In addition to the interconnection points at Oyster Creek and BL England, Ocean Wind wanted to assess where the onshore duct bank installation impacts are going to impact wetlands from the export cable landfall and onshore export cable installation on the west side of Island Beach State Park (IBSP) as part of the OC WRA. An area located near Ocean Swimming Parking Area #2 was selected as a proposed location. To support the evaluation of this site, a wetland/watercourse delineation and ecological community assessment was completed within the IBSP portion of the OC WRA The IBSP WRA is an area west of Shore Road near a state-owned maintenance yard located in Island Beach State Park, Berkeley Township, NJ. A sandy maintenance road divides the IBSP WRA area horizontally along with the state-owned maintenance yard. The total area assessed was 2.7 acres.

The IBSP portion of the OC WRA is located within a portion of Block 1750, Lot 1, owned by the State of New Jersey (**Figure 1-1)**. This area is bound by Shore Road to the east, the Barnegat Bay to the west and mapped wetlands to the north and south.

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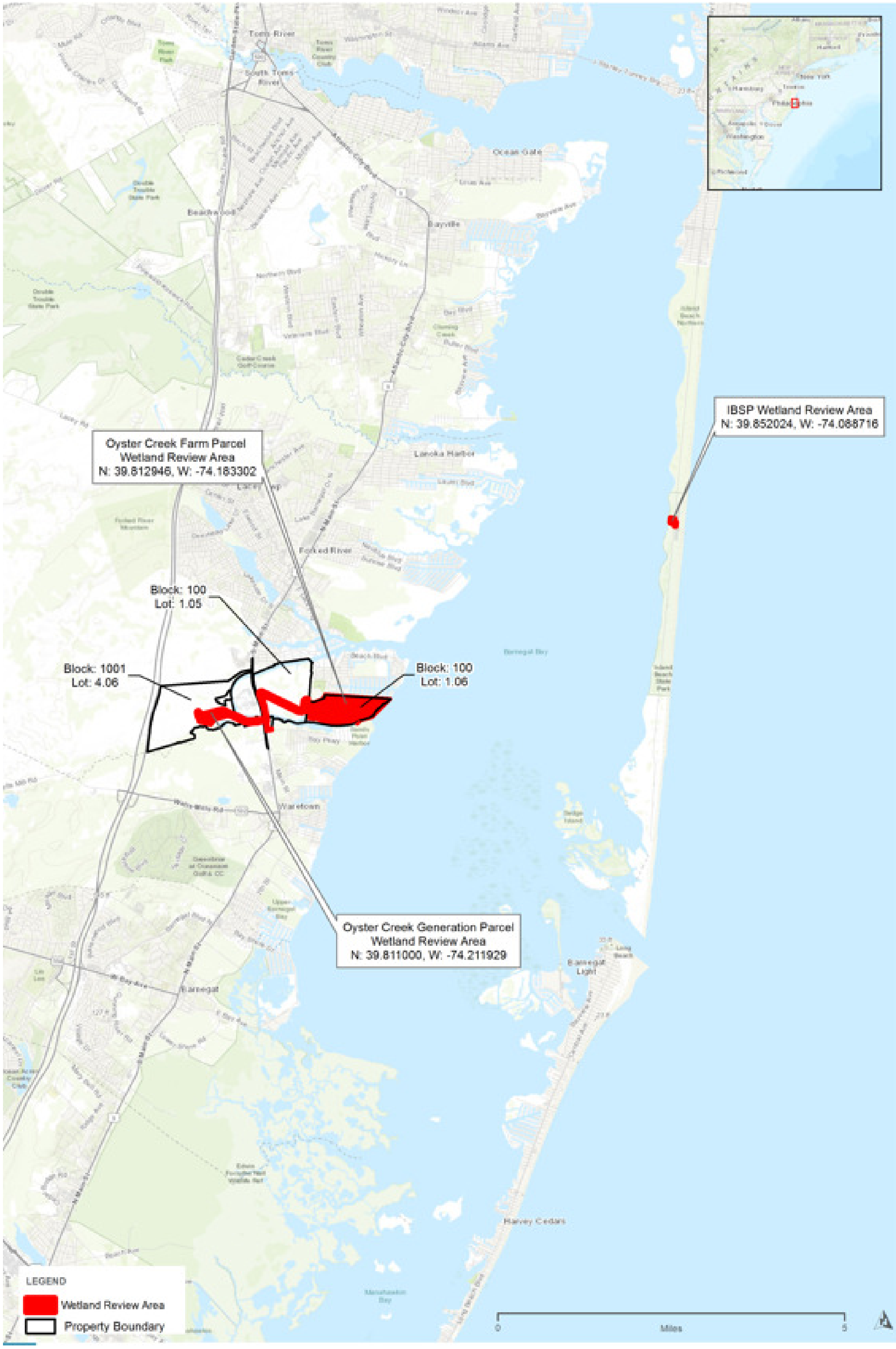

Figure 1-1. Project Overview Figure

2. Methods

HDR Engineering, Inc. (HDR) delineated the boundaries of wetlands and watercourses within the Project Area in two phases, Desktop Review and Field Survey, as described below.

2.1 Desktop Review

Prior to conducting the wetland and watercourse delineation, relevant materials were reviewed, and are included as attachments for reference:

- NJDEP Watershed Management Area Map
- New Jersey State Department of Environmental Protection (NJDEP) Wetlands Map
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Map
- U.S. Department of Agriculture (USDA) Natural Resources Conservation (NRCS) Web Soil Survey (WSS) Custom Soil Resource Report (**Attachment A**)
- Federal Emergency Management Agency (FEMA) 2013 Preliminary Working Data Flood Insurance Rate Maps (FIRM)

2.2 Field Survey

June 26 through 29, 2019 the boundaries of proposed Oyster Creek export cable route on the Holtec Property was delineated. On May 5 and 7, 2020, August 10 and 11, 2020, and September 3, 2020, the boundaries of the wetlands and watercourses within the OCGS Site were delineated.

On June 2, 2021, the boundaries of the wetlands and watercourses within the OC WRA were delineated. On November 19 and 30, 2021 the boundaries and watercourses within the IBSP WRA were delineated.

All delineation flag locations were surveyed by a license New Jersey Land Surveyor and additionally recorded using sub-meter accuracy GPS units.

All delineations used the three-parameter methodology described in the 1987 United States Army Corps of Engineers (USACE) wetland delineation manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Atlantic and Gulf Coastal Plain Region (USACE 2010). The lines were walked and verified based on the three-parameter approach (soils, vegetation, and hydrology) described in the 1989 Federal Interagency Manual. Upland and wetland observation points were recorded for each delineated wetland. Watercourses were delineated using the indicators of the ordinary high-water mark as described in Regulatory Guidance Letter 05-05 (USACE 2005). Mapped wetland observation locations were then verified by a New Jersey licensed professional land surveyor. Wetland delineation data sheets are included in **Attachment C**. Photographs of the site, wetland observation soil pits, and vegetation were taken and are included in **Attachment D**.

3. Results

3.1 Desktop Review

3.1.1 OC WRA

3.1.1.1 Proposed Export Cable Route – Lacey and Ocean Township

The OC WRA is within the NJDEP Barnegat Bay Watershed Management Area (WMA-13) **Figure 3.1-1**). The Barnegat Bay Watershed covers over 600 square miles and its characteristics vary from coastal dunes and marshes to developed lands. An array of environmentally sensitive habitats exists here, such as sand beaches, bay islands, submerged aquatic vegetation, finfish nursery areas, shellfish beds, and waterfowl nesting grounds.

Oyster Creek discharge channel abuts the proposed ECR review area to the south. According to the NJDEP's Surface Quality Standards (N.J.A.C. 7:9B, adopted amendments N.J.A.C. 7:9B-1.15), Oyster Creek is classified as FW2-NT/SE1 waters. Designated uses for this classification include maintenance, migration and propagation of the natural and established biota, primary contact recreation, industrial and agricultural water supply, public potable water supply after conventional filtration treatment, migration of diadromous fish, and secondary contact recreation.

The western portion of the proposed ECR review area (Block 1001, Lot 4.02) has deciduous scrub/shrub wetlands and coniferous scrub/shrub wetlands mapped based on the NJDEP Wetlands Land Use/Land Cover Map (**Figure 3.1-2**). The NJDEP map shows wetlands within the WRA east of Route 9 (Block 100, Lot 1.05) as mixed scrub/shrub coniferous dominated wetlands.

The USFWS NWI map classifies wetlands within the proposed ECR review area on the western side of Route 9 as palustrine emergent wetlands (Cowardin classification PEM1E and PEM1C). The USFWS NWI map classifies wetlands within the OC WRA on the eastern side of Route 9 as estuarine and marine wetland (E2FO1P, E2EM1N, E2EM1P, E1UBL), and palustrine forested/shrub wetlands (PFO1B, PSS1B) (**Figure 3.1-3**).

The USDA WSS report indicates the majority of soil map units within the 1,112.2 ECR review area are classified as Lakehurst sand, Psamments, Manahawkin muck, and Psammaquents (**Attachment A**). Lesser amounts of mapped soils include Appoquinimink-Transquaking Mispillion complex and Herring Creek mucky silt loam. Lakehurst sand soils are non-hydric, moderately well drained and found on flats and dunes. Psamments are non-hydric soils, typically sandy human-transported material found on flats, with a typical soil profile consisting of coarse sand, gravelly coarse sand, and sand. Manahawkin muck soils are frequently flooded, hydric, and found in swamps and floodplains. These soils are typical of freshwater channels adjacent to tide water. Psammaquents are frequently flooded, hydric, very poorly drained, and found on flat landforms. The acreage, percent composition, soil series, and hydric rating for soil map units are presented in **Table 3.1.2-1**. A U.S. Department of Agriculture Custom Soil Resource Report is provided in **Attachment A**.

FEMA floodplain maps (FEMA 2015 Preliminary Work Map Data) showed that most of the proposed ECR review area is within Special Flood Hazard Area Zone X (Area of minimal flood hazard). The areas of the proposed ECR review area near Oyster Creek are designated Flood Zone AE (1% annual chance of flood). There are also areas of 0.2 percent annual chance flood hazard within the WRA. **Figure 3.1-4** illustrates the extents of the FEMA PFIRM flood hazard zones. **Table 3.1.2-2** summarizes the extents of each flood hazard zone within the proposed ECR review area.

Table 3.1.2-1. Soil Map Units within the Wetland Review Areas

Map Unit Symbol	Map Unit Name	Percent of Site	Soil Series Component	% Component	Hydric Rating
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	0.1%	Appoquinimink	40	Yes
			Transquaking	30	Yes
			Mispillion	25	Yes
			Minor Components	5	No
LakB		46.3%	Lakehurst and similar soils	85	No

Map Unit Symbol	Map Unit Name	Percent of Site	Soil Series Component	% Component	Hydric Rating
	Lakehurst sand, 0 to 5 percent slopes		Minor components	15	Yes/No
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	14.9%	Manahawkin, frequently flooded, and similar soils	85	Yes
			Minor components	15	Yes
PssA	Psamments, 0 to 2 percent slopes	24.2%	Psamments, nearly level, and similar soils	85	No
			Minor components	15	Yes
PstAt	Psamments, 0 to 2 percent slopes	13.7%	Psammaquents, sulfidic substratum, frequently flooded, and similar soils	85	Yes
			Minor components	15	Yes
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	0.8%	Herring creek, 0 to 1 meter water depth, and similar soils	85	Yes
			Minor components	15	Yes
	Totals for Site	**100.0%**			

Table 3.1.2-2. Summary of FEMA Flood Hazard Zones within the Wetland Review Areas

Map Unit Symbol	Percent of Wetland Review Area
Zone AE (1.0%)	43.4%
Zone X (0.2%)	2.9%
Zone X (minimal flood risk)	53.7%
Totals for Site	**100.0%**

3.1.1.2 Proposed Onshore Substation at Oyster Creek Generating Station

The proposed onshore substation at the OCGS Site is within the NJDEP Barnegat Bay Watershed Management Area (WMA-13) (**Figure 3.1-5**). According to the NJDEP's Surface Quality Standards (N.J.A.C. 7:9B, adopted amendments N.J.A.C. 7:9B-1.15), Oyster Creek is classified as FW2-NT/SE1 waters. Designated uses for this classification include maintenance, migration and propagation of the natural and established biota, primary contact recreation, industrial and agricultural water supply, public potable water supply after conventional filtration treatment, migration of diadromous fish, and secondary contact recreation.

Block 1001, Lot 4.05 of the OCGS Site does not have mapped wetlands based on the NJDEP Wetlands Land Use/Land Cover Map (**Figure 3.1-6**). The NJDEP map shows wetlands within the OCGS Site Wetland Review Area east of Route 9 as mixed scrub/shrub coniferous dominated wetlands, Atlantic white cedar wetlands, and mixed scrub/shrub coniferous dominated wetlands. NJDEP mapped wetlands at the western portion of the Wetland Review Area of the OCGS Site are predominately deciduous scrub/shrub wetlands, coniferous scrub/shrub wetlands, mixed wooded coniferous dominated wetlands, mixed wooded deciduous dominated wetlands, and Atlantic White Cedar wetlands.

The USFWS NWI Map classifies wetlands within the OCGS Site Wetland Review Area on the eastern side of Route 9 as estuarine and marine wetlands (Cowardin classification E2EM1N, E2EM1P, E2FO1P, E2FO4P, and E2EM1Pd), freshwater forested/shrub wetlands (PFO4Cg), freshwater emergent wetlands (PEM1E), and estuarine and marine wetlands (E2FO1P).The USFWS NWI map classifies wetlands on the western side of Route 9 on the OCGS Site as freshwater forested/shrub wetlands (PSS1Eh, PFO4C, PSS1/4Eg, PFO4/1C) and freshwater pond (PUBHh), with one area of freshwater emergent wetlands (PEM1Fh) (**Figure 3.1-7**).

The USDA WSS report indicates the majority of soil map units within the 1,194.4 acre OCGS Site is classified as Lakehurst sand, Psammaquents, Manahawkin muck, and Atsion sand (**Attachment A**). Lesser amounts of mapped soils include Appoquinimink-Transquaking-Mispillion complex, Berryland sand, Downer loamy sand, Lakewood san, Psamments, Herring Creek mucky silty loam, and Trappe sand. Lakehurst sand soils are non-hydric, moderately well drained and found on flats and dunes. Psammaquents are frequently flooded, hydric, very poorly drained, and found on flat landforms. Manahawkin muck soils are frequently flooded and found in swamps and floodplains. These soils are typical of freshwater channels adjacent to tide water. Atsion sand is poorly drained sandy marine sediments. Atsion sands are typically found in second growth woodland. A typical soil profile contains slightly decomposed plant material within the first two inches and sand for the remaining depths. The acreage, percent composition, soil series, and hydric rating for soil map units are presented in **Table 3.1.2-3** and **Table 3.1.2-4**. A U.S. Department of Agriculture Custom Soil Resource Report is provided in **Attachment A**.

FEMA floodplain maps (FEMA 2015 Preliminary Work Map Data) showed that most of the OCGS Site is within Special Flood Hazard Area Zone X (Area of minimal flood hazard). The areas of the OCGS Site near Oyster Creek are designated Flood Zone AE (1% annual chance of flood). There are also areas of 0.2 percent annual chance flood hazard within the Wetland Review Area. **Figure 3.1-8** illustrates the extents of the FEMA PFIRM flood hazard zones.

Table 3.1.2-3. Soil Map Units within the OCGS Site

Map Unit Symbol	Map Unit Name	Percent of Site	Soil Series Component	% Component	Hydric Rating
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	0.6%	Appoquinimink	40	Yes
			Transquaking	30	Yes
			Mispillion	25	Yes
			Minor Components	5	No
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	9.9%	Atsion and similar soils	90	Yes
			Minor Components	10	No
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	0.9%	Downer and similar soils	80	No
			Minor components	20	Yes/No
LakB	Lakehurst sand, 0 to 5 percent slopes	45.0%	Lakehurst and similar soils	85	No
			Minor components	15	Yes/No
LasB	Lakewood sand, 0 to 5 percent slopes	3.2%	Lakewood and similar soils	85	No
			Minor components	15	Yes/No
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	13.9%	Manahawkin, frequently flooded, and similar soils	85	Yes
			Minor components	15	Yes
PssA	Psamments, 0 to 2 percent slopes	3.0%	Psamments, nearly level, and similar soils	85	No

Map Unit Symbol	Map Unit Name	Percent of Site	Soil Series Component	% Component	Hydric Rating
			Minor components	15	Yes
PstAt	Psamments, 0 to 2 percent slopes	15.5%	Psammaquents, sulfidic substratum, frequently flooded, and similar soils	85	Yes
			Minor components	15	Yes
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	6.4%	Herring creek, 0 to 1 meter water depth, and similar soils	85	Yes
			Minor components	15	Yes
	Totals for Site	**100.0%**			

Table 3.1.2-4. Summary of FEMA Flood Hazard Zones within the OCGS Site

Map Unit Symbol	Percent of OCGS Site
Zone AE (1.0%)	19.6%
Zone A (1.0%)	4.7%
Zone VE (1.0%)	0%
Zone X (0.2%)	4.1%
Zone X (minimal flood risk)	71.6%
Totals for Site	**100.0%**

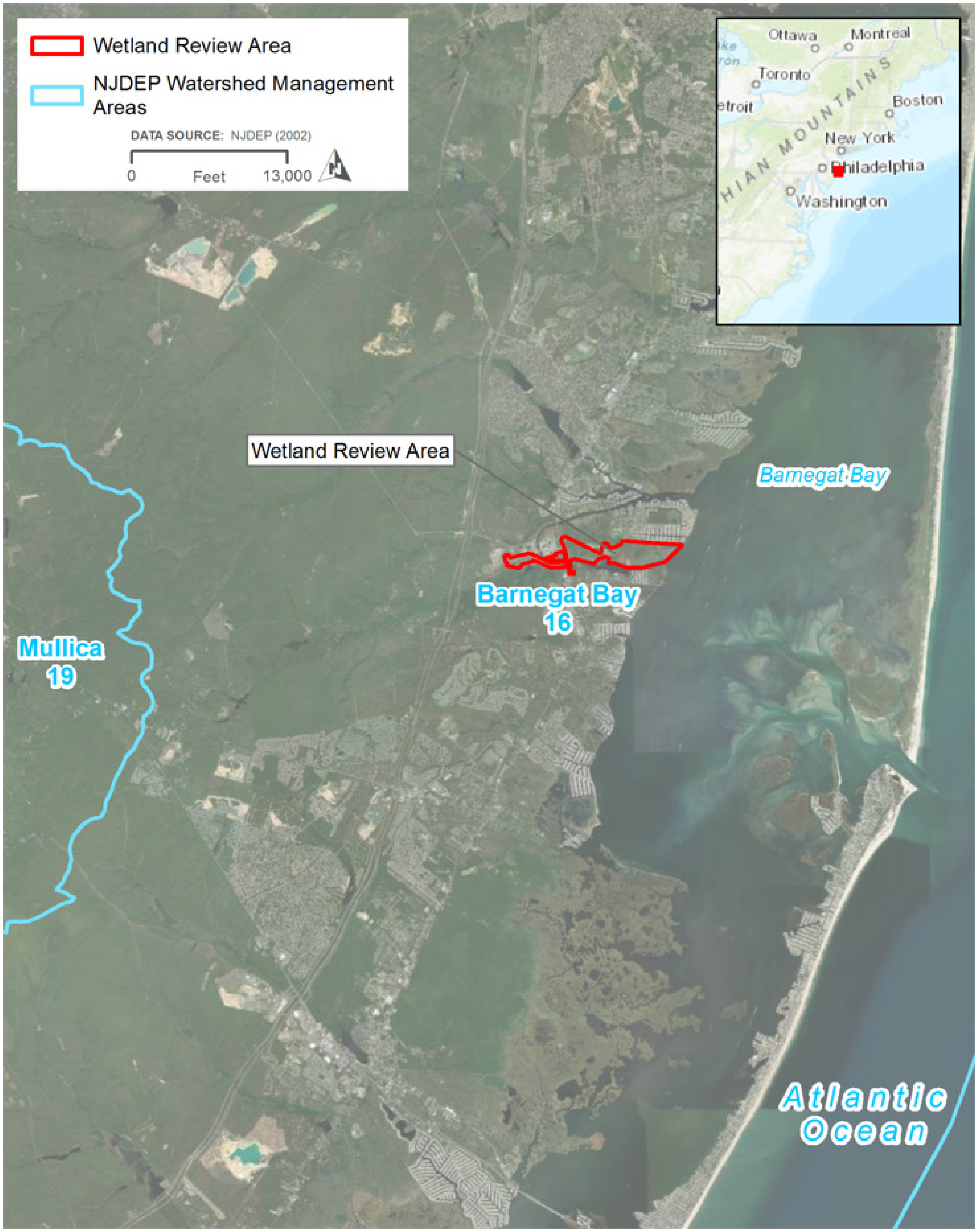

Figure 3.1.2-1. NJDEP Watershed Management Areas Map.

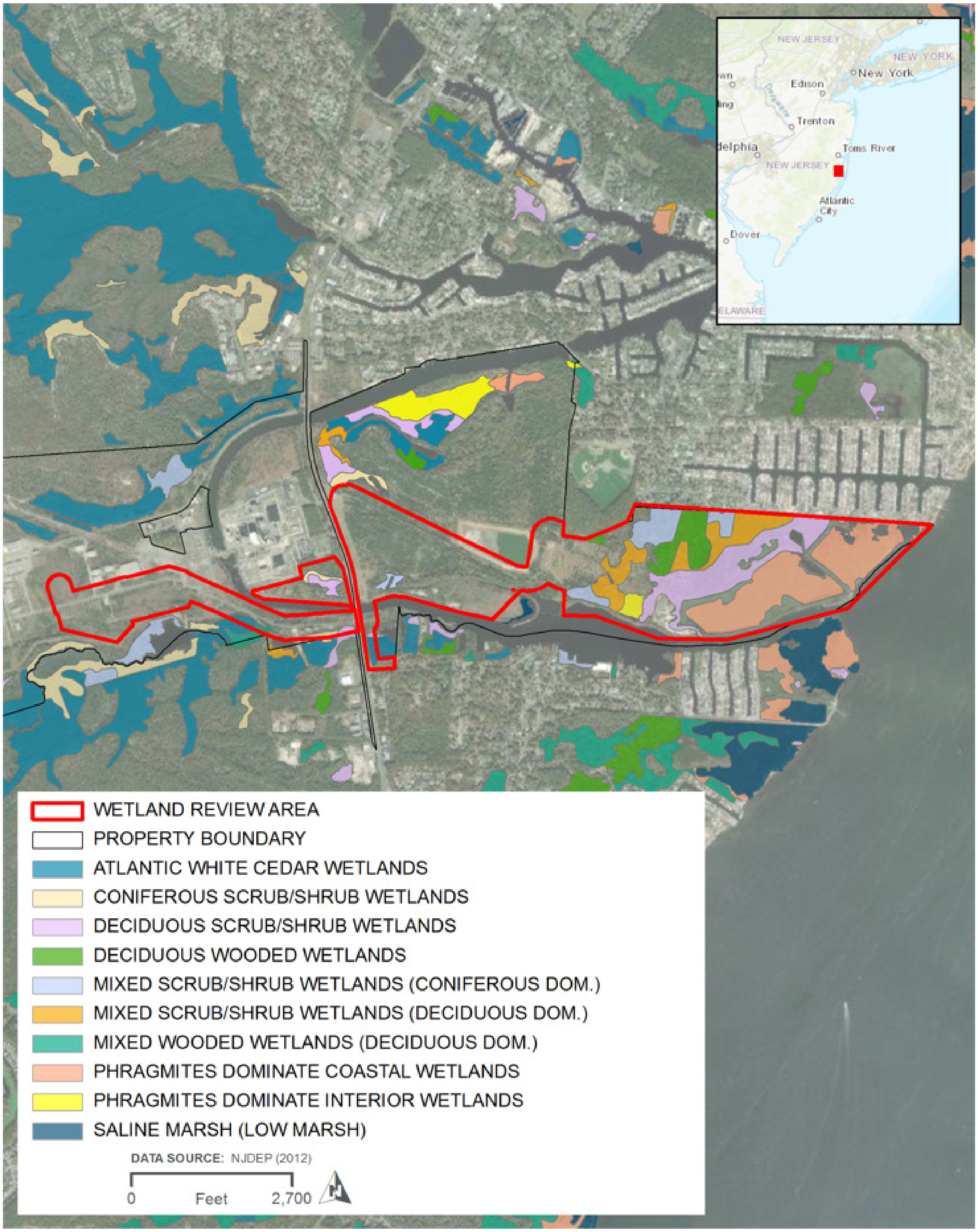

Figure 3.1.2-2. NJDEP Wetlands Map- OC WRA

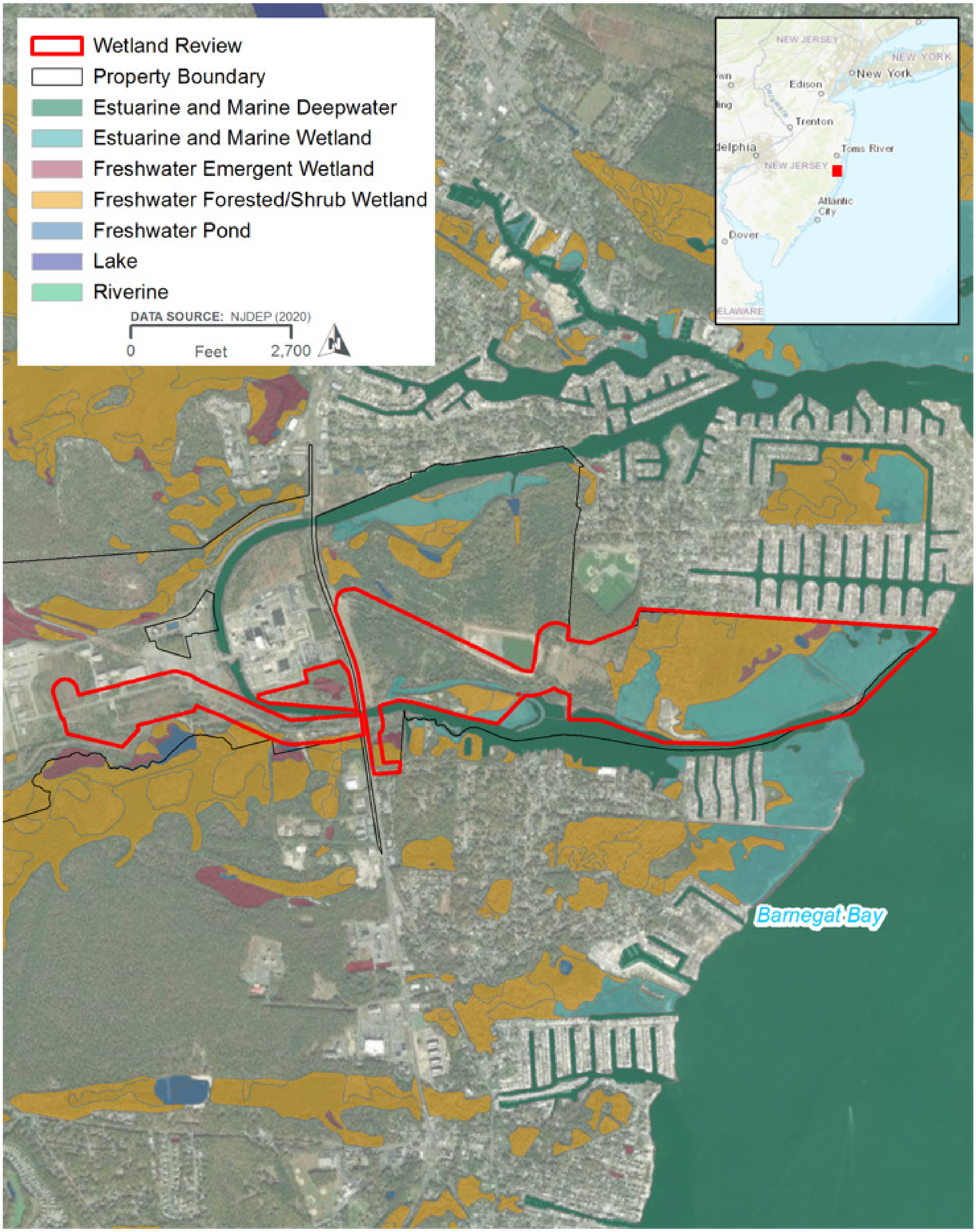

Figure 3.1.2-3. NWI Wetlands Map- OC WRA

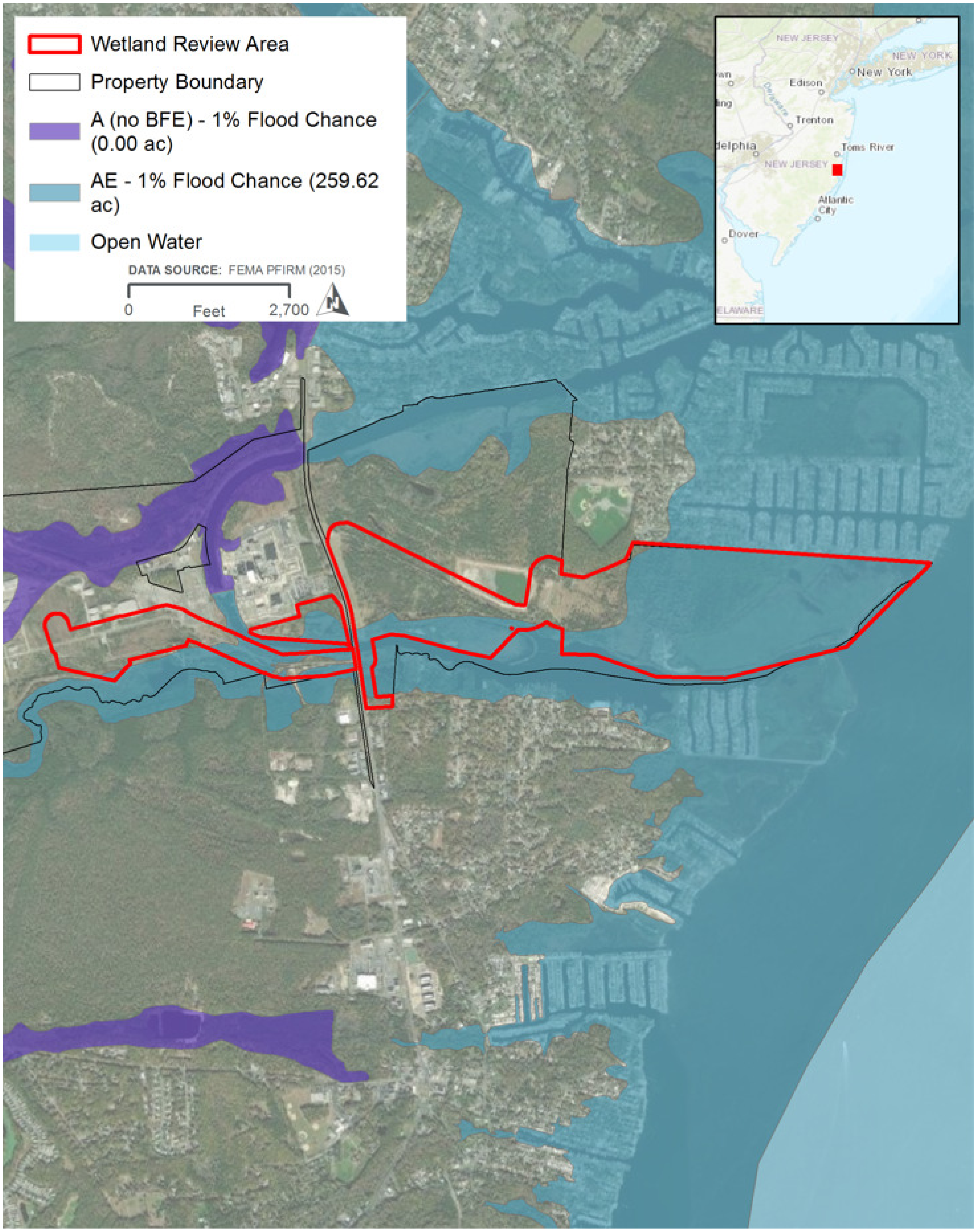

Figure 3.1.2-4. FEMA PFIRM Flood Hazard Area Map- OC WRA

3.1.1.3 Proposed Export Cable Route - Island Beach State Park

The IBSP Export Cable Route (ECR) Review Area is within the NJDEP Barnegat Bay Watershed Management Area (WMA-13) (**Figure 3.1-9**). The Barnegat Bay abuts the IBSP WRA to the west. According to the NJDEP's Surface Quality Standards (N.J.A.C. 7:9B, adopted amendments N.J.A.C. 7:9B-1.15), Barnegat Bay is classified as SE1C1 waters. Designated uses for this classification include shellfish harvesting, maintenance, migration and propagation of the natural and established biota, primary contact recreation and any other reasonable use.

IBSP WRA has deciduous scrub/shrub wetlands, mixed scrub/shrub wetlands (deciduous dominate), and phragmites dominate interior wetlands mapped based on the NJDEP Wetlands Land Use/Land Cover Map (**Figure 3.1-10**).

The USFWS NWI map classifies wetlands within the IBSP WRA north and south of the access road as freshwater forested/shrub (Cowardin classification PSS13B). The wetlands west of the maintenance yard are classified as estuarine and marine (Cowardin classification E2EM1PD). (**Figure 3.1-11**).

The USDA WSS report indicates the majority of soil map units within the 2.2-acre IBSP WRA are classified as Hooksan fine sand (**Attachment A**). Lesser amounts of mapped soils include Mantoloking sand. Hooksan fine sand are non-hydric, excessively drained and found on dunes on barrier islands. Mantoloking sand are frequently flooded, hydric, subaqueous drainage and found on flood-tidal delta flats. The acreage, percent composition, soil series, and hydric rating for soil map units are presented in **Table 3.1.2-5**. A U.S. Department of Agriculture Custom Soil Resource Report is provided in **Attachment A**.

FEMA floodplain maps (FEMA 2015 Preliminary Work Map Data) showed that the entire extent of the IBSP WRA is within Flood Hazard Zone AE (1% annual chance of flood). **Figure 3.1-12** illustrates the extents of the FEMA PFIRM flood hazard zones. **Table 3.1.2-6** summarizes the extents of each flood hazard zone within the IBSP WRA.

Table 3.1.2-5. Soil Map Units within the Wetland Review Areas

Map Unit Symbol	Map Unit Name	Percent of Site	Soil Series Component	% Component	Hydric Rating
HorsC	Hooksan fine sand, 2 to 10 percent slopes very frequently flooded	99.3%	Hooksan and similar soils	85	No
			Transquaking	5	Yes
			Appoquicinimink	5	Yes
			Atsion	5	Yes
WMa1	Mantoloking sand, 0 to 1 meter water depth, flat	0.7%	Mantoloking Sand	85	Yes
			Cottman	10	Yes
			Demas	5	Yes
	Totals for Site	**100.0%**			

Table 3.1.2-6. Summary of FEMA Flood Hazard Zones within the Wetland Review Areas

Map Unit Symbol	Percent of Wetland Review Area
Zone AE (1.0%)	100%
Totals for Site	**100.0%**

Figure 3.1.2-9. WMA Map- IBSP

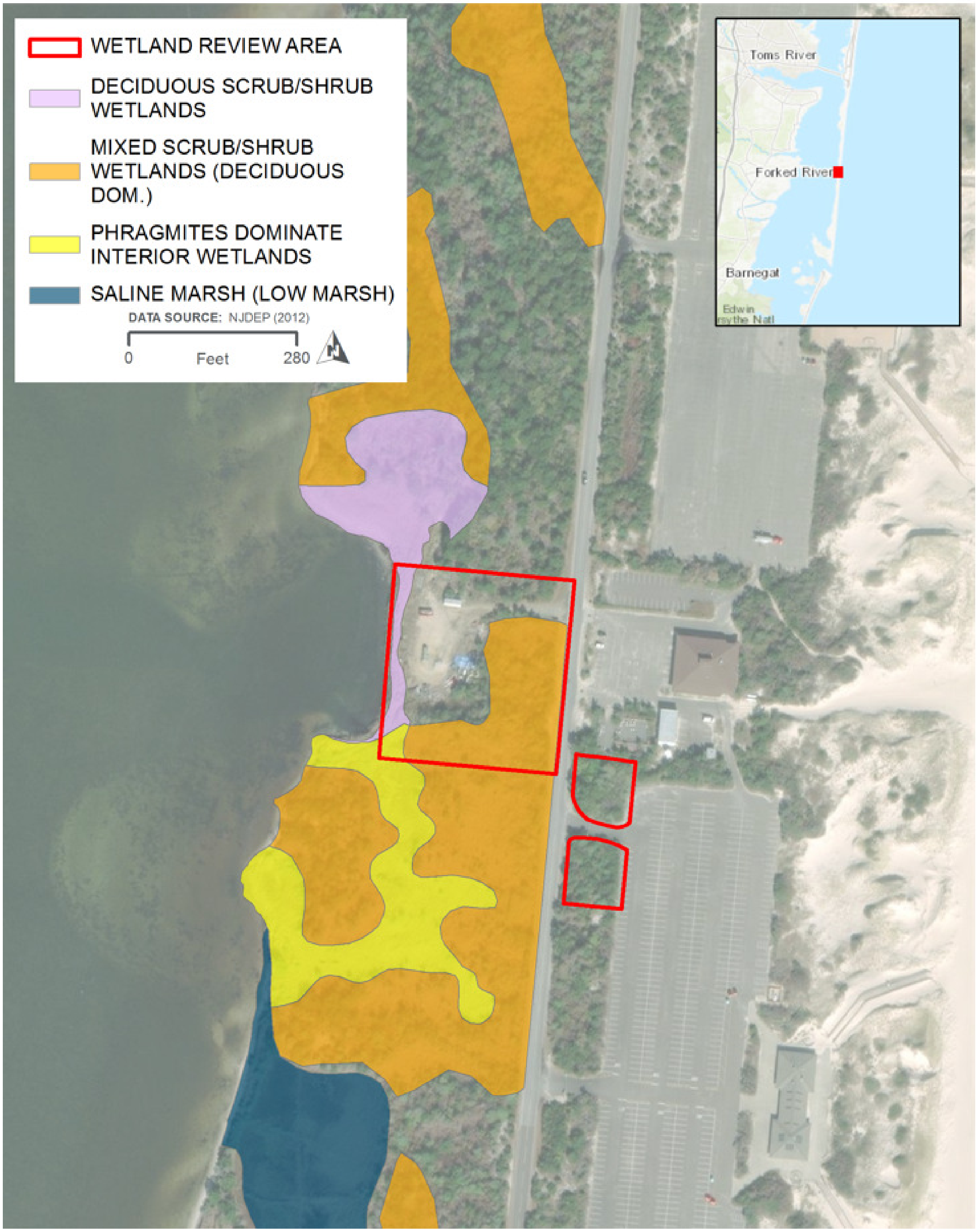

Figure 3.1.2-10. NJDEP Wetlands Map- IBSP

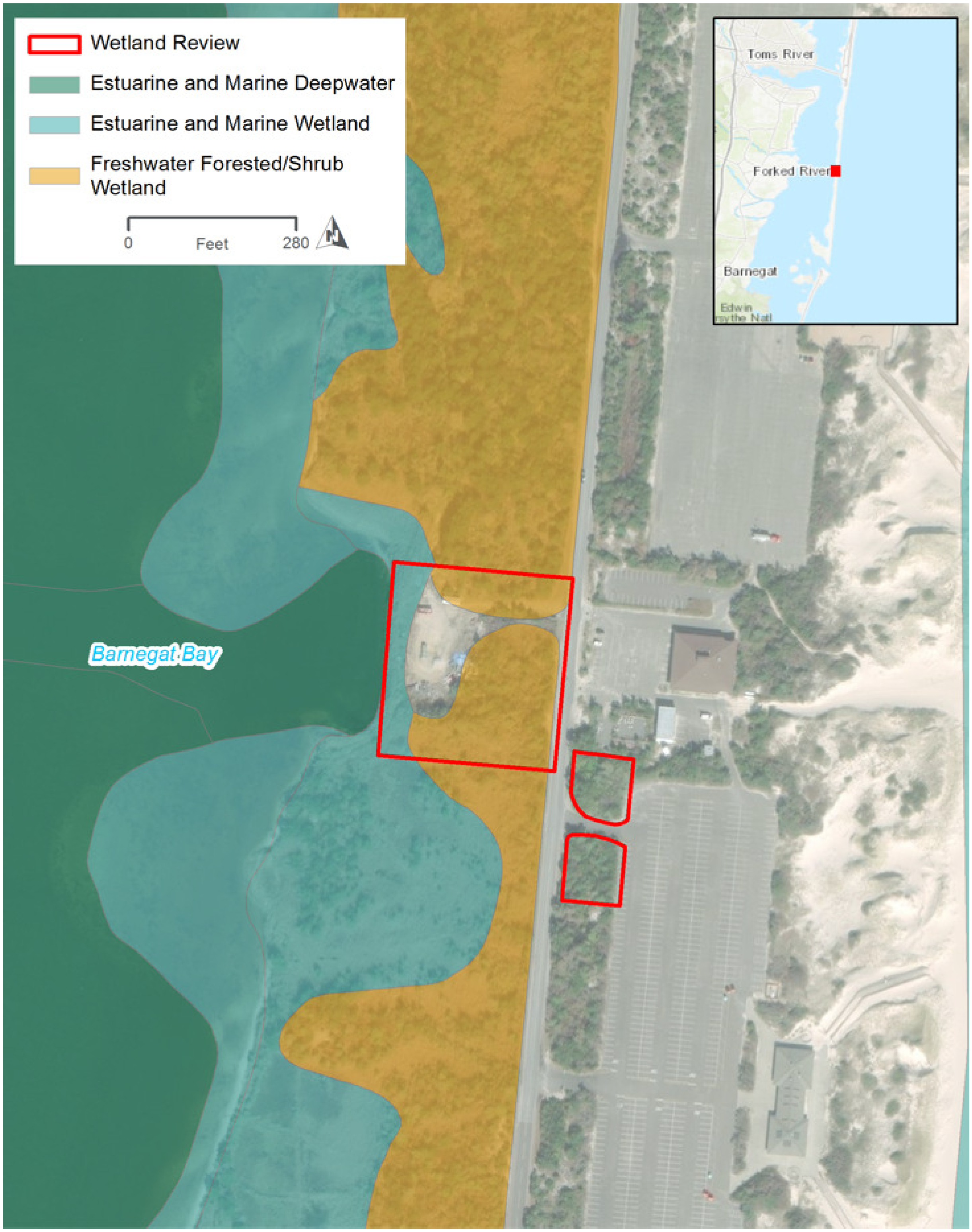

Figure 3.1.2-11. NWI Wetlands Map- IBSP

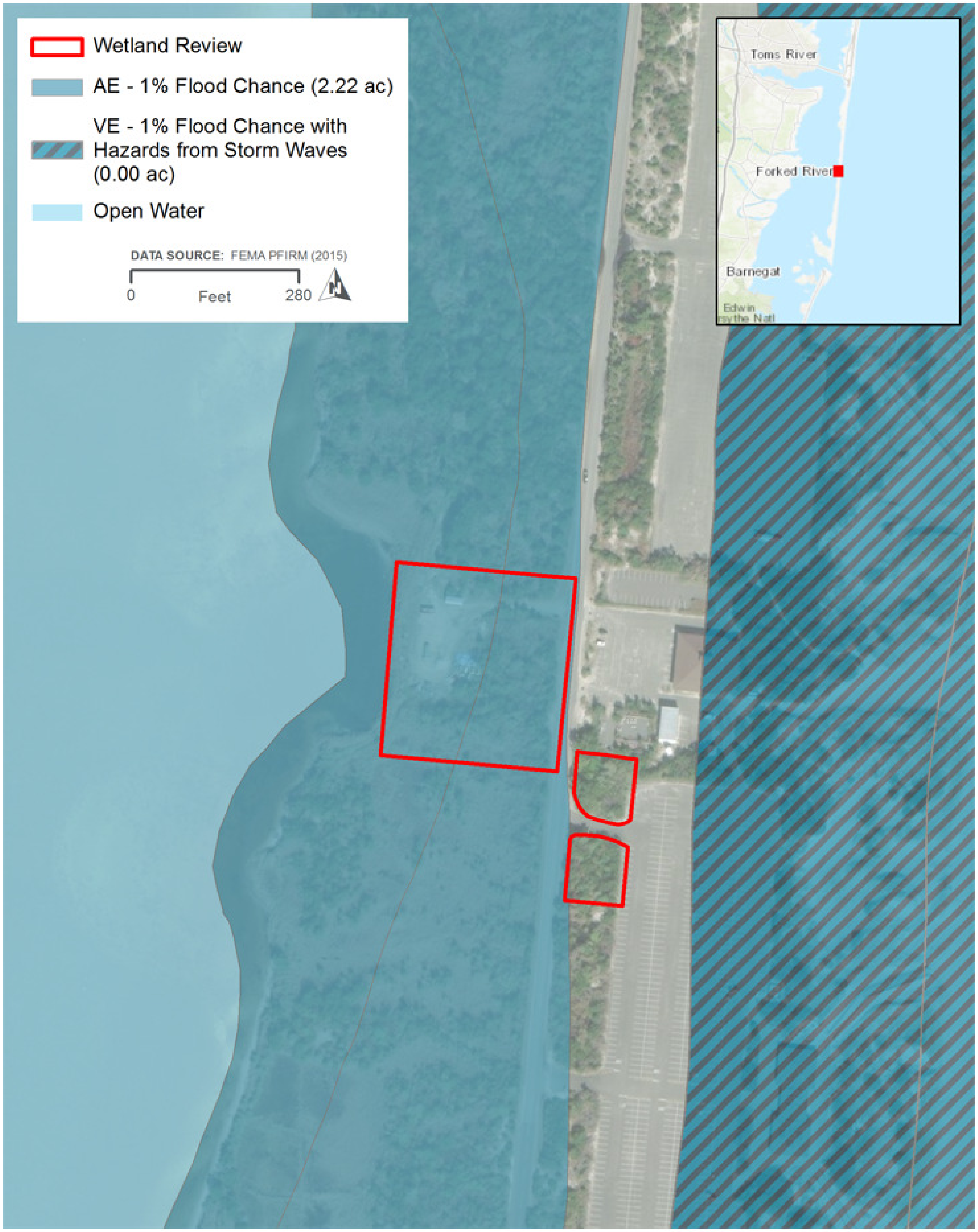

Figure 3.1.2-12. FEMA PFIRM Flood Hazard Area Map- IBSP

3.2 Wetland Delineation Field Survey

3.2.1 OC WRA

3.2.1.1 Proposed Export Cable Route- Lacey and Ocean Townships

Four palustrine forested and emergent wetlands were delineated within the WRA, comprising an area of 14.9 acres. The delineated wetlands and observation points are shown on **Figure 3.2.1-1.** During the site walk-over on November 3, 2021 with NJDEP, wetlands B, F, E, H2, and N were enlarged by NJDEP as described below citing the continuation of hydrophytic vegetation and hydric soils beyond the originally delineated boundary increasing the total wetland area. Additionally, NJDEP identified Wetlands H, G2, and I, bringing the total delineated wetland are up to 225.75 acres. Wetland delineation data sheets for upland and wetland observation points are included in **Attachment E**. These wetlands are described in detail below.

<u>Wetland A</u> – The area delineated as Wetland A is an 86.37 -acre and is an estuarine intertidal emergent wetland dominated by *Phragmites australis* based on Cowardin et al. (1979). Wetland A is located on the seaward side of the berm that separates the saltmarshes from freshwater wetlands on the Site. It is bounded to the north by Orlando Drive, to the east by Barnegat Bay, to the south by Oyster Creek, and to the west by the berm described above. The northwestern portion of Wetland A is identified as "PF01Bd" (Palustrine Forested, Broad-Leaved Deciduous Vegetation, Seasonally Saturated, Partially Drained/Ditched)) by NWI. Common reed (*Phragmites australis)* has a Facultative Wetland (FACW) indicator status providing a hydrophytic vegetation indicator (Attachment B). Soils in Wetland A were indicative of hydric soils due to the presence of sandy mucky mineral material (Indicator S1). Hydrology indicators include a high water table (3 inches below surface), saturation at the surface, water marks, and water-stained leaves. A summary of wetland indicators is provided in **Table 3.2.1-1**.

An upland observation point was taken outside of Wetland A and no hydric soil indicators were observed. Dominant species within the upland area included winged sumac (*Rhus copallinum*), beach rose (*Rosa rugosa*), Japanese honeysuckle (*Lonicera japonica*), poison ivy (*Toxicodendron radicans*) (Attachment B). Winged sumac has an Upland (UPL) indicator status, and beach rose, Japanese honeysuckle, and Virginia creeper (*Parthenocissus quinquefolia*) have a Facultative Upland (FACU) indicator status. Poison ivy has a Facultative (FAC) indicator status. These dominant species are all indicative of upland vegetation based on the dominance test.

<u>Wetland B/C Complex</u> – The Wetland B/C Complex abuts the manmade ditches that run north to south connected by two ditches that run east to west. The dirt trail that runs through the property bisects this wetland complex. It is bounded to the north by a the property boundary and residential area (Orlando Drive). Wetland B lies north of the dirt trail and Wetland C lies to the south. This area was originally delineated to not include the extensive areas between the ditches that run north to south. Upon site verification with a NJDEP representative, they pointed out the wetlands extend between ditches siting the presence of hydrophytic vegetation and hydric soils. Wetland B is 18.19 acres and Wetland C is 27.42 acres. Both are palustrine forested broad-leaved deciduous seasonally saturated wetland based on Cowardin et al. (1979). They are dominated by red maple *(Acer rubrum),* sensitive fern (*Onoclea sensibilis),* and highbush blueberry (*Vaccinium corymbosum)*. Sensitive fern and highbush blueberry have Facultative Wetland (FACW) indicator statuses, while red maple has a FAC indicator status providing a hydrophytic vegetation indicator. Soils in the both wetlands were indicative of hydric soils due to the presence of hydrogen sulfide odors (Indicator A4) and sandy mucky mineral material (Indicator S1). Hydrology indicators include a high water table (6 inches), saturation at the surface, water marks, drift, deposits, and water-stained leaves. This habitat type is identified as "PF01Bd" (Palustrine Forested, Broad-Leaved Deciduous Vegetation, Seasonally Saturated, Partially Drained/Ditched) by

NWI and is present north and south of the main berm. A summary of wetland indicators is provided in **Table 3.2.2-1**.

An upland observation point was taken outside of Wetlands B and C and no hydric soil indicators were observed. Dominant species within the upland area included red maple, highbush blueberry, and bitter panicum (*Panicum amarum*). Red maple has a FAC indicator status, indicating upland vegetation. Highbush blueberry has a FACW indicator status and bitter panicum has a FAC indicator status. Based on the dominance test, hydrophytic vegetation is present; however, no wetland hydrology indicators or hydric soil indicators were present.

<u>Wetland E</u> – Wetland E is a 23.46-acre palustrine scrub/shrub wetland that receives surface runoff from Watercourses E and F based on Cowardin et al. (1979). Wetland E is identified as “E2EM1P” (Estuarine, Intertidal, Emergent/Persistent Vegetation, Irregularly Flooded) and “PEM1B” (Palustrine, Emergent, Persistent Vegetation, Seasonally Saturated) by NWI. This area was originally delineated further to the south and did not extend north to the dirt trail. However, upon site verification with a NJDEP representative, they pointed out the presence of hydrophytic vegetation and hydric soils. Wetland E is dominated by red maple, having a FAC indicator status, and common reed, having a FACW indicator status; providing a hydrophytic vegetation indicator (Dominance Test). Soils in Wetland E were indicative of hydric soils due to the presence of hydrogen sulfide (Indicator A4) and stratified layers (Indicator A5). Hydrology indicators include the presence of surface water, a high water table, saturation, and hydrogen sulfide odor. A summary of wetland indicators is provided in **Table**

An upland observation point was taken outside of Wetland E and no hydric soil indicators were observed. Dominant species within the upland area include Eastern red cedar (*Juniperus virginiana*), black tupelo (*Nyssa sylvatica*), highbush blueberry, and iron oak (*Quercus stellata*). Eastern red cedar has a FACU indicator status and black tupelo has a FAC indicator status. Highbush blueberry has a FACW indicator status and iron oak has a UPL indicator status. Based on the dominance test, this area is an upland.

Wetland G2 – Wetland G-2 was identified during the NJDEP site visit as a depressional isolated palustrine forested wetland based on Cowardin et al. (1979). It is a 0.37-acre wetland dominated by red maple *(Acer rubrum),* and highbush blueberry (*Vaccinium corymbosum).* Highbush blueberry has a Facultative Wetland (FACW) indicator statuses, while red maple has a FAC indicator status providing a hydrophytic vegetation indicator. Soils in the wetland were indicative of hydric soils due to the presence of hydrogen sulfide odors (Indicator A4) and sandy mucky mineral material (Indicator S1). Hydrology indicators include a high water table (6 inches), saturation at the surface, water marks, drift, deposits, and water-stained leaves. This habitat type is identified as “PF01Bd” (Palustrine Forested, Broad-Leaved Deciduous Vegetation, Seasonally Saturated, Partially Drained/Ditched) by NWI and is present north of the dirt road bisecting Wetlands B and C.

Table 3.2.2-1. Summary of Wetland Delineation Field Survey Results

Wetland ID	Hydrology Indicators	Dominant Vegetation	Hydric Soil Indicator	Size (Acres)	Cowardin Classification
Wetland A	High water table (A2), saturation (A3), water marks (B1), water-stained leaves (B9)	*Phragmites australis (FACW)*	Muck presence, sandy mucky mineral (S1)	86.37	E2EM5P
Wetland B & C	High water table (A2), saturation (A3), water marks (B1), water-stained leaves (B9)	*Acer rubrum (FAC), Vaccinium corymbosum (FACW), Phragmites australis (FACW), Onoclea sensibilis (FACW)*	Hydrogen sulfide, sandy mucky mineral (S1, A4)	45.61	PFO1Bd PEM1B
Wetland E	Surface water (A1), high water table (A2), saturation (A3), hydrogen sulfide odor (C1)	*Acer rubrum (FAC), Phragmites australis (FACW)*	Hydrogen sulfide, stratified layers (A4, A5)	23.46	E2EM5P PFO1Bd
Wetland G2	High water table (A2), saturation (A3), water marks (B1), water-stained leaves (B9)	*Acer rubrum (FAC), Vaccinium corymbosum (FACW)*	Hydrogen sulfide, sandy mucky mineral (S1, A4)	0.37	PFO1Bd
			Totals for Site	**155.81**	

Wetland K – The area delineated as Wetland K is a 0.13-acre palustrine emergent wetland based on Cowardin et al. (1979). Wetland K is located on the western side of Route 9 south of the OCGS parking lot paved parking and equipment laydown area. Wetland K is a stormwater detention/recharge basin; it is fed by two pipes entering on the northern side. This wetland is not mapped by NWI; based on the surrounding topography this area was upland prior to being excavated to create a stormwater basin. Dominant species observed within Wetland K include panic grass (*Panicum virgatum*) in the herb stratum, providing a hydrophytic vegetation indicator through the dominance test. Soils in Wetland K were indicative of hydric soils due to the presence of a depleted matrix (Indicator F3) and depleted soils below a dark surface (Indicator A3). Wetland hydrology indicators include water-stained leaves. The water table was observed at 18" and saturation was present at 12" below the ground surface. A summary of wetland hydrology, vegetation, and soil indicators is provided in **Table 3.2.2-2**.

An upland observation point was taken outside of Wetland K and no hydric soil indicators were observed. Dominant species within the upland area included pitch pine (*Pinus rigida*), bear oak (*Quercus ilicifolia*), sweet fern (*Comptonia peregrina*), and panic grass, which did not pass the hydrophytic vegetation indicator tests.

Wetland L – The area delineated as Wetland L is a 3.15 acre palustrine emergent, shrub/scrub, open water, and forested wetland based on Cowardin et al. (1979). Wetland L is located on the western side of Route 9 southeast of the OCGS and contains an exiting, flowing channel (Watercourse 2) that discharges into Oyster Creek. It is dominated by black tupelo (*Nyssa sylvatica*) and red maple (*Acer rubrum*) in the tree stratum, highbush blueberry (*Vaccinium corymbosum*) in the shrub stratum, and water shield (*Brasenia schreberi*) and common reed (*Phragmites australis*) in the herb stratum, providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Soils in Wetland L were indicative of hydric soils due to the presence of a histosol (Indicator A1). Soils consisted of a deep saturated peat layer; plant roots were confined to the upper four inches of the soil profile. Hydrology indicators include a high-water table at the surface, saturation at the surface, surface water with a depth of one inch, water-stained leaves, and aquatic fauna. Morphological plant adaptations consisted of trees and shrubs growing on hummocks, surface roots, and multiple trunks on the red maples. Wetland L is identified by NWI as “PEM1E” (Palustrine, emergent, persistent, seasonally flooded/saturated) and as “PEM1C” (Palustrine, emergent, persistent, seasonally flooded). Based on the field delineation, Wetland L also contains forested (PFO1E; palustrine forested, needle-leaved vegetation, persistent, seasonally flooded/saturated) wetlands, an open water (POW; palustrine open water) wetland 0.58 acre in size, and scrub/shrub (PSS1E; palustrine scrub/shrub, broad-leaved deciduous vegetation, seasonally flooded/saturated) components. A summary of wetland indicators is provided in **Table 3.2.2-2**.

Atlantic white cedars (*Chamaecyparis thyoides*) are present in the northerly portion of Wetland L and along a partially breached east-west berm that runs across the wetland. Most of the trees are 6 to 12 inches in diameter with some over 15 inches in diameter. Portions of the wetland feature a scrub/shrub association; the area south of the berm is a common reed-dominated herbaceous wetland with the shallow ponded area dominated by white water lily (*Nymphaea alba*). Killifish (*Fundulus diaphanus*) were observed in the ponded area. Sundew (*Drosera rotundifolia*) plants and swamp loosestrife (*Decodon verticillus*) were also observed in the herbaceous portion of the wetland. A culvert enters the northerly end of the wetland; no flow was discernable during the June 2, 2021 delineation survey. A flowing exiting stream course (Watercourse 2) from Wetland L was delineated to the point where it enters the Oyster Creek discharge channel upstream of the Route 9 bridge.

An upland observation point was taken outside of the Wetland L and no wetland hydrology indicators were observed. Dominant species within the upland area included pitch pine and black tupelo in the tree stratum and highbush blueberry in the shrub stratum, providing a hydrophytic vegetation indicator through the dominance test and prevalence index. The soils also met the wetland criterion for sandy redox (S5) however, the area is not a wetland based on the lack of wetland hydrology.

<u>Wetland M</u> – Wetland M is a 14.39 acre palustrine forested and emergent wetland based on Cowardin et al. (1979). Wetland M is located on the eastern side of Route 9 and abuts the delineated Oyster Creek Tributary (Watercourse 1). Wetland M is identified by NWI as “PFO1B” (Palustrine, forested, broad-leaved deciduous, seasonally saturated), “PSS1B” (Palustrine, scrub-shrub, broad-leaved deciduous, seasonally saturated), and “E2EM1P” (Estuarine, intertidal, emergent, persistent, irregularly flooded). No evidence of tidal influence was observed in the studied portions of Wetland M or along Watercourse 1. Wetland M is dominated by red maple and black tupelo in the tree stratum, highbush blueberry in the shrub stratum, and shallow sedge (*Carex lurida*) and spotted touch-me-not (*Impatiens capensis*) in the herb stratum, providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Soils in Wetland M were indicative of hydric soils due to the presence of a histosol (Indicator A1). Hydrology indicators include the presence of a high-water table at a depth of three inches, saturation at the surface, water marks, and water-stained leaves. Morphological plant adaptations consisted of surface roots and multiple trunks on the red maples. A summary of wetland indicators is provided in **Table 3.2.2-2**.

An upland observation point was taken outside and to the north of Wetland M, and no hydric soil or wetland hydrology indicators were observed. Dominant species within the upland area include black oak, Eastern red cedar (*Juniperus virginiana*), black cherry (*Prunus serotina*), Northern bayberry (*Myrica pensylvanica)*, common timothy (*Phleum pratense),* and American holly (*Ilex opaca*) which did not pass the hydrophytic vegetation indicator tests.

<u>Wetland N</u> – Wetland N is a 1.85-acre palustrine forested wetland based on Cowardin et al. (1979). Wetland N is located on the eastern side of Route 9 and west of the delineated Oyster Creek Tributary. Wetland N is partially mapped by NWI as “E2FO1P” (Estuarine, intertidal, forested, broad-leaved deciduous, irregularly flooded). However, this wetland was found to be characteristic of a palustrine forested wetland. Wetland N is dominated by black tupelo and red maple in the tree stratum, highbush blueberry in the shrub stratum, and

uptight sedge (*Carex stricta*) in the herb stratum, providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Soils in Wetland N were indicative of hydric soils due to the presence of depleted soil below a dark surface (Indicator A11). Hydrology indicators include the presence of surface water at less than one inch depth, a high-water table at the surface, saturation at the surface, water-stained leaves, and aquatic fauna. A summary of wetland indicators is provided in **Table 3.2.2-2**.

An upland observation point was taken outside of the Wetland N and no hydric soils or hydrophytic vegetation were observed. Dominant species within the upland area included Eastern red cedar and red maple. This area is considered upland due to the lack of hydric soil indicators and hydrophytic vegetation.

Table 3.2.2-2. Summary of Wetland Delineation Field Survey Results

Wetland ID	Hydrology Indicators	Dominant Vegetation	Hydric Soil Indicator	Size (Acres) or Linear Feet (LF)	NWI Cowardin Classification	Field-Determined Cowardin Classification
Wetland K	Water-Stained Leaves	*Panicum virgatum (FAC)*	Depleted Matrix (F3), Depleted Below Dark Surface (A11)	0.13 acre	None	PEM
Wetland L	Surface water, high water table, saturation, water-stained leaves, aquatic fauna	*Nyssa sylvatica (FAC), Acer rubrum (FAC), Vaccinium corymbosum (FACW), Brasenia schreberi (OBL), Phragmites australis (FACW)*	Histosol (A1)	3.15 acre	PEM1E, PEM1C	PEM, PSS, PFO, POW
Wetland M	High water table, saturation, water marks, water-stained leaves	*Acer rubrum (FAC), Nyssa sylvatica (FAC), Vaccinium corymbosum (FACW), Carex lurida (OBL), Impatiens capensis (FACW)*	Histosol (A1)	14.39 acre	PFO1B, PSS1B, E2EM1P	PFO, PEM
Wetland N	Surface water, high water table, saturation, water-stained leaves, aquatic fauna	*Nyssa sylvatica (FAC), Acer rubrum (FAC), Vaccinium corymbosum (FACW), Carex stricta (OBL)*	Depleted Below Dark Surface (A11)	1.85acre	E2FO1P	PFO
			Totals for Site	**14.86**		

FACW= Facultative Wetland species

FAC = Facultative species

OBL = Obligate species

FACU = Facultative Upland species

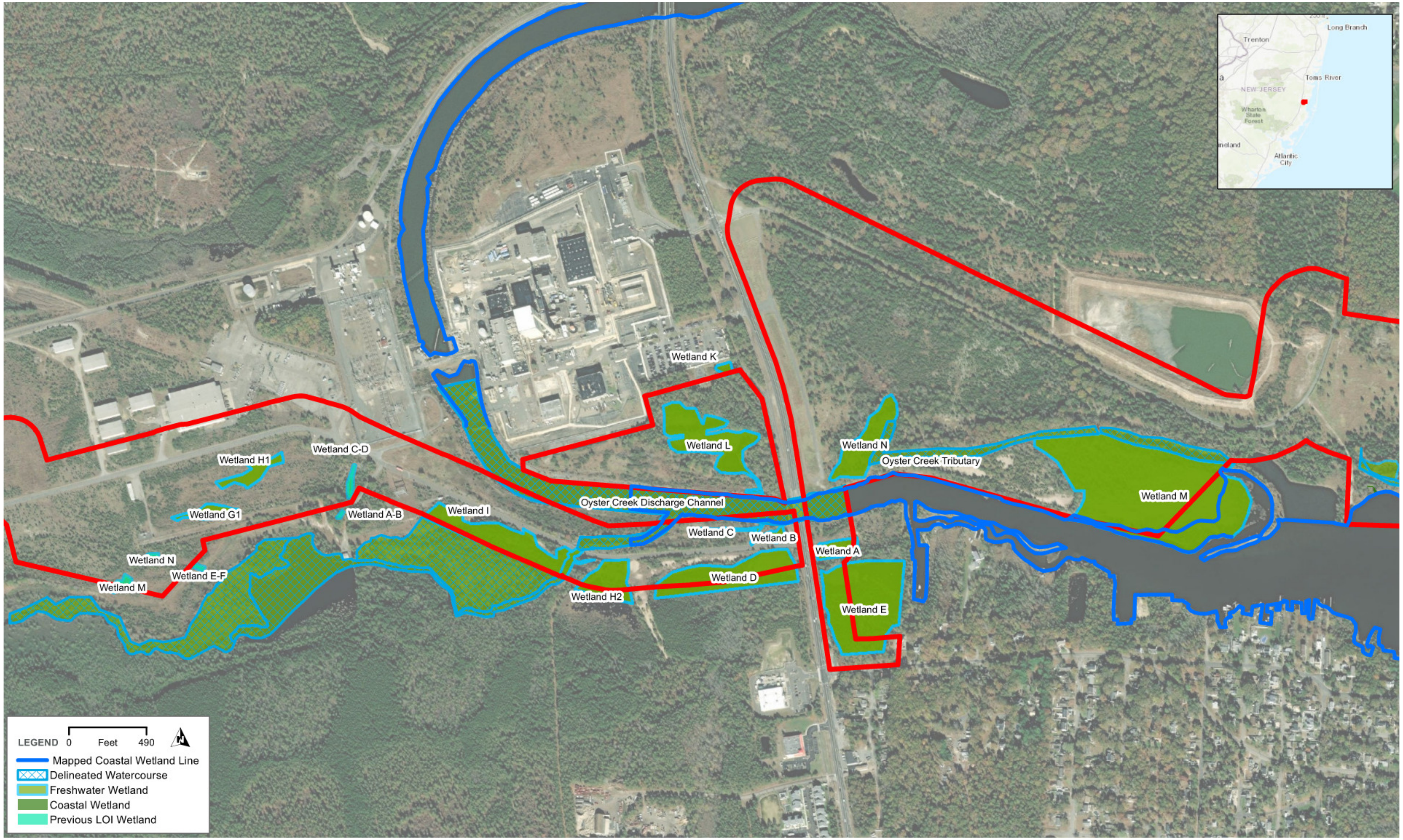

Figure 3.2.2-2. Field Survey Wetland Delineation Map – OC WRA

Ocean Wind
An Ørsted & PSEG project

Figure 3.2.2-2. Field Survey Wetland Delineation Map – OC WRA

3.2.1.2 Proposed Onshore Substation at Oyster Creek Generating Station

Wetland A – The area delineated as Wetland A is a 0.60 acre palustrine forested and emergent wetland based on Cowardin et al. (1979). Wetland A is located on the eastern side of Route 9 south of the bridge that crosses Oyster Creek. It is bounded to the north by a wooded upland area abutting Oyster Creek, to the east by residential properties, to the south by fencing with vacant land, and to the west by the shoulder of Route 9. Wetland A is not mapped by NWI. Dominant species observed within Wetland A include Red maple (*Acer rubrum*) and Eastern red cedar (*Juniperus virginiana)* in the tree stratum, Northern bayberry (*Morella pensylvanica*) in the shrub stratum, and fall panic grass (*Panicum dichotomiflorum*) in the herb stratum, providing a hydrophytic vegetation indicator through the dominance test and prevalence index. (**Attachment E**). Soils in Wetland A were indicative of hydric soils due to the presence of a depleted matrix (Indicator F3). Hydrology indicators include surface water with a depth of one inch, a high water table at the soil surface, and saturation at the soil surface. A summary of wetland hydrology, vegetation, and soil indicators is provided in **Table 3.2.2-1**.

An upland observation point was taken outside of Wetland A and no hydric soil indicators were observed. Dominant species within the upland area included Eastern red cedar, Scotch pine (*Pinus sylvestris*), Northern bayberry, fall panic grass, and Virginia strawberry (*Fragaria virginiana*), which did not pass the hydrophytic vegetation indicator tests (**Attachment EC**).

Wetland B – The area delineated as Wetland B is a 0.20-acre palustrine emergent wetland based on Cowardin et al. (1979). Wetland B is located on the western side of Route 9 south of the bridge that crosses Oyster Creek and contains a flowing ditch that discharges into Oyster Creek. It is dominated by common reed (*Phragmites australis*), providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Soils in Wetland B were indicative of hydric soils due to the presence of a hydrogen sulfide (Indicator A4). Hydrology indicators include a high water table at the surface, saturation at the surface, and surface water with a depth of 2 inches. This habitat type is not mapped by NWI. A summary of wetland indicators is provided in **Table 3.2.2-1**.

An upland observation point was taken outside of the Wetland B and no hydric soil or wetland hydrology indicators were observed. Dominant species within the upland area included choke cherry (*Prunus virginiana*), red pine (*Pinus resinosa*), Scotch pine, Eastern red cedar, Eastern arborvitae, red maple, and Asian bittersweet (*Celastrus orbiculatus*), which did not pass the hydrophytic vegetation indicator tests.

Wetland C – Wetland C is a 0.20-acre palustrine forested and emergent wetland based on Cowardin et al. (1979). Wetland C is located on the western side of Route 9 and west of Wetland B. A ditch flows through the wetland and discharges into Oyster Creek and the western portion contains a wet meadow exhibiting surface inundation. Wetland C is not identified by NWI. Wetland C is dominated by red maple, coastal sweet-pepperbush (*Clethra alnifolia*), common reed, and sensitive fern (*Onoclea sensibilis*), providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Soils in Wetland C were indicative of hydric soils due to the presence of a depleted matrix (Indicator F3). Hydrology indicators include the presence of a high water table at the surface and saturation at the surface. A summary of wetland indicators is provided in **Table 3.2.2-1**.

An upland observation point was taken outside of Wetland C and no hydric soil or wetland hydrology indicators were observed. Dominant species within the upland area include Eastern red cedar, black cherry (*Prunus serotina*), highbush blueberry (*Vaccinium corymbosum)*, winged sumac (*Rhus copallinum*), Northern bayberry, carpetweed (*Mollugo verticillata*), cinnamon fern (*Osmundastrum cinnamomeum*), and red raspberry (*Rubus idaeus*) which did not pass the hydrophytic vegetation indicator tests.

Wetland D – Wetland D is a 3.44-acre palustrine emergent wetland based on Cowardin et al. (1979). Wetland D is located on the western side of Route 9, south of Discharge Drive. Wetland D is identified by NWI as "PSS1Eh" (Palustrine, Scrub/Shrub, Broad-Leaved Deciduous, Seasonally Flooded/Saturated, Nontidal, Diked/Impounded). However, because Wetland D consists of a monoculture of common reed, the field-determined Coward class is PEM and not consistent with PSS1Eh as determined by NWI. Wetland D is dominated by common reed, providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Soils in Wetland D were indicative of hydric soils due to the presence of dark surface (Indicator S7). Hydrology indicators include surface water, a high water table and saturation. A summary of wetland indicators is provided in **Table 3.2.2-1**.

An upland observation point was taken outside of the Wetland D and no hydric soil or wetland hydrology indicators were observed. Dominant species within the upland area included Eastern red cedar, northern bayberry, common reed, and red raspberry. These dominant species are all indicative of wetland vegetation based on the dominance test; however, the prevalence index for these species was less than or equal to 3. This area is still considered upland due to the lack of hydric soil indicators, a restrictive layer at 10 inches, and lack of wetland hydrology.

Wetland E – Wetland E is a 5.66-acre palustrine forested needle-leaved evergreen wetland based on Cowardin et al. (1979). Wetland E is located on the eastern side of Route 9 and south of Wetland A. Wetland E is identified as "PFO4Cg" (Palustrine, Forested, Needle-Leaved Evergreen, Seasonally Flood, Organic Soils) by NWI. Wetland E is dominated by Atlantic white cedar (*Chamaecyparis thyoides*), coastal sweet-pepperbush, southern arrow-wood (*Viburnum dentatum*), highbush blueberry, cinnamon fern, and Eastern poison ivy (*Toxicodendron radicans*), providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Soils in Wetland E were indicative of hydric soils due to the presence of histosol (Indicator A1). Hydrology indicators include the presence of a high water table at the surface, saturation at the surface, and water-stained leaves. A summary of wetland indicators is provided in **Table 3.2.2-1**.

An upland observation point was taken outside of Wetland E and no hydric soil or wetland hydrology indicators were observed. Dominant species within the upland area include pin oak (*Quercus palustris*), choke cherry, sassafras (*Sassafras albidum*), red pine, coastal sweet-pepperbush, Eastern red cedar, Virginia strawberry, annual wormwood (*Artemisia annua*), and Asian bittersweet, which did not pass the hydrophytic vegetation indicator tests.

Wetland G – Wetland G is a 0.49-acre palustrine emergent wetland based on Cowardin et al. (1979). Wetland G is located on the middle portion of the Forked River parcel south of Discharge Road. This wetland appears to be isolated and no defined outlet was found. Wetland G is not identified by NWI. Wetland G is dominated by Eastern red cedar, black cherry, common reed, and fall panic grass, providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Soils in Wetland G were indicative of hydric soils due to the presence of a depleted matrix (Indicator F3). Hydrology indicators include a high water table at a depth of 3 inches, saturation to the surface, and water stained leaves. A summary of wetland indicators is provided in **Table 3.2.2-1.**

An upland observation point was taken outside of the Wetland G and no hydric soil or wetland hydrology indicators were observed. Dominant species within the upland area included Eastern red cedar, black cherry, red raspberry, and fall panic grass. These dominant species are all indicative of wetland vegetation based on the dominance test; however, the prevalence index is less than or equal to three. This area is still considered an upland due to the lack of hydric soil indicators and wetland hydrology.

Wetland H1 (within generation site) - Wetland H1 is a 0.73-acre freshwater shrub wetland based on Cowardin et al. (1979). Wetland H is located on the southwestern edge of the Block 41, Lot 43 parcel. Wetland H is identified as "PEM1Fh" (Palustrine, Emergent, Persistent, Semi-permanently Flooded, Diked/Impounded) by NWI. However, this wetland is a PSS wetland based the field-determined Cowardin class and is not consistent with PEM1Fh as determined by NWI. Wetland H1 is dominated by red maple, coastal sweet-pepperbush, and Eastern red cedar, providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Soils in Wetland H were indicative of hydric soils due to the presence of dark surface (Indicator S7). Hydrology indicators include saturation and sediment deposits. A summary of wetland indicators is provided in **Table 3.2.2-1**.

An upland observation point was taken outside of Wetland H and no hydric soil or wetland hydrology indicators were observed. Dominant species within the upland area include Eastern red cedar, pitch pine, red maple, arrowwood, common reed, and red raspberry. Hydrophytic vegetation is present based on the prevalence index; however, this area is not a wetland due to lack of hydric soils and wetland hydrology.

Wetland H2 (along access road) – Wetland H2 is a 1.36-acre palustrine emergent wetland based on Cowardin et al. (1979). Wetland H2 was originally 0.68 acres and was enlarged to 1.36 acres based on NJDEP walk through. It is located on the western side of Route 9, south of Discharge Drive. Wetland H2 is identified by NWI as "PSS1Eh" (Palustrine, Scrub/Shrub, Broad-Leaved Deciduous, Seasonally Flooded/Saturated, Nontidal, Diked/Impounded). Wetland H2 is dominated by Atlantic white cedar, providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Soils in Wetland H2 were indicative of hydric soils due to the presence of dark surface (Indicator S7). Hydrology indicators include surface water, a high water table and saturation. A summary of wetland indicators is provided in **Table 3.2.2-2**.

Wetland I - Wetland I consists of 2.8 acres continuing an additional 14.8 acres outside the Project review area. Additionally, there is a 6.7 acre "fire pond"/stream area that the wetlands drain into.   This area was not originally delineated by HDR wetland scientists and was identified by the NJDEP representative during site visit in November of 2021. The NJDEP representative noted dominant vegetation such as Atlantic white cedar, red maple, and sweet pepperbush, and tussock sedge (*Carex stricta*) along with hydric soil indicators such as dark surface (S7).

Wetland L – Wetland L is a 14.4-acre freshwater forested/shrub wetland based on Cowardin et al. (1979). Wetland L is located on the western side of Route 9, south of Discharge Drive along an unnamed tributary to Oyster Creek's tributary that runs east along the north side of Discharge Drive. Wetland L is identified by NWI as "PFO4/1C" (Palustrine, Forested, Needle-Leaved Evergreen, Broad-Leaved Deciduous, Seasonally Flooded). Wetland L is dominated by Atlantic white cedar, providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Soils in Wetland H2 were indicative of hydric soils due to the presence of dark surface (Indicator S7). Hydrology indicators include surface water, a high water table and saturation. A summary of wetland indicators is provided in **Table 3.2.2-2**.

Table 3.2.2-2. Summary of Wetland Delineation Field Survey Results

Wetland ID	Hydrology Indicators	Dominant Vegetation	Hydric Soil Indicator	Size (Acres) or Linear Feet (LF)	NWI Cowardin Classification	Field-Determined Cowardin Classification
Wetland A	Surface water, high water table, saturation	*Acer rubrum* (FAC),*Juniperus virginiana (FACU), Morella pensylvanica* (FAC), *Panicum dichotomiflorum* (FACW)	Depleted Matrix (F3)	0.60 acre	None	PFO/PEM
Wetland B	Surface water, high water table, saturation	*Phragmites australis (FACW)*	Hydrogen Sulfide (A4)	0.20 acre	None	PEM
Wetland C	High water table, saturation	*Acer rubrum (FAC),* C*lethra alnifolia* (FACW), *Phragmites australis (FACW), Onoclea sensibilis* (FACW)	Depleted Matrix (F3)	0.20 acre	None	PEM
Wetland D	Surface water, high water table, saturation	*Phragmites australis (FACW)*	Dark Surface (S7)	3.44 acre	PSS1Eh	PEM
Wetland E	High water table, saturation, water-stained leaves	*Chamaecyparis thyoides* (OBL),C*lethra alnifolia* (FACW), *Viburnum dentatum* (FAC),*Toxicodendron radicans (FAC)*	Histosol (A1)	5.65 acre	PFO4Cg	PFO
Wetland A-B	Surface water, high water table, saturation	*Acer rubrum (FAC), Morella pensylvanica (FAC), Panicum dichotomiflorum (FACW), Juniperus virginiana (FACU)*	Depleted Matrix (F3)	0.72 acre	None	PFO/PEM
Wetland C-D	High water table, saturation	*Acer rubrum (FAC), Clethra alnifolia (FACW), Phragmites australis (FACW), Onoclea sensibilis (FACW)*	Histic Epipedon (A2)	0.02 acre	None	PFO/PEM
Wetland E-F	High water table, saturation, water-stained leaves	*Chamaecyparis thyoides (OBL), Clethra alnifolia (FACW), Viburnum dentatum (FAC), Vaccinium corymbosum (FACW), Osmundastrum cinnamomeum (FACW), Toxicodendron radicans (FAC)*	Histosol (A1)	0.04 acres	PFO4Cg	PFO4Cg

Wetland ID	Hydrology Indicators	Dominant Vegetation	Hydric Soil Indicator	Size (Acres) or Linear Feet (LF)	NWI Cowardin Classification	Field-Determined Cowardin Classification
Wetland G	High water table, saturation, water-stained leaves	*Chamaecyparis thyoides (OBL), Panicum dichotomiflorum (FACW), Phragmites australis (FACW)*	Depleted Matrix (F3)	0.49 acre	None	PEM1E
Wetland H1	Saturation, sediment deposits	*Acer rubrum (FAC), Juniperus virginiana (FACU), Clethra alnifolia (FACW)*	Dark Surface (S7)	0.73 acre	PEM1Fh	PSS
Wetland H2	Surface water, high water table, saturation	*Chamaecyparis thyoides (OBL),*	Dark Surface (S7)	1.36 acre	PSS1Eh	PEM
Wetland L	Surface water, high water table, saturation	*Acer rubrum (FAC), Chamaecyparis thyoides (OBL), Clethra alnifolia (FACW)*	Dark Surface (S7)	14.4 acre	PFO4/1C	PFO
			Totals for Site	**28.72**		

FACW= Facultative Wetland species

FAC = Facultative species

OBL = Obligate species

FACU = Facultative Upland species

*Length of the delineation line. This was a linear wetland line with open ends and therefore no area could be calculated.

3.2.1.3 Proposed Export Cable Route – Island Beach State Park

Two palustrine forested and emergent wetlands were delineated within the WRA, comprising an area of 1.18 acres. The delineated wetlands and observation points are shown on **Figure 3.2.1-4.** Wetland delineation data sheets for upland and wetland observation points are included in **Attachment E**. These wetlands are described in detail below.

<u>Wetland A</u> – The area delineated as Wetland B is 0.10 acres of shrub-scrub wetlands based on Cowardin et al. (1979). It was located during the IBSP wetland delineation event and was delineated although it was outside of the wetland review area. The wetland is crescent shaped, adjacent to the western side of Shore Road. There is 3-5 ft high berm west of the wetland. There was no outlet which demonstrated Wetland A is isolated. It was dominated by red maple (*Acer rubrum*), arrowwood (*Viburnum dentatum*), highbush blueberry (*Vaccinium corymbosum*), common reed (*Phragmites australis*), and catbriar (*Smilax rotundifolia*) providing a hydrophytic vegetation indicator through the dominance test and prevalence test. Wetland hydrology indicators include saturation at 10” below ground surface. A summary of wetland hydrology, vegetation, and soil indicators is provided in **Table 3.2.2-2.** An upland observation point was taken outside of Wetland A and no wetland, hydrophytic vegetation or hydric soil indicators were present.

<u>Wetland B</u>– The area delineated as Wetland B is a 11.86-acre shrub-scrub wetland based on Cowardin et al. (1979). Wetland B is located on the western side of Shore Road and surrounds the maintenance yard to the north, south, east and west. This wetland is by NWI as freshwater forested/shrub wetland and estuarine and marine wetland. It is hydrologically connected to Barnegat Bay though tidal influence appears to be limited to

the immediate shoreline. Dominant species observed within Wetland B include eastern red cedar *(Juniperus virginiana)* in the tree stratum, highbush blueberry (*Vaccinium corymbosum*) in the shrub stratum, common reed (*Phragmites australis*) and Sensitive Fern (*Onoclea sensibillis)* in the herb stratum and catbrier (*Smilax rotundifolia*) in the woody vine stratum, providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Wetland hydrology indicators include water table present and saturation. The water table was observed at 16” and saturation was present at 10” below the ground surface. A summary of wetland hydrology, vegetation, and soil indicators is provided in **Table 3.2.2-2**.

An upland observation point was taken outside of Wetland B and no hydric soil indicators were observed. Dominant species within the upland area included eastern red cedar *(Juniperus virginiana)*, Northern bayberry (*Myrica pensylvanica*), common reed (*Phragmites australis)* and Virginia creeper (*Parthenocissus quinquefolia)*, which did not pass the hydrophytic vegetation indicator tests.

<u>Wetland C</u> – The area delineated as Wetland C is a 0.19 acre shrub-scrub wetlands based on Cowardin et al. (1979). Wetland C is located on the western side of Shore Road north of the maintenance yard and appears to be hydrologically isolated. It is dominated by highbush blueberry (*Vaccinium corymbosum*) in the shrub stratum common reed (*Phragmites australis*) in the herb stratum, and catbrier (*Smilax rotundifolia*) in the woody vine stratum, providing a hydrophytic vegetation indicator through the dominance test and prevalence index. Soils in Wetland C were indicative of hydric soils due to the presence of a hydrogen sulfide (Indicator A4) and stripped matrix (Indicator S6). Soils consisted of a deep saturated peat layer; plant roots were confined to the upper four inches of the soil profile. Hydrology indicators include a high-water table at the surface, saturation at the surface and surface water with a depth of 8”. Wetland C is identified by NWI as freshwater forested/shrub wetland. A summary of wetland indicators is provided in **Table 3.2.2-2**.

An upland observation point was taken outside of the Wetland C and no wetland hydrology indicators were observed. Dominant species within the upland area included eastern red cedar in the tree stratum and northern bayberry and southern arrowwood in the shrub stratum and catbrier and Virginia creeper in the woody vine stratum which does not provide a hydrophytic vegetation indicator through the dominance test and prevalence index. The soils did not meet the criterion for hydric soils.

Table 3.2.2-3. Summary of Wetland Delineation Field Survey Results

Wetland ID	Hydrology Indicators	Dominant Vegetation	Hydric Soil Indicator	Size (Acres) or Linear Feet (LF)	NWI Cowardin Classification	Field-Determined Cowardin Classification
Wetland A	Saturation (A3), water marks (B1)	*Acer rubrum (FAC) Viburnum dentatum (FAC) Vaccinium corymbosum,(FACW) Phragmites australis (FACW), Smilax rotundifolia (FAC)*	Organic bodies (A6), stripped matrix (S6)	0.10 acres	PSS1/3B, E2EM1PD	PSS1/3B, E2EM1PD
Wetland B	Saturation (A3), high water table (A2)	*Phragmites australis (FACW) Juniperus virginiana (FACU), Vaccinium corymbosum (FACW), Onoclea sensibillis (FACW), Smilax rotundifolia (FAC)*	Redox depressions (F8)	1.10 acre	None	PSS1/3B, E2EM1PD
Wetland C	Saturation (A3), high water table (A2), hydrogen sulfide present (C1)	*Phragmites australis (FACW), Smilax rotundifolia (FAC), Vaccinium corymbosum (FACW)*	Hydrogen sulfide (A4), stripped matrix (S6)	0.08 acre	PEM1E, PEM1C	PSS1/3B, E2EM1PD
			Totals for Site	**1.28 acres**		

FACW= Facultative Wetland species

FAC = Facultative species

OBL = Obligate species

FACU = Facultative Upland species

Figure 3.2.2-3. Delineated Wetlands and Watercourses Map- IBSP

3.3 Watercourse Delineation Field Survey

Three watercourses were delineated during the field surveys. The location of these features are provided in **Figure 3.3-1** through **Figure 3.3-3** and the length and area of each watercourse is provided in **Table 3.3-1**. The Oyster Creek Discharge Channel is a manmade feature, dredged to facilitate the operation of the decommissioned nuclear power plant. It is approximately 145 feet in width and tidally influenced from its connection to Oyster Creek and Barnegat Bay to the east. The Manmade Discharge Channel is identified as "E1UBL" (Estuarine, subtidal, unconsolidated bottom, saltwater tidal) by NWI. One stream ("Oyster Creek Stream") located at the edge of the JCP&L (Block 1001, Lot 4.06) and Holtec property (Block 41, Lot 43) was also delineated and connects to Oyster Creek. The stream is approximately 30 feet in width with an eroding bank on the western side. The stream was delineated up to the Discharge Drive road crossing, where a five-barrel concrete culvert system is in place. The culverts are each approximately 60 inches in diameter. During the field survey there was a heavy flow through all five barrels during the ebb tide. The Oyster Creek Steam is identified as "E1UBlx" (Estuarine, Subtidal, Unconsolidated Bottom, Excavated) by NWI. Portions of the Oyster Creek Discharge Channel and Oyster Creek Stream are outside of the Wetland Review Area. The manmade ditch system on the Holtec Property (Block 100, Lot 1.06) are ditches that are eight to 15 feet in width, and appear to be permanently flooded with a very deep organic substrate composed of leaf litter and broken branches and tree limbs. No discernable flow was evident in the ditches except where the flow was constricted by culverts running through the berms in two locations. The ditches are best described as "R3UBHx" (Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated) wetlands. Totals in **Table 3.3-1** below include areas within and outside the Wetland Review Area.

Table 3.3-1. Summary of Watercourse Delineation Field Survey Results

Watercourse	Length (linear ft.)	Area (sq ft)	Abutting Wetland
Oyster Creek Discharge Channel	2,871	446,926	B,C,L
Oyster Creek Tributary	1,002	60,113	M,N
Holtec Parcel Manmade Ditch System	10,275	274,398	A,B,C,E
Totals for Site	**14,148**	**781,437**	

3.4 Wildlife

3.4.1 OC WRA

3.4.1.1 Proposed Export Cable Route – Lacey and Ocean Townships

While no species-specific wildlife studies were conducted, all wildlife observations made in association with the wetlands delineation and ecological community mapping field studies were recorded. Birds were identified by song and/or direct observation; mammals were identified by direct observation and/or tracks. Fish and amphibians were identified by direct observation.

Fish – Banded killifish (*Fundulus diaphanus)* were observed in inundated areas of Wetland L and in the excavated ditch east of Route 9 during the site surveys.

Amphibians – Green frogs (*Rana clamitans*) were observed in or proximate to the wetlands during the site surveys. No toads or salamanders were observed.

Reptiles – One male box turtle was observed near Wetland L, and three box turtles was observed within or adjacent to Wetland M. One garter snake (*Thamnophis sirtalis*) was observed near Wetland M and two snapping turtles were observed within Wetland M.

Birds – A total of 22 species of birds were observed during the June 2, 2021 site survey; 18 of which were common passerine species. Turkey vultures (*Cathartes aura*) were observed soaring over the site. Dominant passerine bird species were the gray catbird, robin (*Turdus migratorius*), prairie warbler, and Carolina chickadee (*Parus caroliniensis*). Laughing gulls (*Lanus atricilla*), and common terns (*Sterna hirundo*) were observed by the Oyster Creek Tributary.

Mammals – Gray squirrels (*Sciurus carolinensis)* were observed near Wetlands L and M, and sign (tracks and droppings only) of white-tailed deer was observed at several locations. No large animal burrows were observed during the site surveys. No structures, large dead trees, or trees with cavities or exfoliating bark that could provide roosting habitat for bats were observed.

3.4.1.2 Proposed Onshore Substation at Oyster Creek Generation Station

While no species-specific wildlife studies were conducted, all wildlife observations made in association with the wetlands delineation and habitat assessment field studies were recorded. Birds were identified by song and/or direct observation; mammals were identified by direct observation and/or tracks. Fish and amphibians were identified by direct observation.

Fish – One Atlantic menhaden (*Brevoortia tyrannus)* was observed in the Discharge Channel during the site surveys.

Amphibians – Green frogs (*Rana clamitans*) were observed in or proximate to the wetlands during the site surveys. No toads or salamanders were observed.

Reptiles – One male box turtle (*Terrapene carolina*) was observed on the Forked River II, LLC parcel in Wetland G, and one male box turtle was observed along Privateer Drive near Wetland J. No lizards or snakes were observed.

Birds – A total of 35 species of birds were observed during the May 2020, August 2020, and September 2020 site surveys; 24 of which were common passerine species. One Northern harrier (*Circus cyaneus*), a State-endangered species, was observed over the Forked River parcel. Turkey vultures (*Cathartes aura*) were observed soaring over the site. Dominant passerine bird species were the gray catbird, robin (*Turdus migratorius*), prairie warbler, and Carolina chickadee (*Parus caroliniensis*). Canada geese (*Branta canadensis*), laughing gulls (*Lanus atricilla*), herring gulls (*Larus argentatus*), double-crested cormorants (*Phalacrocorax auritus*), and common terns (*Sterna hirundo*) were observed by the Discharge Channel.

Mammals – Gray squirrels (*Sciurus carolinensis)* were observed near Wetlands E and F, and sign (tracks and droppings only) of white-tailed deer (*Odocoileus virginianus*) was observed at several locations. Raccoon (*Procyon lotor*) tracks were also observed along Oyster Creek and the Discharge Channel. No large animal burrows were observed during the site surveys. A pile of shells and flattened vegetation along a slope were noted at the junction of Oyster Creek with the Discharge Channel, but no Northern river otters (*Lontra canadensis*) were observed. No structures, large dead trees, or trees with cavities or exfoliating bark that could provide roosting habitat for bats were observed.

3.4.1.3 Proposed Export Cable Route – Island Beach State Park

While no species-specific wildlife studies were conducted, all wildlife observations made in association with the wetlands delineation and ecological community mapping field studies were recorded. Birds were identified by song and/or direct observation; mammals were identified by direct observation and/or tracks.

Fish – No fish were observed in or proximate to the wetlands during the site survey.

Amphibians – No amphibians were observed in or proximate to the wetlands during the site survey.

Reptiles – One box turtle shell with a decaying turtle was observed near Wetland B.

Birds – Birds observed during the site surveys were limited to year-round resident species common to coastal environments. Species observed consisted of Carolina wren (*Thryothorus ludovicianus*), robin (*Turdus migratorius*), blue jay (*Cyanocitta cristata*), goldfinch (*Spinus tristus*), Northern harrier (*Circus cyaneus*), herring gull (*Larus argentatus*), black-capped chickadee (*Parus atricapillus*), and gray catbird (*Dumetella carolinensis*).

Mammals – No mammals were observed during the site surveys; droppings of Eastern cottontails (*Sylvilagus floridanus*) were observed

3.5 Species-Specific Assessment

3.5.1 OC WRA

A database search with the NJDEP Natural Heritage Program and the USFWS IPaC Mapper indicated seven state-listed avian species, two state-listed reptile species, one state-listed amphibian species, two federally-listed mammal species, and two state and federally-listed plant species as potentially occurring on or within 1.5 miles of the WRA. A summary of site observations of special concern species and listed species, along with habitat potential for each of the species is presented below (**Table 3.6.2-1**). The publication "Endangered and Threatened Wildlife of New Jersey" (Beans and Niles; 2003) was used as a reference for the field work and assessment, as were species dossiers on NJDEP's website (**Table 3.6.2-1**). There were no lizards observed within the WRA. The lack of ground cover (fallen trees, bark, or deep leaf litter) may limit the site's attractiveness to some amphibians and reptiles. Species that were directly observed at the WRA or require habitat specific surveys are discussed in further detail below. Special concern species are not included in the table below.

Table 3.6.2-1. Federal and State endangered and threatened species with potential to occur within the Oyster Creek Project Area.

Species Common	Species Scientific	Status
Mammals		
Bobcat	*Lynx rufus*	SE
Fin whale	*Balaenoptera physalus*	FE, SE
Humpback whale	*Megaptera noveangliae*	FE, SE
North Atlantic right whale	*Eubalaena glacialis*	FE, SE
Birds		
Bald eagle	*Haliaeetus leucocephalus*	SE
Barred owl	*Strix varia*	ST
Osprey	*Pandion haliaetus*	ST

Species Common	Species Scientific	Status
Black skimmer	*Rynchops niger*	SE
Black-crowned night heron	*Nycticorax nycticorax*	ST
Grasshopper sparrow	*Ammodramus savannarum*	ST
Least tern	*Sternula antillarum*	SE
Northern harrier	*Circus cyaneus*	SE
Peregrine falcon	*Falco peregrinus*	SE
Roseate tern	*Sterna dougallii dougallii*	FE, SE
Yellow-crowned night heron	*Nyctanassa violacea*	ST
Reptiles		
Northern pine snake	*Pituophis melanoleucus melanoleucus*	ST
Timber rattlesnake	*Crotalus horridus horridus*	SE
Atlantic green turtle	*Chelonia mydas*	FT, ST
Atlantic loggerhead	*Caretta caretta*	FT, SE
Kemp's Ridley sea turtle	*Lepidochelys kempii*	FE, ST
Amphibians		
Pine barrens treefrog	*Hyla andersonii*	ST

Status: FT - Federally Threatened, FE - Federally Endangered, SE - State Endangered, ST - State Threatened

Eastern Box Turtle is listed as a Special Concern Species in New Jersey occurring within 1.5 miles of the site. Because Eastern box turtle is a Special Concern Species, this species was not included in the table above but was observed during the site survey. One adult male box turtle was observed in June 2021 near Wetland L, and three box turtles were observed within or near Wetland M. This species inhabits open woodlands and meadows and are usually found not far from streams or ponds (Conserve Wildlife Foundation of New Jersey 2019). Additionally, the dense cover and lack of human presence/vehicular traffic renders the site attractive for box turtles.

Northern Pine Snake is listed as a Threatened Species in New Jersey occurring on the site. No northern pine snakes were observed during the site survey. Beans and Niles cite "Pine snakes in New Jersey require dry pine-oak forest types growing on very infertile sandy soils". This habitat type is limited on the site to open or weakly vegetated areas between Oyster Creek and the Oyster Creek tributary.

Pine Barrens Treefrog is listed as a Threatened Species in New Jersey occurring on the site. No Pine Barrens treefrogs were observed or heard during the site survey. Beans and Niles cite "Structural characteristics of preferred habitats include an open canopy, a dense shrub layer, and heavy ground cover." This habitat type is present on portions of the site, and there are ample open water (ditches, small ponds, and seasonally flooded herbaceous marshes) for breeding.

Barred Owl is listed as a Threatened Species in New Jersey occurring on the site. No barred owls were observed or heard during the site survey. Beans and Niles cite "These owls require wet woods that contain large trees with cavities suitable for nesting." This habitat type was not observed on the site; the few large trees (red maples and pitch pines) do not have cavities that would offer nesting habitat for owls.

Northern Harrier is listed as an Endangered Species (breeding population only) in New Jersey occurring on the site. Suitable habitat (open early successional fields) are not present on the site. No evidence of nesting (nests, adults carrying nesting material or prey items) was observed in 2021.

Swamp Pink is listed as a Federally-threatened species and as an endangered species in New Jersey. Lacey Township, NJ is cited by USFWS as being documented for the presence of swamp pink. The wetland delineation was conducted by field personnel with experience in identifying rare plants such as swamp pink. No specimens of swamp pink nor suitable habitat was observed on the site. While several of the sympatric species (red maple, sweet pepperbush, sphagnum moss and cinnamon fern) are present, suitable habitat is very limited and the wetland hummocks/microtopographic relief cited in the USFWS dossier is limited on the site.

Bald Eagle is listed as an Endangered Species in New Jersey. No bald eagles were observed during the site investigation. The site itself does not offer foraging opportunities for bald eagles though they may forage over the open waters of Barnegat Bay and Oyster Creek to the east and south of the site.

Table 3.6.2-2. State and Federal Listed birds that have the potential to pass through the Oyster Creek Project Areas.

Common Name	Scientific Name	NJ Status*	Federal Status*
American Oystercatcher	*Haematopus palliates*	SC - Breeding + Non-breeding	BCC
Piping Plover	*Charadrius melodus*	E - Breeding + Non-breeding	T
Red Knot	*Calidris canutus rufa*	E - Non-breeding	T - Non-breeding
Bald Eagle	*Haliaeetus leucocephalus*	E - Breeding, T - Non-breeding	BCC
Peregrine Falcon	*Falco peregrinus*	E - Breeding, SC - Non-breeding	BCC
Northern Harrier	*Circus cyaneus*	E - Breeding, SC - Non-breeding	-
Cooper's Hawk	*Accipiter cooperii*	SC - Breeding	-
Osprey	*Pandion haliaetus*	T - Breeding	-
Barred Owl	*Strix varia*	T - Breeding + Non-breeding	-
Cattle Egret	*Bubulcus ibis*	T - Breeding, SC - Non-breeding	-
Snowy Egret	*Egretta thula*	SC - Breeding	BCC
Black-crowned Night-heron	*Nycticorax nycticorax*	T - Breeding, SC - Non-breeding	-
Yellow-crowned Night-Heron	*Nyctanassa violacea*	T - Breeding + Non-breeding	-
Great Blue Heron	*Ardea herodias*	SC - Breeding	-
Tricolored Heron	*Egretta tricolor*	SC - Breeding + Non-breeding	-
Little Blue Heron	*Egretta caerulea*	SC - Breeding + Non-breeding	-
Glossy Ibis	*Plegadis falcinellus*	SC - Breeding	-
Black-throated Blue Warbler**	*Dendroica caerulescens*	SC - Breeding	-
Black-throated Green Warbler**	*Dendroica virens*	SC - Breeding	-

Common Name	Scientific Name	NJ Status*	Federal Status*
Northern Parula**	*Parula americana*	SC - Breeding	-
Worm-eating Warbler**	*Helmitheros vermivorum*	SC - Breeding	BCC
Saltmarsh Sparrow**	*Ammodramus caudacutus*	SC - Breeding	BCC
Grasshopper Sparrow	*Ammodramus savannarum*	T - Breeding, SC - Non-breeding	-
Wood Thrush**	*Hylocichla mustelina*	SC - Breeding	BCC
Gray-cheeked Thrush	*Catharus minimus*	SC - Non-breeding	-
Veery**	*Catharus fuscescens*	SC - Breeding	-
Black Skimmer	*Rynchops niger*	E - Breeding + Non-breeding	BCC
Common Tern	*Sterna hirundo*	SC - Breeding	-
Gull-billed Tern	*Gelochelidon nilotica*	SC - Breeding + Non-breeding	BCC
Least Tern	*Sterna antillarum*	E - Breeding + Non-breeding	BCC
Roseate Tern	*Sterna dougallii*	E - Breeding + Non-breeding	E
Source: NJDEP 2012 and USFWS IPaC database (USFWS 2018b).			

* E = Endangered, T = Threatened, SC = Special Concern, BCC = Birds of Conservation Concern

4. Literature Cited

Beans, B.E., and Niles, L. (2003). Endangered and Threatened Wildlife of New Jersey. Rutgers University Press. P. 1-300.

Conserve Wildlife Foundation of New Jersey. (2019). New Jersey endangered and threatened species field guide: Eastern box turtle. Accessed July 31, 2019 at www.conservewildlife nj.org/species/fieldguide/.

Cowardin, L.M., Carter, V., Golet, F.C. and LaRoe, E.T. (1979). *Classification of Wetland and Deepwater Habitats of the United States*. Washington, D.C.: U.S. Department of the Interior, Fish and Wildlife Service.

Environmental Laboratory. (1987). *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1*. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.

Jersey Central Power & Light Company, (JCP&L) (1972). *Oyster Creek Nuclear Generating Station – Environmental Report*. Jersey Central Power & Light Company, 300 Madison Ave. Morristown, NJ 07960.

United States Department of Agriculture (USDA): Natural Resources Conservation Service. (2015). *Web Soil Survey*. Retrieved from United States Department of Agriculture, Natural Resources Conservation Service: http://websoilsurvey.nrcs.usda.gov/. Accessed 8 June 2021.

U.S. Army Corps of Engineers (USACE). (2005). *Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark Identification.* Don T. Riley, Major General, US Army, Director of Civil Works.

U.S. Army Corps of Engineers. (2010). *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0)*. ed. J.S. Wakely, R.W. Lichvar, and C.V. Noble, ERDC/EL TR-09-19. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Water's Edge Environmental, LLC. (2019). Development Constraints Analysis for Block 479, Lots 74, 76, 94.01, 97, 98 & 99 in Upper Township, Cape May County, NJ. Report prepared for RC Cape May Holdings, LLC. Ocean City, New Jersey.

Attachment A. USDA NRCS Web Soil Survey Custom Soil Resource Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Ocean County, New Jersey

December 8, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

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The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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Soil Map

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Soil Map

Map Scale: 1:1,030 if printed on A portrait (8.5" x 11") sheet.

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Ocean County, New Jersey
Survey Area Data: Version 19, Aug 31, 2021

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

Date(s) aerial images were photographed: Apr 13, 2021—Sep 14, 2021

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HorsC	Hooksan fine sand, 2 to 10 percent slopes	2.7	99.3%
WMa1	Mantoloking sand, 0 to 1 meter water depth, flat	0.0	0.7%
Totals for Area of Interest		**2.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Ocean County, New Jersey

HorsC—Hooksan fine sand, 2 to 10 percent slopes

Map Unit Setting

National map unit symbol: 2xhph
Elevation: 0 to 30 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 58 degrees F
Frost-free period: 190 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Hooksan and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hooksan

Setting

Landform: Dunes on barrier islands
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Eolian sands

Typical profile

A - 0 to 6 inches: fine sand
C - 6 to 90 inches: sand

Properties and qualities

Slope: 2 to 10 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 79 to 90 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Appoquinimink, very frequently flooded

Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf

Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Transquaking, very frequently flooded

Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Atsion, tide flooded

Percent of map unit: 5 percent
Landform: Barrier beaches, tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

WMa1—Mantoloking sand, 0 to 1 meter water depth, flat

Map Unit Setting

National map unit symbol: 2thv2
Elevation: 0 feet
Mean annual precipitation: 41 to 49 inches
Mean annual air temperature: 53 to 60 degrees F
Frost-free period: 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Mantoloking, 0 to 1 meter water depth, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mantoloking, 0 To 1 Meter Water Depth

Setting

Landform: Flood-tidal delta flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Inactive flood-tidal delta sandy lagoonal deposits

Typical profile

Aseg - 0 to 7 inches: sand
ACseg - 7 to 13 inches: sand
Cseg - 13 to 67 inches: sand

Asegb - 67 to 79 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Subaqueous
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 99.19 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Strongly saline (16.0 to 35.0 mmhos/cm)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Cottman, 0 to 1 meter water depth

Percent of map unit: 10 percent
Landform: Lagoon bottoms, washover-fan slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave, convex
Across-slope shape: Linear
Hydric soil rating: Yes

Demas, 0 to 1 meter water depth

Percent of map unit: 5 percent
Landform: Washover-fan flats, washover-fan slopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

United States Department of Agriculture

NRCS

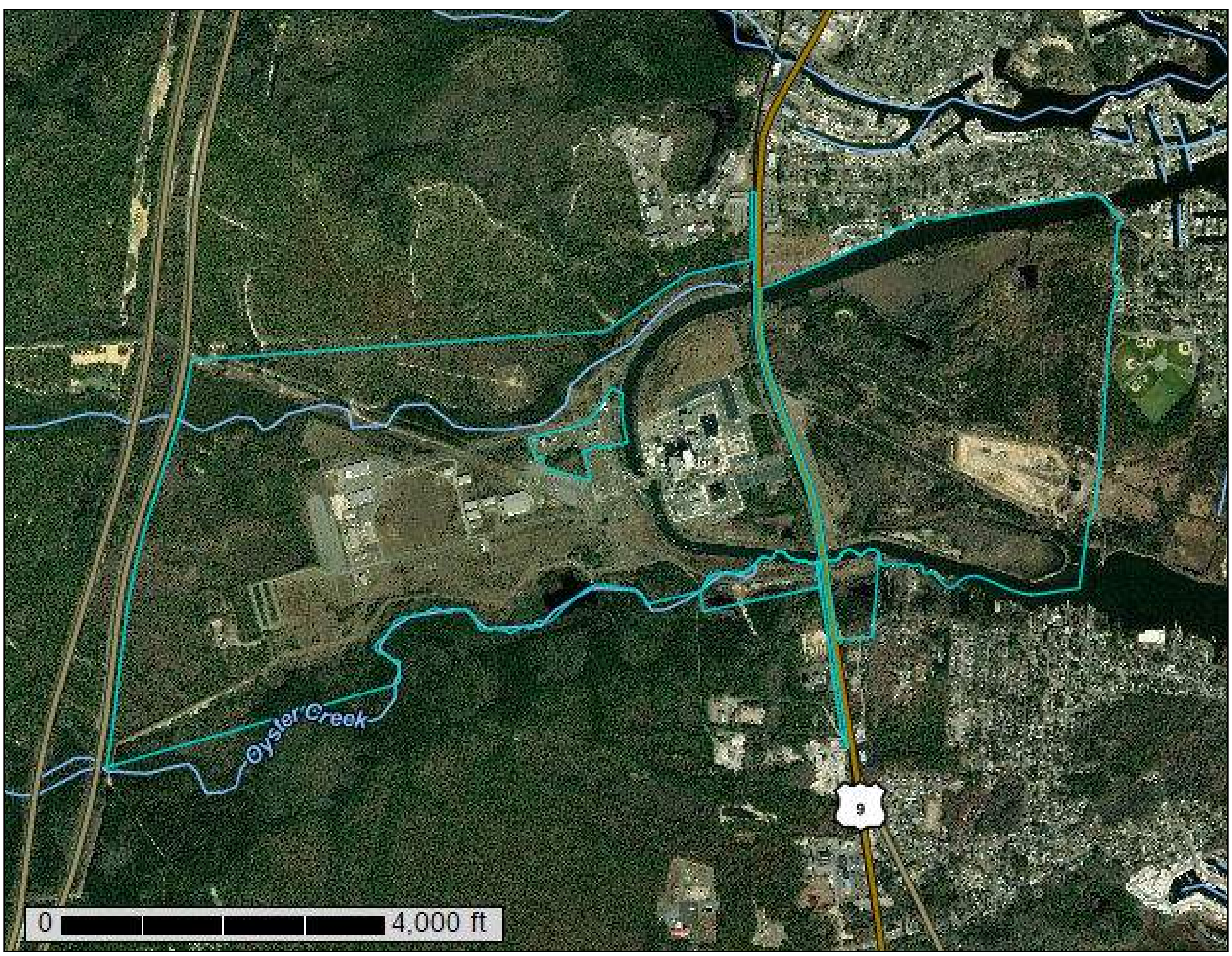
Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Ocean County, New Jersey

Oyster Creek



May 20, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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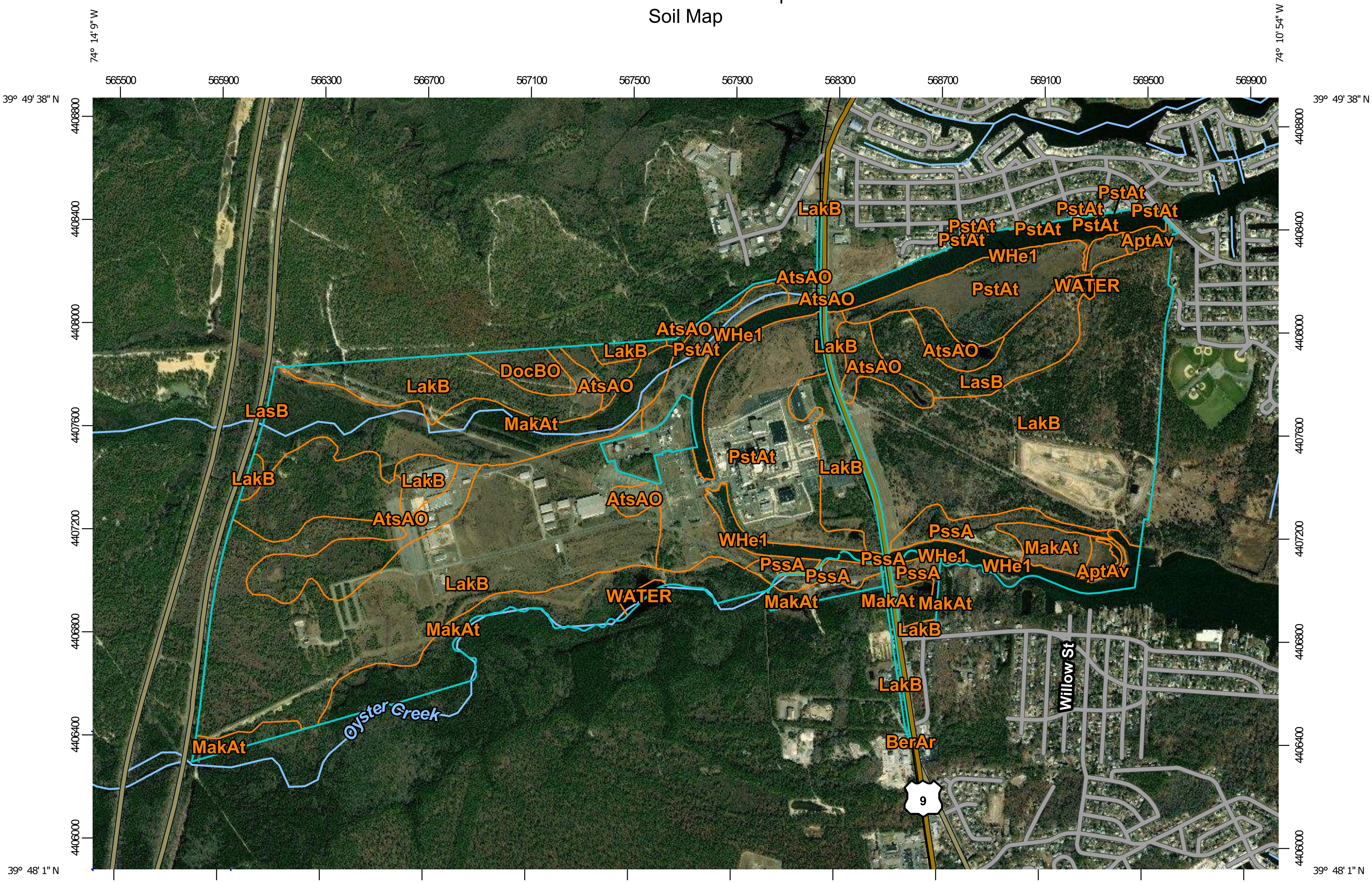

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Meters: 0, 300, 600, 1200, 1800

Feet: 0, 1000, 2000, 4000, 6000

N

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

MAP LEGEND

Area of Interest (AOI)
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Soils
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Soil Map Unit Lines
Soil Map Unit Points

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

Water Features
Streams and Canals

Transportation
Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background
Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

Soil Survey Area: Ocean County, New Jersey
Survey Area Data: Version 17, Sep 16, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 16, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	7.1	0.6%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	110.7	9.9%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	0.0	0.0%
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	10.9	1.0%
LakB	Lakehurst sand, 0 to 5 percent slopes	501.5	45.0%
LasB	Lakewood sand, 0 to 5 percent slopes	38.7	3.5%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	166.5	14.9%
PssA	Psamments, 0 to 2 percent slopes	33.4	3.0%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	172.4	15.5%
WATER	Water	3.3	0.3%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	71.0	6.4%
Totals for Area of Interest		**1,115.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Ocean County, New Jersey

AptAv—Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded

Map Unit Setting

National map unit symbol: vk14
Elevation: 10 to 120 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Appoquinimink, very frequently flooded, and similar soils: 40 percent
Transquaking, very frequently flooded, and similar soils: 30 percent
Mispillion, very frequently flooded, and similar soils: 25 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Appoquinimink, Very Frequently Flooded

Setting

Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy fluviomarine deposits over herbaceous organic material

Typical profile

Ag - 0 to 12 inches: mucky silt loam
Cg - 12 to 30 inches: silt loam
Oe - 30 to 80 inches: mucky peat

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Strongly saline (16.0 to 32.0 mmhos/cm)
Available water storage in profile: Very high (about 17.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Description of Transquaking, Very Frequently Flooded

Setting

Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over loamy

Typical profile

Oe - 0 to 14 inches: mucky peat
Oa - 14 to 60 inches: muck
Cg - 60 to 90 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 32.0 mmhos/cm)
Available water storage in profile: Very high (about 26.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Description of Mispillion, Very Frequently Flooded

Setting

Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Herbaceous organic material over loamy marine deposits and/or loamy fluviomarine deposits

Typical profile

Oe - 0 to 10 inches: mucky peat
Oa - 10 to 26 inches: muck
Cg - 26 to 90 inches: silt loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Available water storage in profile: Very high (about 15.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Hammonton

Percent of map unit: 5 percent
Landform: Flats, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

AtsAO—Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

Map Unit Setting

National map unit symbol: 2thvz
Elevation: 0 to 230 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 66 degrees F
Frost-free period: 190 to 260 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Atsion and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Atsion

Setting

Landform: Flats, drainageways, deflation flats, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave

Across-slope shape: Linear, concave
Parent material: Sandy eolian deposits and/or fluviomarine deposits

Typical profile
Oi - 0 to 2 inches: peat
A - 2 to 4 inches: sand
E - 4 to 26 inches: sand
Bhs - 26 to 34 inches: sand
Cg - 34 to 80 inches: sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.71 to 19.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Lakehurst
Percent of map unit: 5 percent
Landform: Flats, low hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Talf, rise
Down-slope shape: Linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Berryland, occasionally flooded
Percent of map unit: 5 percent
Landform: Flats, drainageways, depressions, deflation flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

BerAr—Berryland sand, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: rdtc
Elevation: 0 to 140 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Berryland, rarely flooded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berryland, Rarely Flooded

Setting

Landform: Flats, drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Sandy fluviomarine deposits

Typical profile

Ag - 0 to 11 inches: sand
Bh - 11 to 19 inches: sand
Bg - 19 to 32 inches: sand
B'h - 32 to 40 inches: sand
Cg1 - 40 to 44 inches: sand
Cg2 - 44 to 80 inches: stratified sand to sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Rare
Available water storage in profile: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Atsion

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Mullica, rarely flooded

Percent of map unit: 5 percent
Landform: Flood plains, drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Manahawkin, frequently flooded

Percent of map unit: 5 percent
Landform: Swamps, flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

DocBO—Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

Map Unit Setting

National map unit symbol: 2thw1
Elevation: 60 to 90 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 66 degrees F
Frost-free period: 190 to 260 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Downer and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Downer

Setting

Landform: Knolls, low hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, rise
Down-slope shape: Convex, linear

Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: loamy sand
BE - 10 to 16 inches: loamy sand
Bt - 16 to 28 inches: sandy loam
C1 - 28 to 48 inches: loamy sand
C2 - 48 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 0.2 mmhos/cm)
Available water storage in profile: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Hammonton

Percent of map unit: 10 percent
Landform: Flats, broad interstream divides
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Dip
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Atsion

Percent of map unit: 5 percent
Landform: Drainageways, flats, depressions, deflation flats
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Linear
Hydric soil rating: Yes

Evesboro

Percent of map unit: 5 percent
Landform: Flats, fluviomarine terraces, knolls, dunes
Landform position (three-dimensional): Riser, rise
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

LakB—Lakehurst sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: rdtz
Elevation: 20 to 150 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of local importance

Map Unit Composition

Lakehurst and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lakehurst

Setting

Landform: Flats, dunes
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Sandy fluviomarine deposits

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 4 inches: sand
E - 4 to 18 inches: sand
Bh - 18 to 32 inches: sand
BC - 32 to 45 inches: sand
C - 45 to 54 inches: sand
Cg - 54 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 19.98 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Berryland, rarely flooded

Percent of map unit: 5 percent
Landform: Flats, drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Atsion, rarely flooded

Percent of map unit: 5 percent
Landform: Flats, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, dip, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Quakerbridge

Percent of map unit: 5 percent
Landform: Flats, knolls
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

LasB—Lakewood sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: rdv1
Elevation: 20 to 150 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of local importance

Map Unit Composition

Lakewood and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lakewood

Setting

Landform: Flats, knolls
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear, convex
Across-slope shape: Linear

Parent material: Sandy fluviomarine deposits

Typical profile

A - 0 to 3 inches: sand
E - 3 to 11 inches: sand
Bh - 11 to 13 inches: loamy sand
BC - 13 to 30 inches: sand
C1 - 30 to 46 inches: sand
C2 - 46 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Quakerbridge

Percent of map unit: 5 percent
Landform: Flats, knolls
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

Lakehurst

Percent of map unit: 5 percent
Landform: Flats, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

Atsion, rarely flooded

Percent of map unit: 5 percent
Landform: Flats, depressions
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, dip, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

MakAt—Manahawkin muck, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: rdv3
Elevation: 0 to 140 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Manahawkin, frequently flooded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manahawkin, Frequently Flooded

Setting

Landform: Swamps, flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Organic, woody material over sandy alluvium

Typical profile

Oa1 - 0 to 13 inches: muck
Oa2 - 13 to 26 inches: muck
Oa3 - 26 to 47 inches: muck
Cg - 47 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 17.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Atsion

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Berryland, occasionally flooded

Percent of map unit: 5 percent
Landform: Flats, drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Mullica, rarely flooded

Percent of map unit: 5 percent
Landform: Flood plains, drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

PssA—Psamments, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2xhpd
Elevation: 0 to 230 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 58 degrees F
Frost-free period: 190 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Psamments, nearly level, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Psamments, Nearly Level

Setting

Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy human-transported material

Typical profile

^A - 0 to 12 inches: coarse sand
^C1 - 12 to 36 inches: gravelly coarse sand
^C2 - 36 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 48 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Mullica

Percent of map unit: 5 percent
Landform: Drainageways on flats, swales on flats, depressions on flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Atsion

Percent of map unit: 5 percent
Landform: Drainageways on flats, depressions on flats, deflation flats on flats
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Berryland, rarely flooded

Percent of map unit: 5 percent
Landform: Drainageways on flats, depressions on flats, deflation flats on flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

PstAt—Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2xhp8
Elevation: 0 to 30 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 58 degrees F
Frost-free period: 190 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Psammaquents, sulfidic substratum, frequently flooded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Psammaquents, Sulfidic Substratum, Frequently Flooded

Setting

Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy lateral spread deposits over organic material

Typical profile

^A - 0 to 12 inches: coarse sand
^C - 12 to 36 inches: gravelly sand
2Oese1 - 36 to 43 inches: mucky peat
2Oese2 - 43 to 80 inches: mucky peat

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.60 to 20.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Salinity, maximum in profile: Very slightly saline to strongly saline (2.0 to 16.0 mmhos/cm)
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D

Hydric soil rating: Yes

Minor Components

Appoquinimink, very frequently flooded
Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Transquaking, very frequently flooded
Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pawcatuck, very frequently flooded
Percent of map unit: 5 percent
Landform: Tidal marshes on barrier islands
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

WATER—Water

Map Unit Composition
Water, greater than 40 acres: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

WHe1—Herring Creek mucky silt loam, 0 to 1 meter water depth

Map Unit Setting
National map unit symbol: 2thtw
Elevation: 0 feet
Mean annual precipitation: 41 to 49 inches
Mean annual air temperature: 53 to 60 degrees F
Frost-free period: 365 days
Farmland classification: Not prime farmland

Map Unit Composition
Herring creek, 0 to 1 meter water depth, and similar soils: 85 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Herring Creek, 0 To 1 Meter Water Depth

Setting

Landform: Estuarine tidal streams
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Mainland cove fine-silty estuarine deposits over woody organic material

Typical profile

Aseg - 0 to 3 inches: mucky silt loam
Cseg - 3 to 24 inches: silt loam
Oeseb1 - 24 to 51 inches: mucky peat
Oeseb2 - 51 to 69 inches: mucky peat

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Subaqueous
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Strongly saline (16.0 to 35.0 mmhos/cm)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Metedeconk, 0 to 1 meter water depth

Percent of map unit: 10 percent
Landform: Estuarine tidal streams
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Truitt, 0 to 1 meter water depth

Percent of map unit: 5 percent
Landform: Mainland coves
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

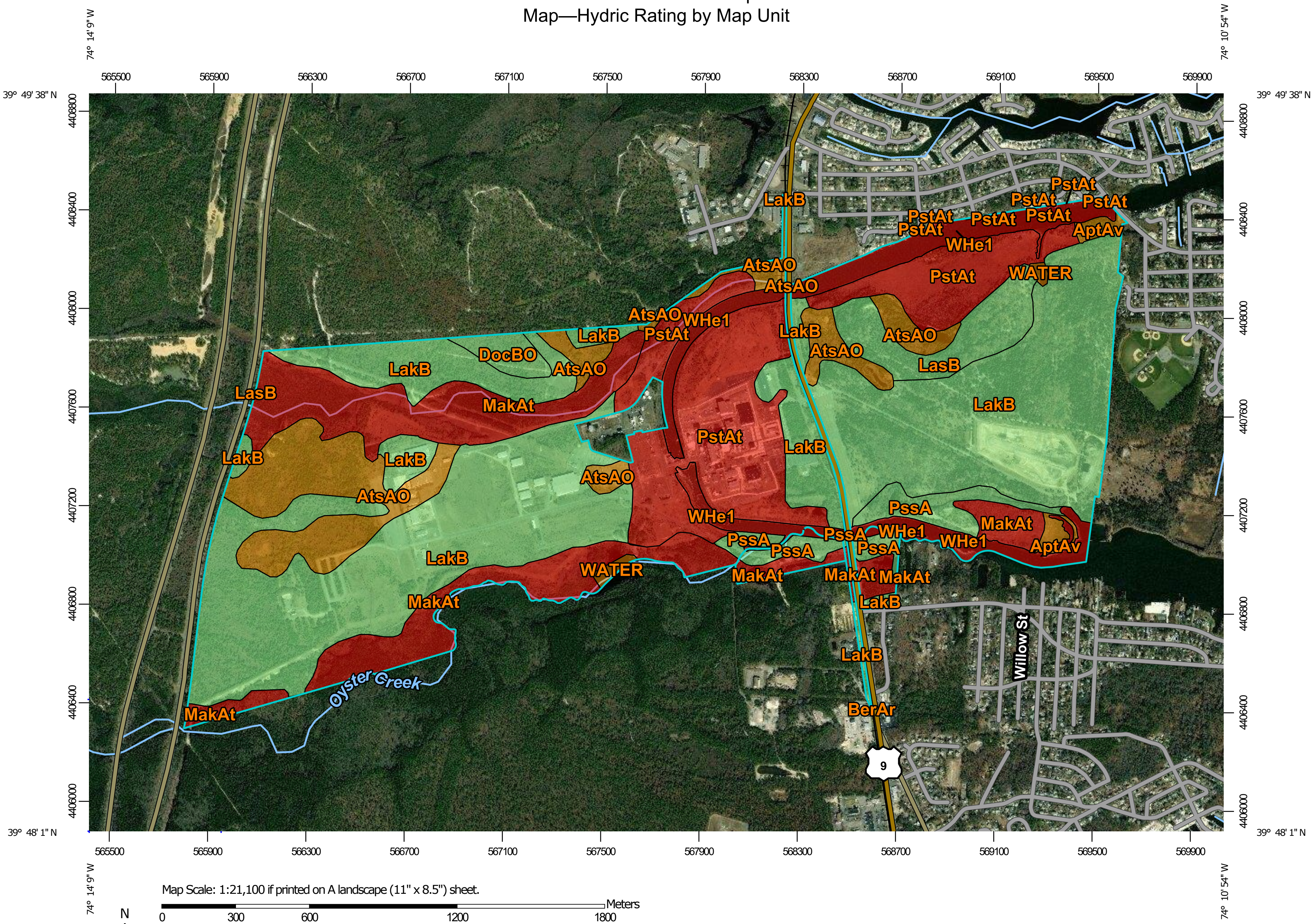
Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Custom Soil Resource Report
Map—Hydric Rating by Map Unit



Map Scale: 1:21,100 if printed on A landscape (11" x 8.5") sheet.

N

0 300 600 1200 1800 Meters

0 1000 2000 4000 6000 Feet

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

MAP LEGEND

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

Soils

Soil Rating Polygons
Hydric (100%)
Hydric (66 to 99%)
Hydric (33 to 65%)
Hydric (1 to 32%)
Not Hydric (0%)
Not rated or not available

Soil Rating Lines
Hydric (100%)
Hydric (66 to 99%)
Hydric (33 to 65%)
Hydric (1 to 32%)
Not Hydric (0%)
Not rated or not available

Soil Rating Points
Hydric (100%)
Hydric (66 to 99%)
Hydric (33 to 65%)
Hydric (1 to 32%)
Not Hydric (0%)
Not rated or not available

Water Features
Streams and Canals

Transportation
Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background
Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

Soil Survey Area: Ocean County, New Jersey
Survey Area Data: Version 17, Sep 16, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 16, 2017

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

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	95	7.1	0.6%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	95	110.7	9.9%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	100	0.0	0.0%
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	5	10.9	1.0%
LakB	Lakehurst sand, 0 to 5 percent slopes	10	501.5	45.0%
LasB	Lakewood sand, 0 to 5 percent slopes	5	38.7	3.5%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	100	166.5	14.9%
PssA	Psamments, 0 to 2 percent slopes	15	33.4	3.0%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	100	172.4	15.5%
WATER	Water	85	3.3	0.3%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	100	71.0	6.4%
Totals for Area of Interest			**1,115.7**	**100.0%**

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

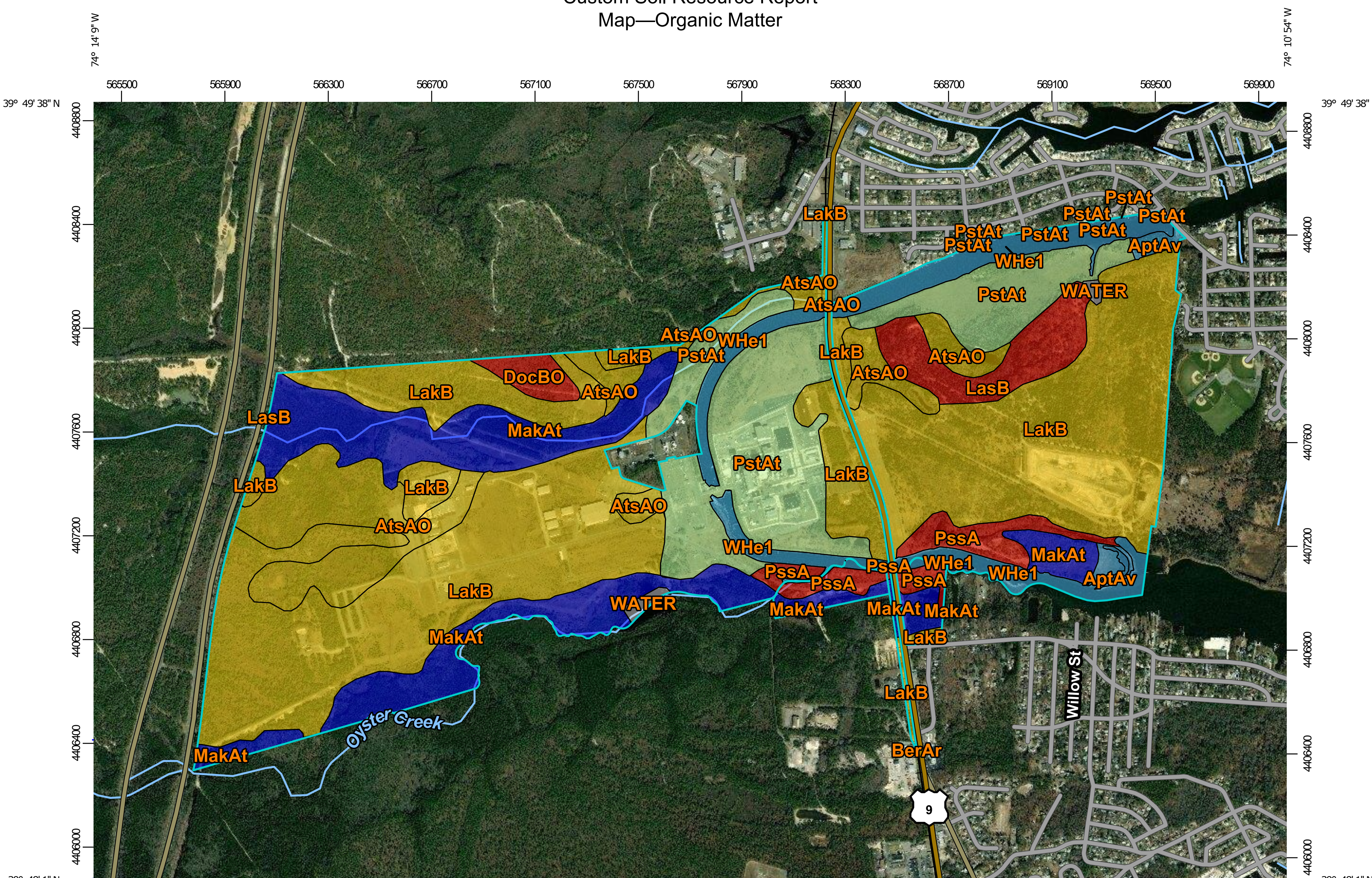
Organic Matter

Organic matter is the plant and animal residue in the soil at various stages of decomposition. The estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms. An irregular distribution of organic carbon with depth may indicate different episodes of soil deposition or soil formation. Soils that are very high in organic matter have poor engineering properties and subside upon drying.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map—Organic Matter



Map Scale: 1:21,100 if printed on A landscape (11" x 8.5") sheet.

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

MAP LEGEND

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

Soils

Soil Rating Polygons
- <= 0.74
- > 0.74 and <= 3.78
- > 3.78 and <= 15.59
- > 15.59 and <= 40.81
- > 40.81 and <= 51.58
- Not rated or not available

Soil Rating Lines
- <= 0.74
- > 0.74 and <= 3.78
- > 3.78 and <= 15.59
- > 15.59 and <= 40.81
- > 40.81 and <= 51.58
- Not rated or not available

Soil Rating Points
- <= 0.74
- > 0.74 and <= 3.78
- > 3.78 and <= 15.59
- > 15.59 and <= 40.81
- > 40.81 and <= 51.58
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

Soil Survey Area: Ocean County, New Jersey
Survey Area Data: Version 17, Sep 16, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 16, 2017

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

Table—Organic Matter

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	39.15	7.1	0.6%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	3.78	110.7	9.9%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	0.74	0.0	0.0%
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	0.30	10.9	1.0%
LakB	Lakehurst sand, 0 to 5 percent slopes	3.63	501.5	45.0%
LasB	Lakewood sand, 0 to 5 percent slopes	0.12	38.7	3.5%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	51.58	166.5	14.9%
PssA	Psamments, 0 to 2 percent slopes	0.00	33.4	3.0%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	15.59	172.4	15.5%
WATER	Water		3.3	0.3%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	40.81	71.0	6.4%
Totals for Area of Interest			**1,115.7**	**100.0%**

Rating Options—Organic Matter

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 50

Units of Measure: Inches

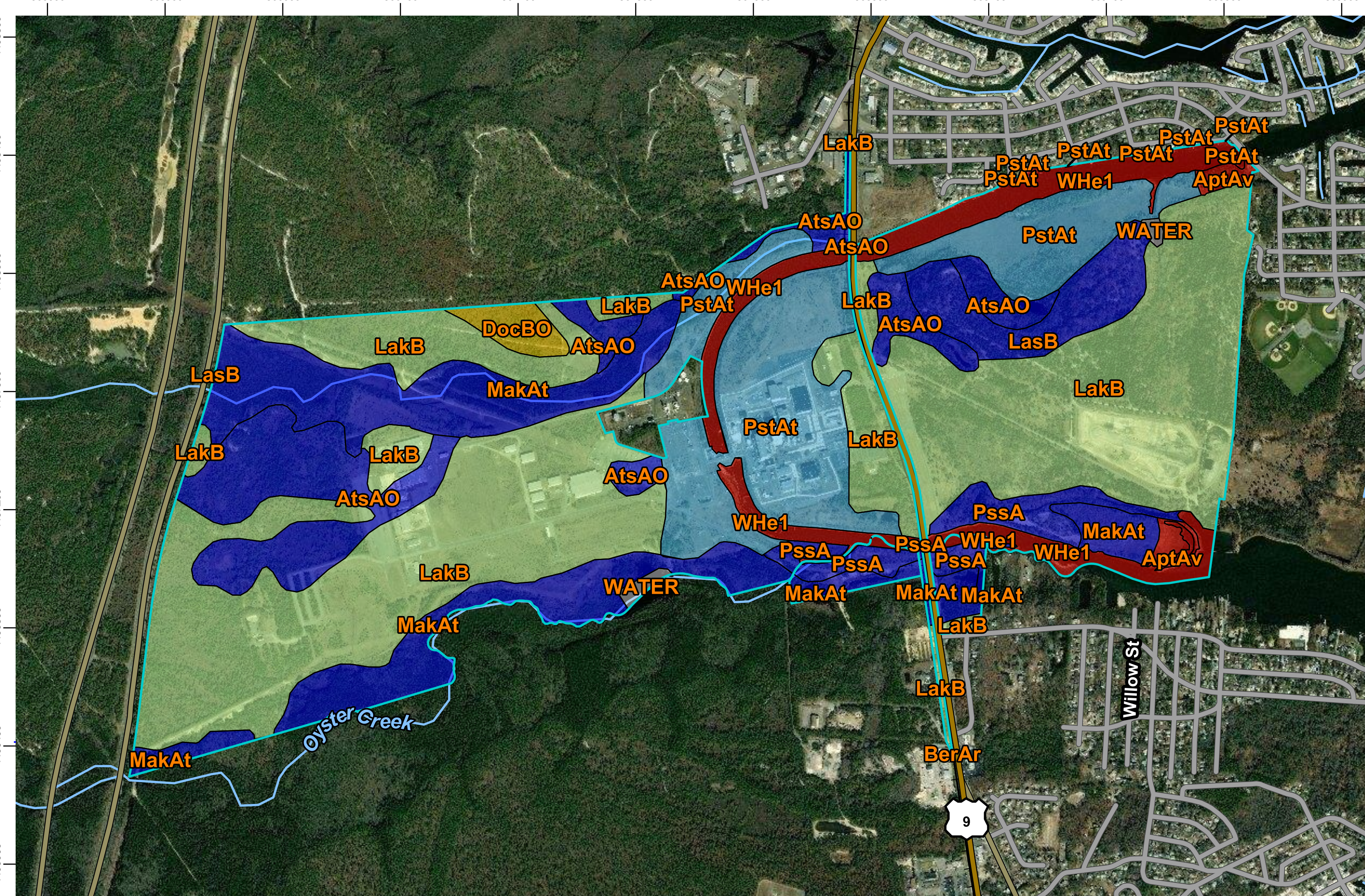
Saturated Hydraulic Conductivity (Ksat)

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Map—Saturated Hydraulic Conductivity (Ksat)



Map Scale: 1:21,100 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 300, 600, 1200, 1800

Feet: 0, 1000, 2000, 4000, 6000

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- <= 16.4724
- > 16.4724 and <= 69.3490
- > 69.3490 and <= 82.7510
- > 82.7510 and <= 86.3400
- > 86.3400 and <= 91.7502
- Not rated or not available

Soil Rating Lines

- <= 16.4724
- > 16.4724 and <= 69.3490
- > 69.3490 and <= 82.7510
- > 82.7510 and <= 86.3400
- > 86.3400 and <= 91.7502
- Not rated or not available

Soil Rating Points

- <= 16.4724
- > 16.4724 and <= 69.3490
- > 69.3490 and <= 82.7510
- > 82.7510 and <= 86.3400
- > 86.3400 and <= 91.7502
- Not rated or not available

Water Features

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

Soil Survey Area: Ocean County, New Jersey
Survey Area Data: Version 17, Sep 16, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 16, 2017

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

MAP LEGEND	MAP INFORMATION
Streams and Canals	

Table—Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	15.8879	7.1	0.6%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	91.7502	110.7	9.9%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	80.1574	0.0	0.0%
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	69.3490	10.9	1.0%
LakB	Lakehurst sand, 0 to 5 percent slopes	82.7510	501.5	45.0%
LasB	Lakewood sand, 0 to 5 percent slopes	90.0735	38.7	3.5%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	90.8512	166.5	14.9%
PssA	Psamments, 0 to 2 percent slopes	91.7400	33.4	3.0%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	86.3400	172.4	15.5%
WATER	Water		3.3	0.3%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	16.4724	71.0	6.4%
Totals for Area of Interest			**1,115.7**	**100.0%**

Rating Options—Saturated Hydraulic Conductivity (Ksat)

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 50

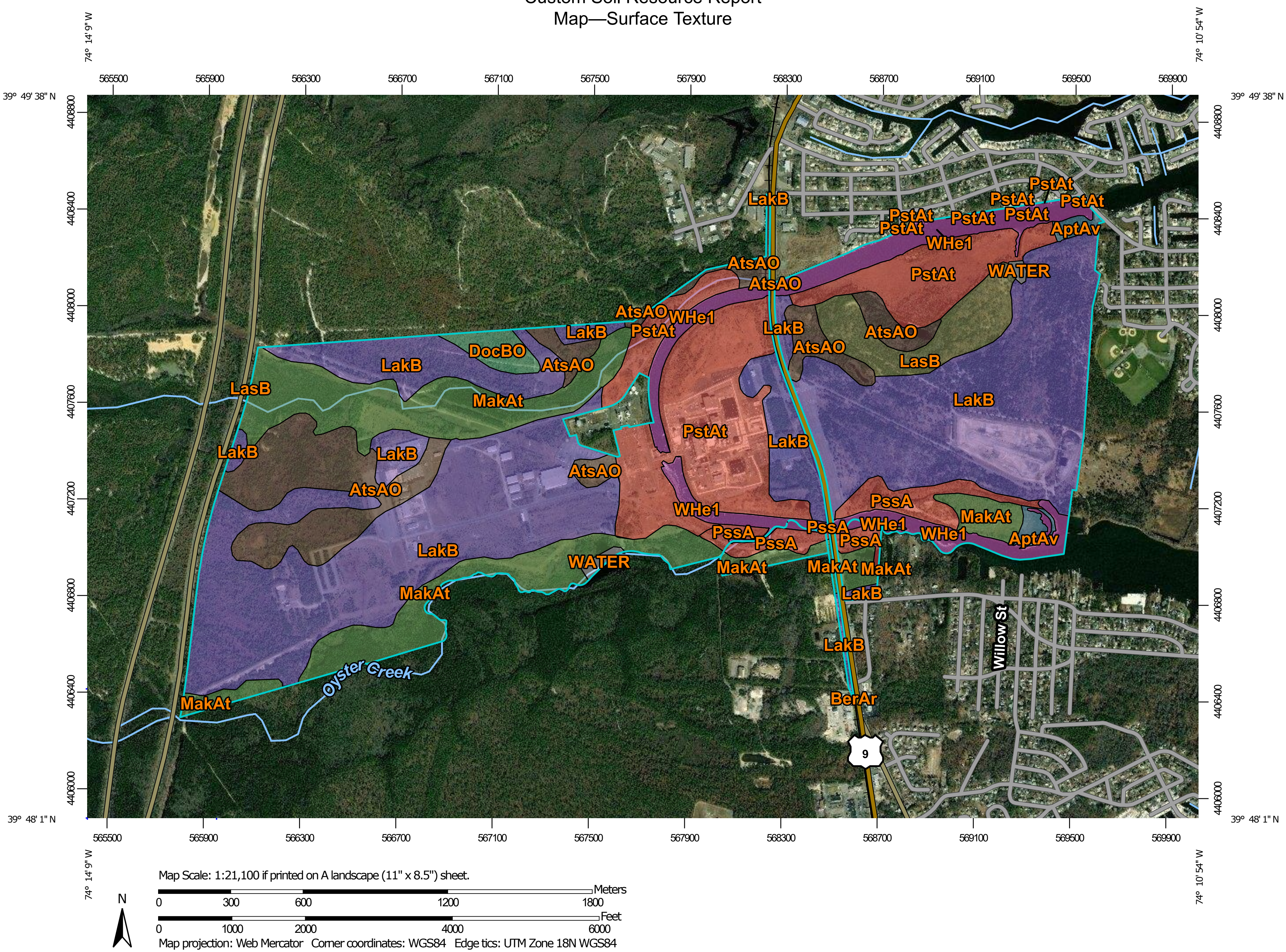
Units of Measure: Inches

Surface Texture

This displays the representative texture class and modifier of the surface horizon.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Map—Surface Texture



Map Scale: 1:21,100 if printed on A landscape (11" x 8.5") sheet.

Meters: 0 300 600 1200 1800

Feet: 0 1000 2000 4000 6000

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Coarse sand
- Loamy sand
- Muck
- Mucky peat
- Mucky silt loam
- Peat
- Sand
- Slightly decomposed plant material
- Not rated or not available

Soil Rating Lines

- Coarse sand
- Loamy sand
- Muck
- Mucky peat
- Mucky silt loam
- Peat
- Sand
- Slightly decomposed plant material
- Not rated or not available

Soil Rating Points

- Coarse sand
- Loamy sand
- Muck
- Mucky peat
- Mucky silt loam
- Peat
- Sand
- Slightly decomposed plant material
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

Soil Survey Area: Ocean County, New Jersey
Survey Area Data: Version 17, Sep 16, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 16, 2017

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

Table—Surface Texture

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	Mucky peat	7.1	0.6%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	Peat	110.7	9.9%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	Sand	0.0	0.0%
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	Loamy sand	10.9	1.0%
LakB	Lakehurst sand, 0 to 5 percent slopes	Slightly decomposed plant material	501.5	45.0%
LasB	Lakewood sand, 0 to 5 percent slopes	Sand	38.7	3.5%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	Muck	166.5	14.9%
PssA	Psamments, 0 to 2 percent slopes	Coarse sand	33.4	3.0%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	Coarse sand	172.4	15.5%
WATER	Water		3.3	0.3%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	Mucky silt loam	71.0	6.4%
Totals for Area of Interest			**1,115.7**	**100.0%**

Rating Options—Surface Texture

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

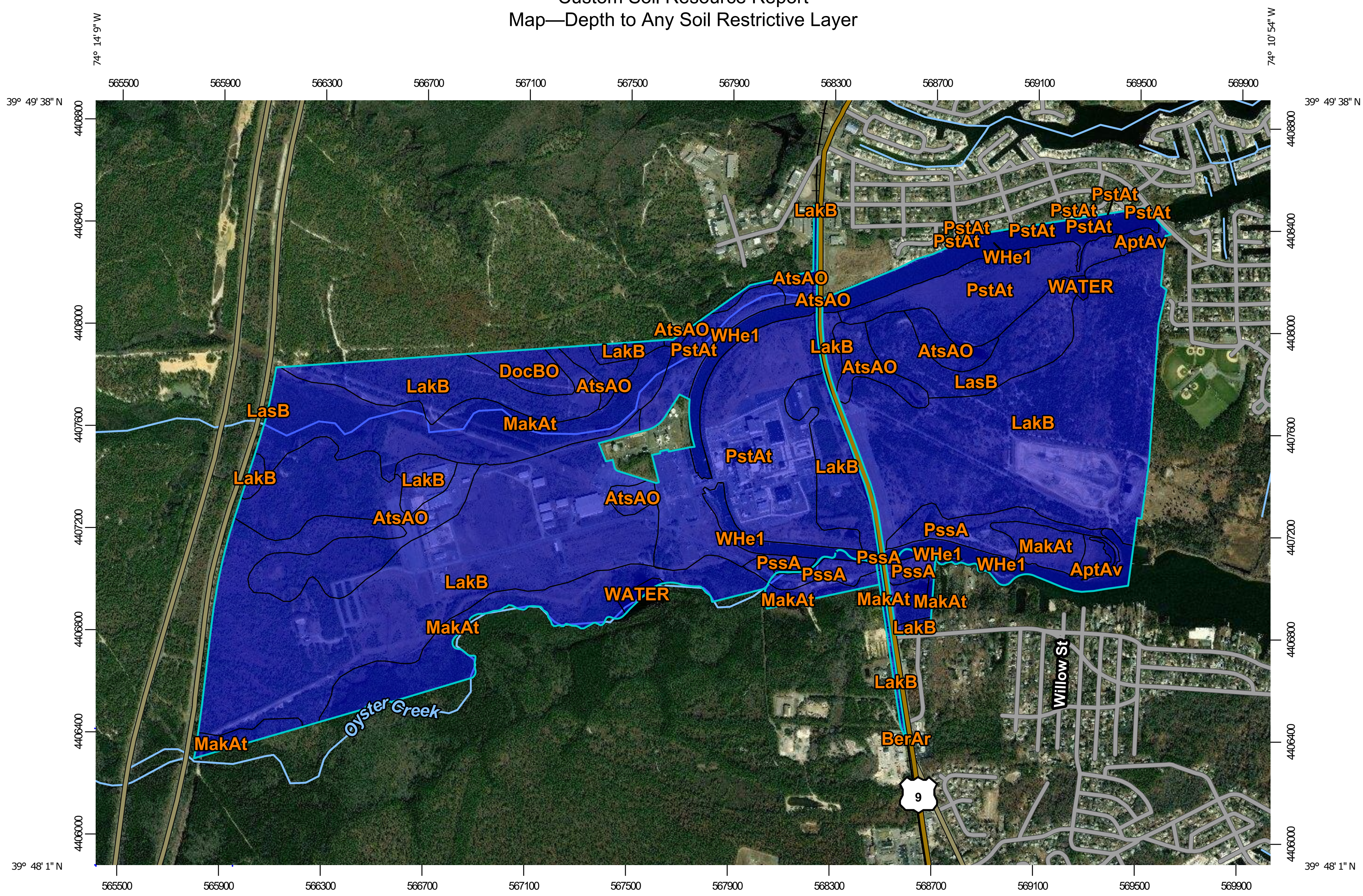
Depth to Any Soil Restrictive Layer

A "restrictive layer" is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers.

This theme presents the depth to any type of restrictive layer that is described for each map unit. If more than one type of restrictive layer is described for an individual soil type, the depth to the shallowest one is presented. If no restrictive layer is described in a map unit, it is represented by the "> 200" depth class.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map—Depth to Any Soil Restrictive Layer



Map Scale: 1:21,100 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 300, 600, 1200, 1800

Feet: 0, 1000, 2000, 4000, 6000

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

MAP LEGEND

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

Soils

Soil Rating Polygons
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

Soil Survey Area: Ocean County, New Jersey
Survey Area Data: Version 17, Sep 16, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 16, 2017

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

Table—Depth to Any Soil Restrictive Layer

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	>200	7.1	0.6%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	>200	110.7	9.9%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	>200	0.0	0.0%
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	>200	10.9	1.0%
LakB	Lakehurst sand, 0 to 5 percent slopes	>200	501.5	45.0%
LasB	Lakewood sand, 0 to 5 percent slopes	>200	38.7	3.5%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	>200	166.5	14.9%
PssA	Psamments, 0 to 2 percent slopes	>200	33.4	3.0%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	>200	172.4	15.5%
WATER	Water	>200	3.3	0.3%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	>200	71.0	6.4%
Totals for Area of Interest			**1,115.7**	**100.0%**

Rating Options—Depth to Any Soil Restrictive Layer

Units of Measure: centimeters

Aggregation Method: Dominant Component

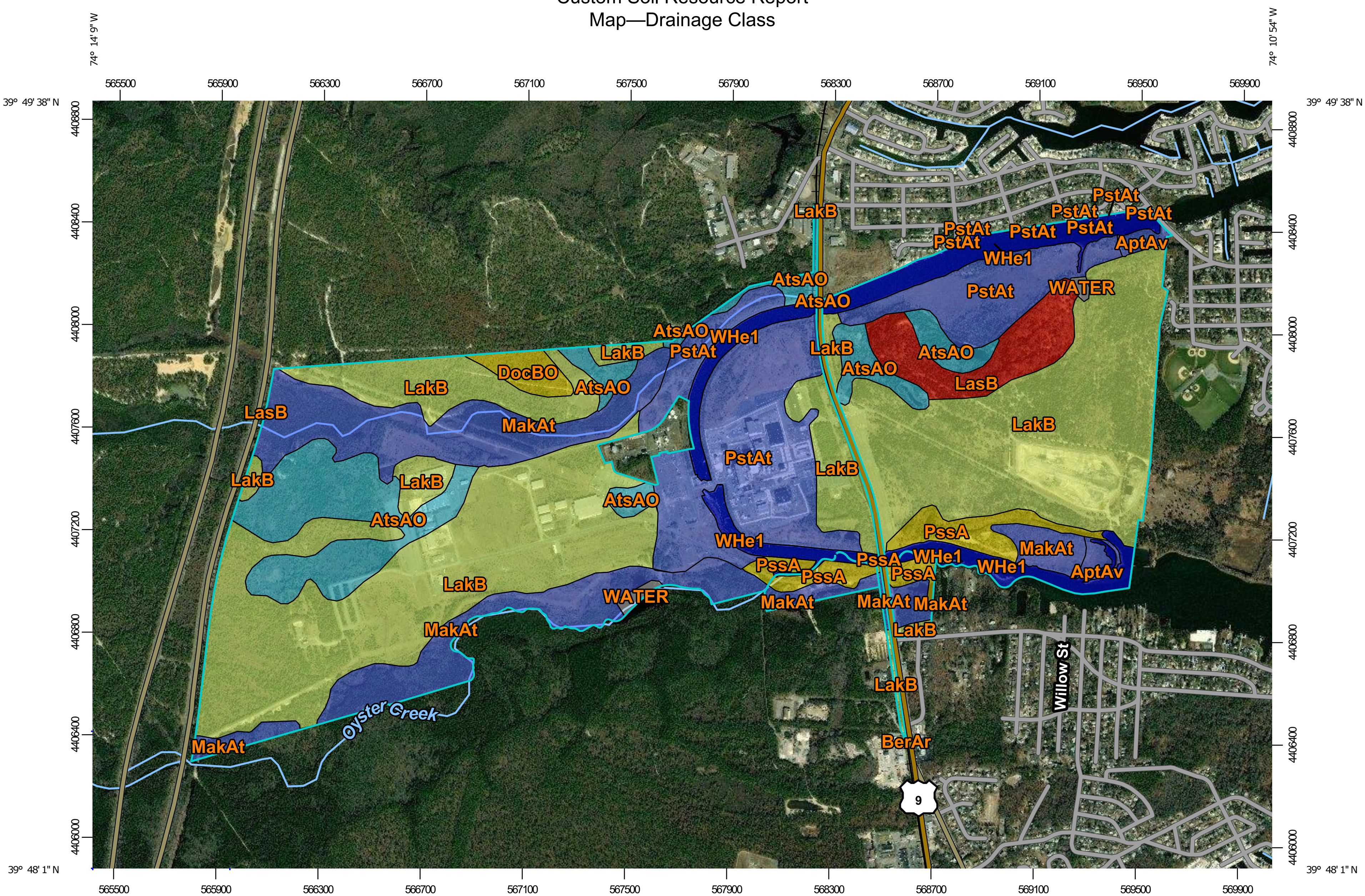
Component Percent Cutoff: None Specified

Tie-break Rule: Lower

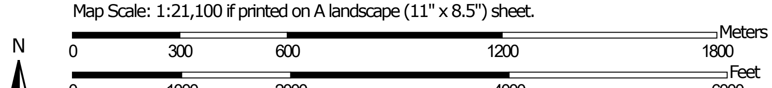
Interpret Nulls as Zero: No

Drainage Class

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."



Map Scale: 1:21,100 if printed on A landscape (11" x 8.5") sheet.



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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Lines

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Points

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

Soil Survey Area: Ocean County, New Jersey
Survey Area Data: Version 17, Sep 16, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 16, 2017

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Table—Drainage Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	Very poorly drained	7.1	0.6%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	Poorly drained	110.7	9.9%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	Very poorly drained	0.0	0.0%
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	Well drained	10.9	1.0%
LakB	Lakehurst sand, 0 to 5 percent slopes	Moderately well drained	501.5	45.0%
LasB	Lakewood sand, 0 to 5 percent slopes	Excessively drained	38.7	3.5%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	Very poorly drained	166.5	14.9%
PssA	Psamments, 0 to 2 percent slopes	Well drained	33.4	3.0%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	Very poorly drained	172.4	15.5%
WATER	Water		3.3	0.3%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	Subaqueous	71.0	6.4%
Totals for Area of Interest			**1,115.7**	**100.0%**

Rating Options—Drainage Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

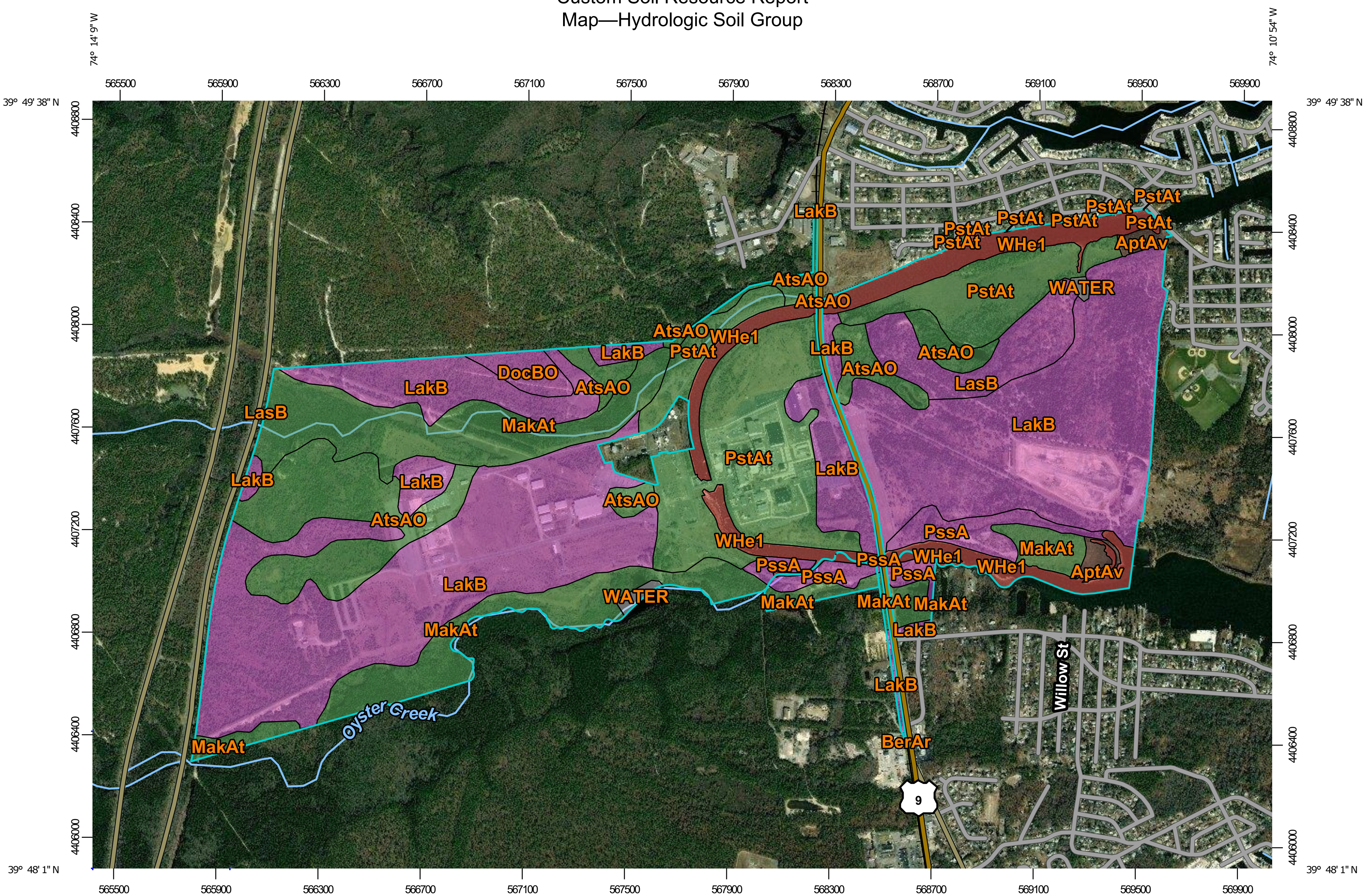
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group



Map Scale: 1:21,100 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 300, 600, 1200, 1800

Feet: 0, 1000, 2000, 4000, 6000

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

MAP LEGEND

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

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
Streams and Canals

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

Background
Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

Soil Survey Area: Ocean County, New Jersey
Survey Area Data: Version 17, Sep 16, 2019

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Date(s) aerial images were photographed: Dec 31, 2009—Sep 16, 2017

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Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	B/D	7.1	0.6%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	A/D	110.7	9.9%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	A/D	0.0	0.0%
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	A	10.9	1.0%
LakB	Lakehurst sand, 0 to 5 percent slopes	A	501.5	45.0%
LasB	Lakewood sand, 0 to 5 percent slopes	A	38.7	3.5%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	A/D	166.5	14.9%
PssA	Psamments, 0 to 2 percent slopes	A	33.4	3.0%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	A/D	172.4	15.5%
WATER	Water		3.3	0.3%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	D	71.0	6.4%
Totals for Area of Interest			**1,115.7**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Water Features

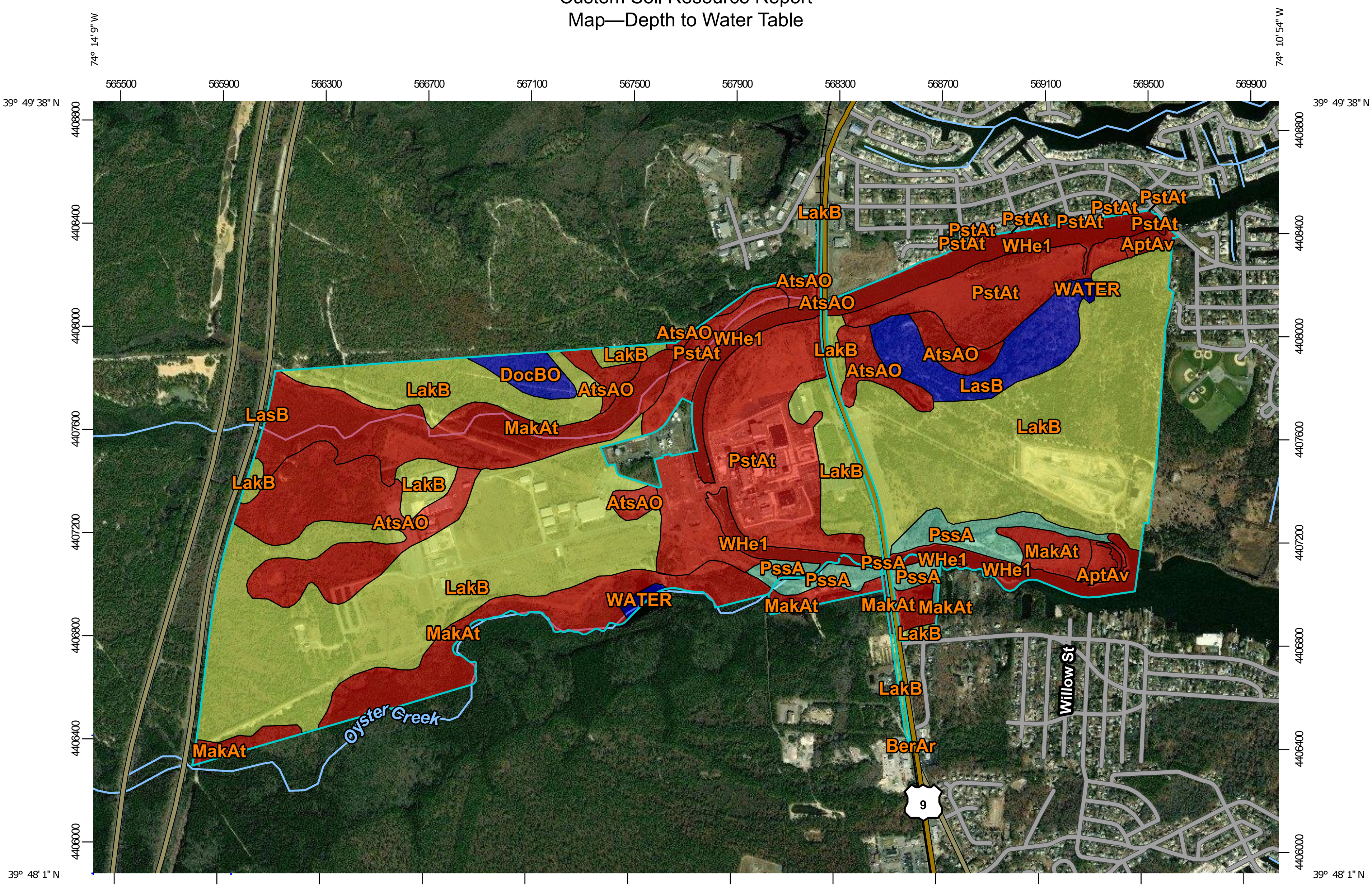
Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map—Depth to Water Table



Map Scale: 1:21,100 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 300, 600, 1200, 1800

Feet: 0, 1000, 2000, 4000, 6000

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points

- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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Table—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	0	7.1	0.6%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	5	110.7	9.9%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	0	0.0	0.0%
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	>200	10.9	1.0%
LakB	Lakehurst sand, 0 to 5 percent slopes	76	501.5	45.0%
LasB	Lakewood sand, 0 to 5 percent slopes	>200	38.7	3.5%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	0	166.5	14.9%
PssA	Psamments, 0 to 2 percent slopes	122	33.4	3.0%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	0	172.4	15.5%
WATER	Water	>200	3.3	0.3%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	0	71.0	6.4%
Totals for Area of Interest			**1,115.7**	**100.0%**

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

Flooding Frequency Class

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

"None" means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.

"Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.

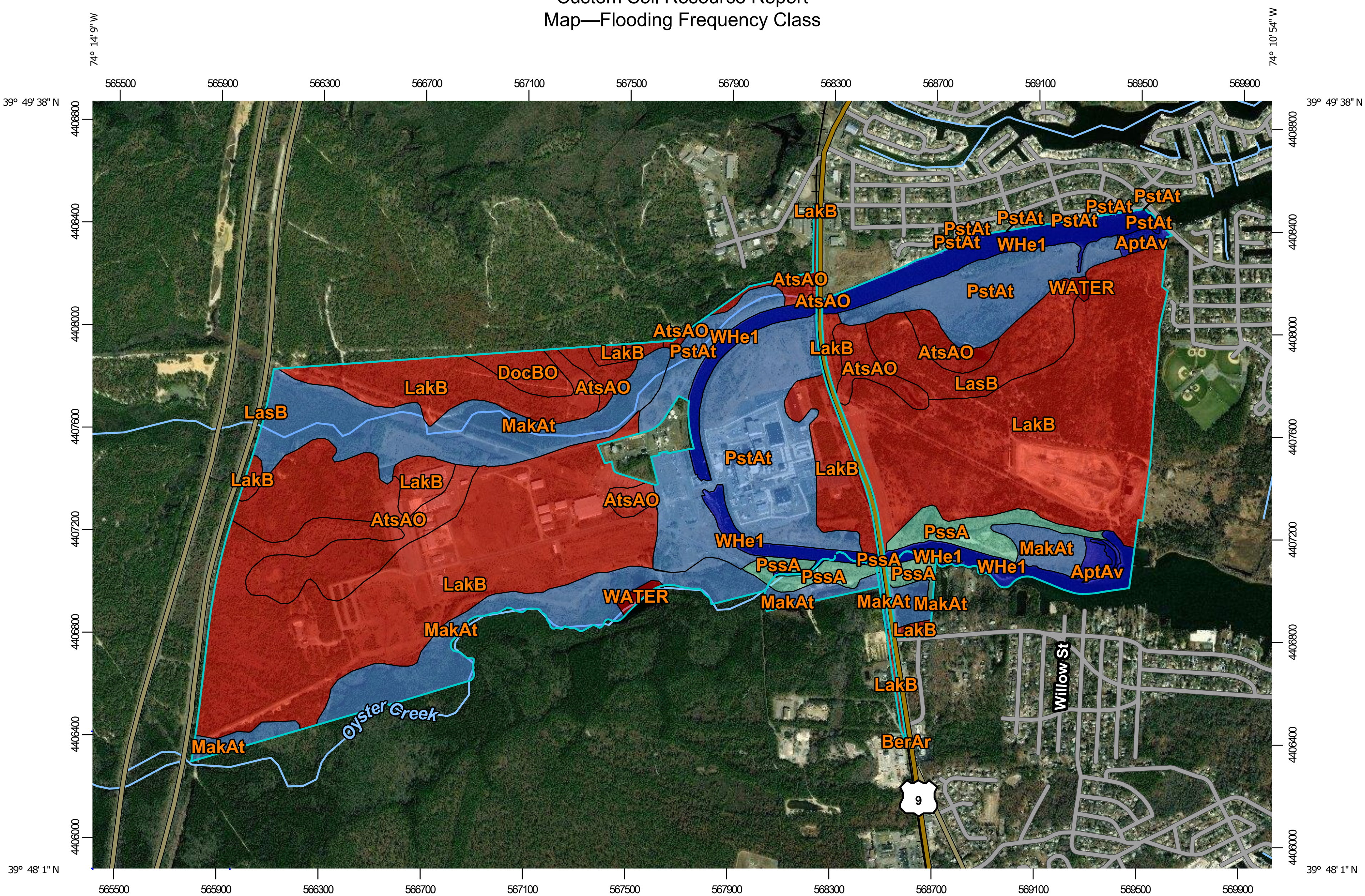
"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.

"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.

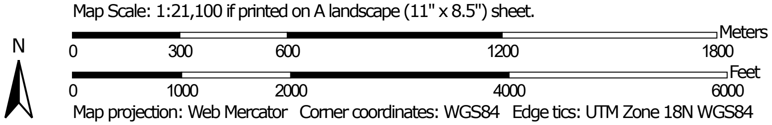
"Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.

"Very frequent" means that flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

Map—Flooding Frequency Class



Map Scale: 1:21,100 if printed on A landscape (11" x 8.5") sheet.



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

MAP LEGEND

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

Soils

Soil Rating Polygons
- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent
- Not rated or not available

Soil Rating Lines
- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent
- Not rated or not available

Soil Rating Points
- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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Date(s) aerial images were photographed: Dec 31, 2009—Sep 16, 2017

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Table—Flooding Frequency Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	Very frequent	7.1	0.6%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	None	110.7	9.9%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	Rare	0.0	0.0%
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	None	10.9	1.0%
LakB	Lakehurst sand, 0 to 5 percent slopes	None	501.5	45.0%
LasB	Lakewood sand, 0 to 5 percent slopes	None	38.7	3.5%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	Frequent	166.5	14.9%
PssA	Psamments, 0 to 2 percent slopes	Occasional	33.4	3.0%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	Frequent	172.4	15.5%
WATER	Water	None	3.3	0.3%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	Very frequent	71.0	6.4%
Totals for Area of Interest			**1,115.7**	**100.0%**

Rating Options—Flooding Frequency Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December

Ponding Frequency Class

Ponding is standing water in a closed depression. The water is removed only by deep percolation, transpiration, or evaporation or by a combination of these processes. Ponding frequency classes are based on the number of times that ponding occurs over a given period. Frequency is expressed as none, rare, occasional, and frequent.

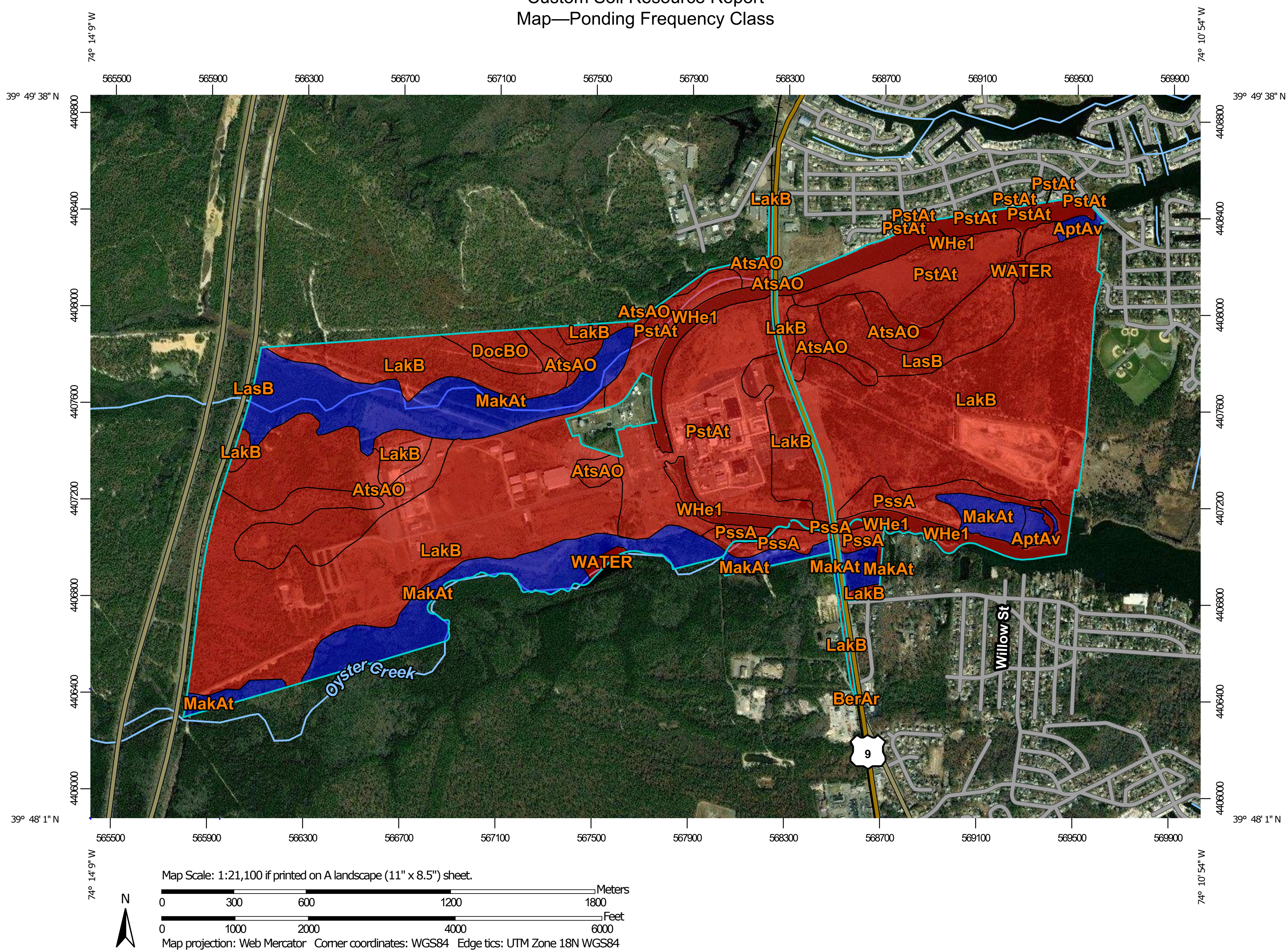
"None" means that ponding is not probable. The chance of ponding is nearly 0 percent in any year.

"Rare" means that ponding is unlikely but possible under unusual weather conditions. The chance of ponding is nearly 0 percent to 5 percent in any year.

"Occasional" means that ponding occurs, on the average, once or less in 2 years. The chance of ponding is 5 to 50 percent in any year.

"Frequent" means that ponding occurs, on the average, more than once in 2 years. The chance of ponding is more than 50 percent in any year.

Map—Ponding Frequency Class



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

None

Rare

Occasional

Frequent

Not rated or not available

Soil Rating Lines

None

Rare

Occasional

Frequent

Not rated or not available

Soil Rating Points

None

Rare

Occasional

Frequent

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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Survey Area Data: Version 17, Sep 16, 2019

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Date(s) aerial images were photographed: Dec 31, 2009—Sep 16, 2017

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Table—Ponding Frequency Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	Frequent	7.1	0.6%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	None	110.7	9.9%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	Rare	0.0	0.0%
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	None	10.9	1.0%
LakB	Lakehurst sand, 0 to 5 percent slopes	None	501.5	45.0%
LasB	Lakewood sand, 0 to 5 percent slopes	None	38.7	3.5%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	Frequent	166.5	14.9%
PssA	Psamments, 0 to 2 percent slopes	None	33.4	3.0%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	None	172.4	15.5%
WATER	Water	None	3.3	0.3%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	None	71.0	6.4%
Totals for Area of Interest			**1,115.7**	**100.0%**

Rating Options—Ponding Frequency Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

United States Department of Agriculture

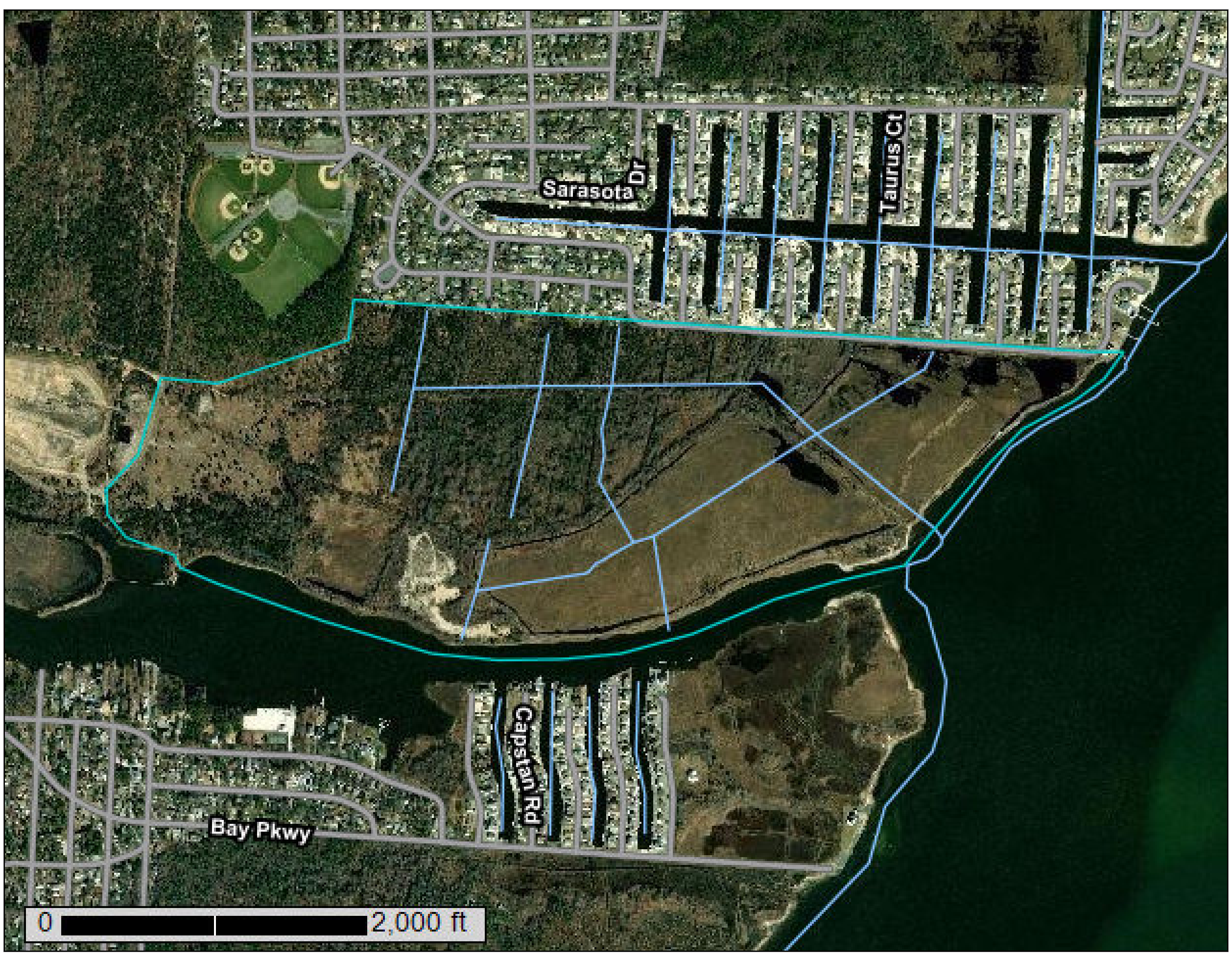
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Ocean County, New Jersey



July 9, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map


74° 11' 28" W
74° 9' 45" W
39° 49' 11" N
39° 48' 20" N
569300
569500
569700
569900
570100
570300
570500
570700
570900
571100
571300
571500
4408000
4407800
4407600
4407400
4407200
4407000
4406800
4406600
Sarasota Dr
Plover Ct
Capstan Rd
Walnut St
Central Ave
LakB
LakB
AtsAO
AptAv
PssA
WTs2
WPp1
BerAr
WHe1
Soil Map may not be valid at this scale.
N
Map Scale: 1:11,200 if printed on A landscape (11" x 8.5") sheet.
Meters
0
150
300
600
900
Feet
0
500
1000
2000
3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

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

Special Point Features

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Ocean County, New Jersey
Survey Area Data: Version 16, Sep 13, 2018

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 16, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	61.3	25.5%
AtsAO	Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area	62.0	25.8%
BerAr	Berryland sand, 0 to 2 percent slopes, rarely flooded	61.2	25.4%
LakB	Lakehurst sand, 0 to 5 percent slopes	38.5	16.0%
PssA	Psamments, 0 to 2 percent slopes	1.0	0.4%
WHe1	Herring Creek mucky silt loam, 0 to 1 meter water depth	14.0	5.8%
WPp1	Pasture Point loamy fine sand, 0 to 1 meter water depth	0.4	0.2%
WTs2	Truitt-Southpoint complex, 1 to 2 meter water depth	2.2	0.9%
Totals for Area of Interest		**240.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Ocean County, New Jersey

AptAv—Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded

Map Unit Setting

National map unit symbol: vk14
Elevation: 10 to 120 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Appoquinimink, very frequently flooded, and similar soils: 40 percent
Transquaking, very frequently flooded, and similar soils: 30 percent
Mispillion, very frequently flooded, and similar soils: 25 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Appoquinimink, Very Frequently Flooded

Setting

Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy fluviomarine deposits over herbaceous organic material

Typical profile

Ag - 0 to 12 inches: mucky silt loam
Cg - 12 to 30 inches: silt loam
Oe - 30 to 80 inches: mucky peat

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Strongly saline (16.0 to 32.0 mmhos/cm)
Available water storage in profile: Very high (about 17.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Description of Transquaking, Very Frequently Flooded

Setting

Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over loamy

Typical profile

Oe - 0 to 14 inches: mucky peat
Oa - 14 to 60 inches: muck
Cg - 60 to 90 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 32.0 mmhos/cm)
Available water storage in profile: Very high (about 26.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Description of Mispillion, Very Frequently Flooded

Setting

Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Herbaceous organic material over loamy marine deposits and/or loamy fluviomarine deposits

Typical profile

Oe - 0 to 10 inches: mucky peat
Oa - 10 to 26 inches: muck
Cg - 26 to 90 inches: silt loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Available water storage in profile: Very high (about 15.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Hammonton

Percent of map unit: 5 percent
Landform: Depressions, flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

AtsAO—Atsion sand, 0 to 2 percent slopes, Northern Tidewater Area

Map Unit Setting

National map unit symbol: 2thvz
Elevation: 0 to 230 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 66 degrees F
Frost-free period: 190 to 260 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Atsion and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Atsion

Setting

Landform: Drainageways, depressions, deflation flats, flats
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave, linear

Across-slope shape: Linear, concave
Parent material: Sandy eolian deposits and/or fluviomarine deposits

Typical profile
Oi - 0 to 2 inches: peat
A - 2 to 4 inches: sand
E - 4 to 26 inches: sand
Bhs - 26 to 34 inches: sand
Cg - 34 to 80 inches: sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.71 to 19.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Berryland, occasionally flooded
Percent of map unit: 5 percent
Landform: Flats, depressions, drainageways, deflation flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Lakehurst
Percent of map unit: 5 percent
Landform: Flats, low hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Talf, rise
Down-slope shape: Linear
Across-slope shape: Linear, convex
Hydric soil rating: No

BerAr—Berryland sand, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: rdtc
Elevation: 0 to 140 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Berryland, rarely flooded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berryland, Rarely Flooded

Setting

Landform: Depressions, drainageways, flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Sandy fluviomarine deposits

Typical profile

Ag - 0 to 11 inches: sand
Bh - 11 to 19 inches: sand
Bg - 19 to 32 inches: sand
B'h - 32 to 40 inches: sand
Cg1 - 40 to 44 inches: sand
Cg2 - 44 to 80 inches: stratified sand to sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Rare
Available water storage in profile: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Atsion

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Mullica, rarely flooded

Percent of map unit: 5 percent
Landform: Flood plains, depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Manahawkin, frequently flooded

Percent of map unit: 5 percent
Landform: Swamps, flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

LakB—Lakehurst sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: rdtz
Elevation: 20 to 150 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of local importance

Map Unit Composition

Lakehurst and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lakehurst

Setting

Landform: Flats, dunes
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Sandy fluviomarine deposits

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 4 inches: sand
E - 4 to 18 inches: sand
Bh - 18 to 32 inches: sand
BC - 32 to 45 inches: sand
C - 45 to 54 inches: sand
Cg - 54 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 19.98 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Berryland, rarely flooded

Percent of map unit: 5 percent
Landform: Depressions, drainageways, flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Quakerbridge

Percent of map unit: 5 percent
Landform: Knolls, flats
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex, linear
Across-slope shape: Linear
Hydric soil rating: No

Atsion, rarely flooded

Percent of map unit: 5 percent
Landform: Flats, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, dip, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

PssA—Psamments, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2xhpd
Elevation: 0 to 230 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 58 degrees F
Frost-free period: 190 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Psamments, nearly level, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Psamments, Nearly Level

Setting

Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy human-transported material

Typical profile

^A - 0 to 12 inches: coarse sand
^C1 - 12 to 36 inches: gravelly coarse sand
^C2 - 36 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 48 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Berryland, rarely flooded

Percent of map unit: 5 percent
Landform: Depressions on flats, drainageways on flats, deflation flats on flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Mullica

Percent of map unit: 5 percent
Landform: Depressions on flats, swales on flats, drainageways on flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Atsion

Percent of map unit: 5 percent
Landform: Deflation flats on flats, depressions on flats, drainageways on flats
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

WHe1—Herring Creek mucky silt loam, 0 to 1 meter water depth

Map Unit Setting

National map unit symbol: 2thtw
Elevation: 0 feet
Mean annual precipitation: 41 to 49 inches
Mean annual air temperature: 53 to 60 degrees F
Frost-free period: 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Herring creek, 0 to 1 meter water depth, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Herring Creek, 0 To 1 Meter Water Depth

Setting

Landform: Estuarine tidal streams
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf

Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Mainland cove fine-silty estuarine deposits over woody organic material

Typical profile

Aseg - 0 to 3 inches: mucky silt loam
Cseg - 3 to 24 inches: silt loam
Oeseb1 - 24 to 51 inches: mucky peat
Oeseb2 - 51 to 69 inches: mucky peat

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Subaqueous
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Strongly saline (16.0 to 35.0 mmhos/cm)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Metedeconk, 0 to 1 meter water depth

Percent of map unit: 10 percent
Landform: Estuarine tidal streams
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Truitt, 0 to 1 meter water depth

Percent of map unit: 5 percent
Landform: Mainland coves
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

WPp1—Pasture Point loamy fine sand, 0 to 1 meter water depth

Map Unit Setting

National map unit symbol: 2thv8
Elevation: 0 feet
Mean annual precipitation: 41 to 49 inches
Mean annual air temperature: 53 to 60 degrees F
Frost-free period: 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Pasture point, 0 to 1 meter water depth, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pasture Point, 0 To 1 Meter Water Depth

Setting

Landform: Submerged wave-cut platforms
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Submerged wave-cut platform coarse-loamy lagoonal deposits over sandy fluviomarine deposits

Typical profile

A - 0 to 2 inches: loamy fine sand
Cseg1 - 2 to 11 inches: loamy sand
Cseg2 - 11 to 36 inches: fine sandy loam
2Cg - 36 to 78 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Subaqueous
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.57 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Strongly saline (16.0 to 35.0 mmhos/cm)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Truitt, 0 to 1 meter water depth

Percent of map unit: 10 percent
Landform: Mainland coves
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Southpoint, 0 to 1 meter water depth

Percent of map unit: 5 percent
Landform: Mainland coves
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

WTs2—Truitt-Southpoint complex, 1 to 2 meter water depth

Map Unit Setting

National map unit symbol: 2thvl
Elevation: -10 to 0 feet
Mean annual precipitation: 41 to 49 inches
Mean annual air temperature: 53 to 60 degrees F
Frost-free period: 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Truitt, 1 to 2 meter water depth, and similar soils: 40 percent
Southpoint, 1 to 2 meter water depth, and similar soils: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Truitt, 1 To 2 Meter Water Depth

Setting

Landform: Mainland coves
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Mainland cove fine-silty estuarine deposits

Typical profile

Aseg - 0 to 1 inches: silty clay loam
Cseg - 1 to 77 inches: silty clay loam
2Oaseb - 77 to 88 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Subaqueous
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Strongly saline (16.0 to 35.0 mmhos/cm)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Yes

Description of Southpoint, 1 To 2 Meter Water Depth

Setting

Landform: Mainland coves
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Mainland cove fine-silty estuarine deposits over herbaceous organic material

Typical profile

Aseg - 0 to 1 inches: silty clay loam
Cseg - 1 to 36 inches: silty clay loam
Oeseb - 36 to 48 inches: mucky peat
Oaseb - 48 to 69 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Subaqueous
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Strongly saline (16.0 to 35.0 mmhos/cm)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Tumagan, 1 to 2 meter water depth

Percent of map unit: 15 percent

Landform: Submerged wave-cut platforms, mainland coves
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Pasture point, 1 to 2 meter water depth

Percent of map unit: 5 percent
Landform: Submerged wave-cut platforms
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Tingles, 1 to 2 meter water depth

Percent of map unit: 5 percent
Landform: Lagoon channels, lagoon bottoms
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

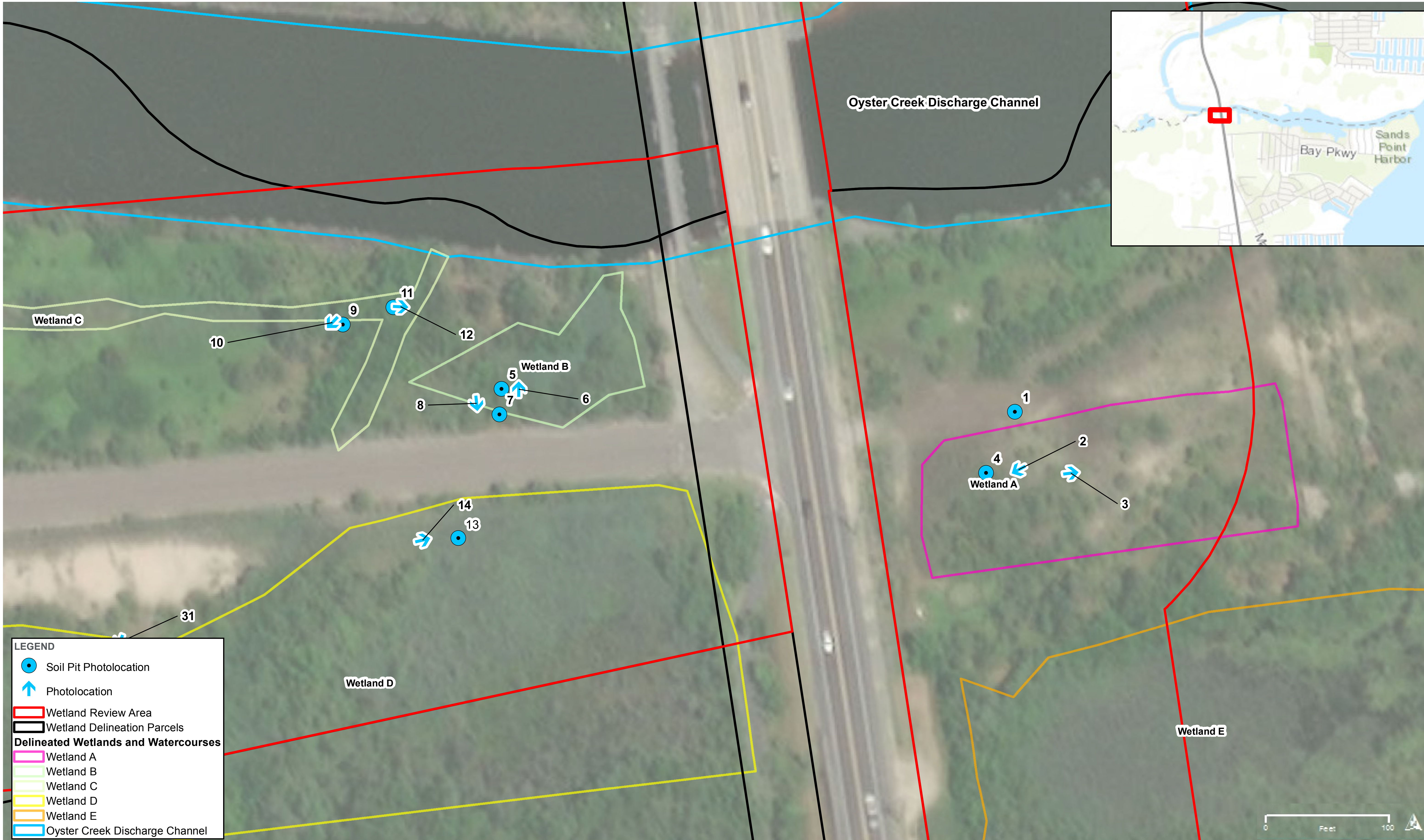
United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Attachment B. Site Photographs



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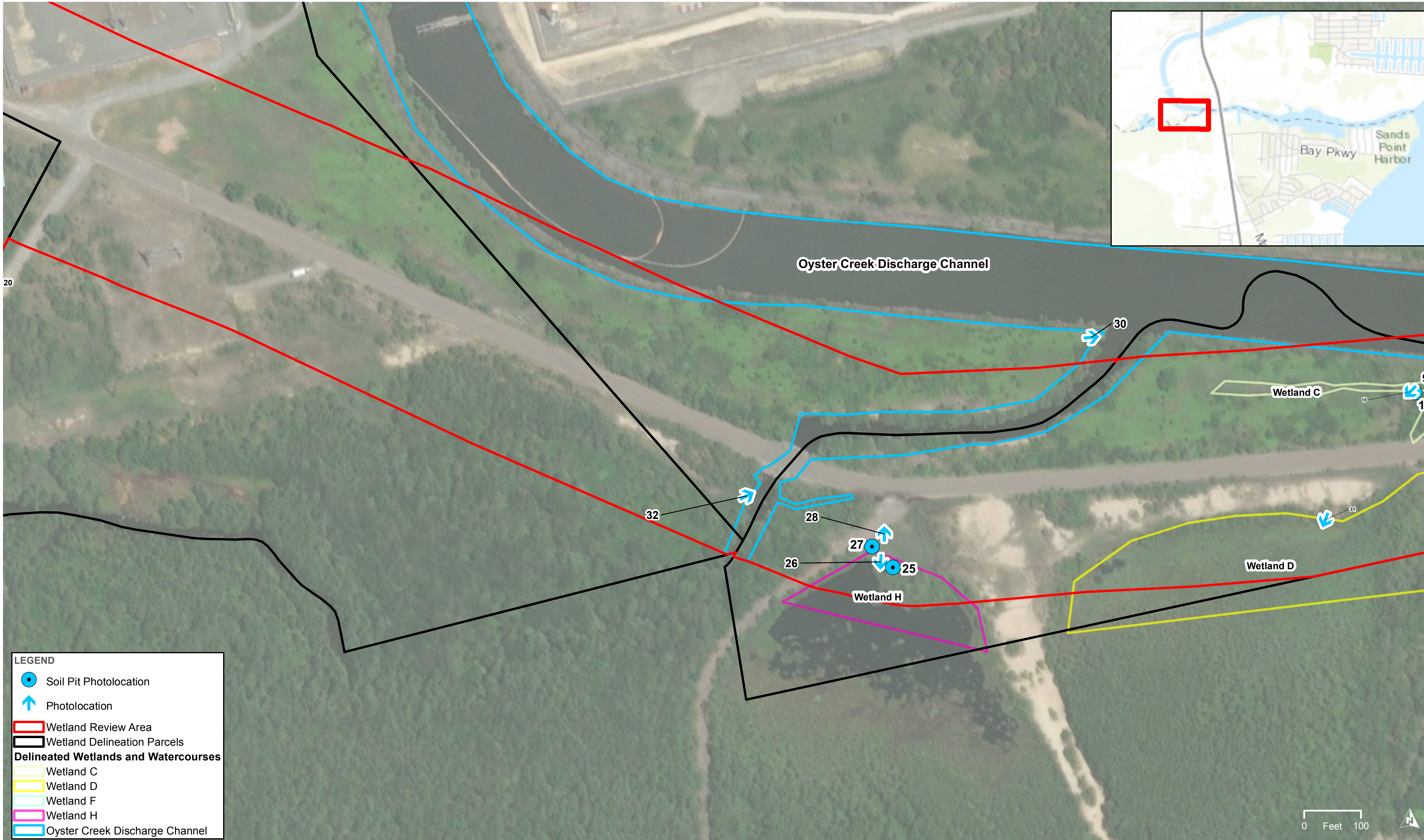
OCEAN WIND - OYSTER CREEK LANDING
PHOTOLOCATION MAP
APPENDIX C

PATH: \\NJ-MAHWAH\ACTIVEPROJECTS\109939\10092078\7.0_GIS_MODELS\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\WETLANDDELINEATION\2020_DELINEATION\OCW_APPC_11X17_PHOTOLOCATION_MAP.MXD - USER: JLANGE - DATE: 12/6/2020



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OCEAN WIND - OYSTER CREEK LANDING
PHOTOLOCATION MAP
APPENDIX C

OCEAN WIND - OYSTER CREEK LANDING

PHOTOLOCATION MAP

APPENDIX C

PATH: \\NJ-MAHWAH\ACTIVEPROJECTS\109939\10092078\7.0_GIS_MODELS\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\WETLANDDELINEATION\2020_DELINEATION\OCW_APPC_11X17_PHOTOLOCATION_MAP.MXD - USER: JLANGE - DATE: 12/6/2020

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OCEAN WIND - OYSTER CREEK LANDING
PHOTOLOCATION MAP
APPENDIX C

Photo 1: Photo of upland soil profile outside of Wetland A.


Photo 2: Photo of Wetland A vegetation.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**1 and 2**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 3: Photo of Wetland A vegetation facing east.

Photo 4: Photo of Wetland A soil profile.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**3 and 4**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 5: Photo of Wetland B soil pit location.

Photo 6: Photo of Wetland B vegetation.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**5 and 6**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 7: Photo of upland soil pit location outside of Wetland B.

Photo 8: Photo of upland vegetation outside of Wetland B.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**7 and 8**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 9: Photo of Wetland C upland soil profile.

Photo 10: Photo of Wetland C upland vegetation.

Photo 11: Photo of Wetland C soil pit location.

Photo 12: Photo of Wetland C vegetation.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	
		REVIEWED BY:	DB	**11 and 12**
		JOB NO:	10092078	

Photo 13: Photo of Wetland D soil pit.

Photo 14: Photo of Wetland D on the south side of Discharge Drive.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**13 and 14**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 15: Photo of Wetland E soil profile.


Photo 16: Photo of Wetland E vegetation.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	
		REVIEWED BY:	DB	**15 and 16**
		JOB NO:	10092078	

Photo 17: Photo of soil profile outside of Wetland E.

Photo 18: Photo of vegetation outside of Wetland E.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**17 and 18**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 19: Photo of Wetland F soil profile.

Photo 20: Photo of drainage basin at southern end of Wetland F.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	
		REVIEWED BY:	DB	**19 and 20**
		JOB NO:	10092078	

Photo 21: Photo of Wetland G soil profile.

Photo 22: Photo of Wetland G1 vegetation.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	
		REVIEWED BY:	DB	**21 and 22**
		JOB NO:	10092078	

Photo 23: Photo of Wetland G1 soil profile.

Photo 24: Photo of upland profile outside of Wetland G1.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**23 and 24**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 25: Photo of Wetland H soil profile.

Photo 26: Photo of Wetland H vegetation.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**25 and 26**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 27: Photo of upland soil profoile outside of Wetland H.

Photo 28: Photo of vegetation outside of Wetland H.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**27 and 28**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 29: Photo of box turtle in Wetland G during May 2020 site survey.

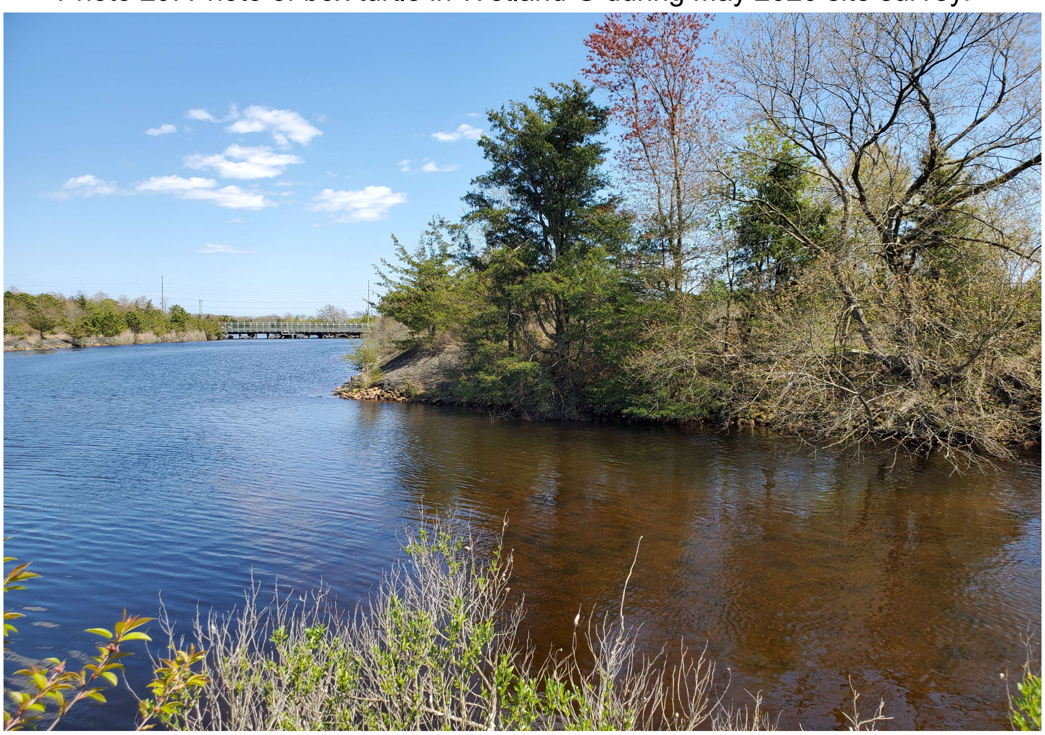
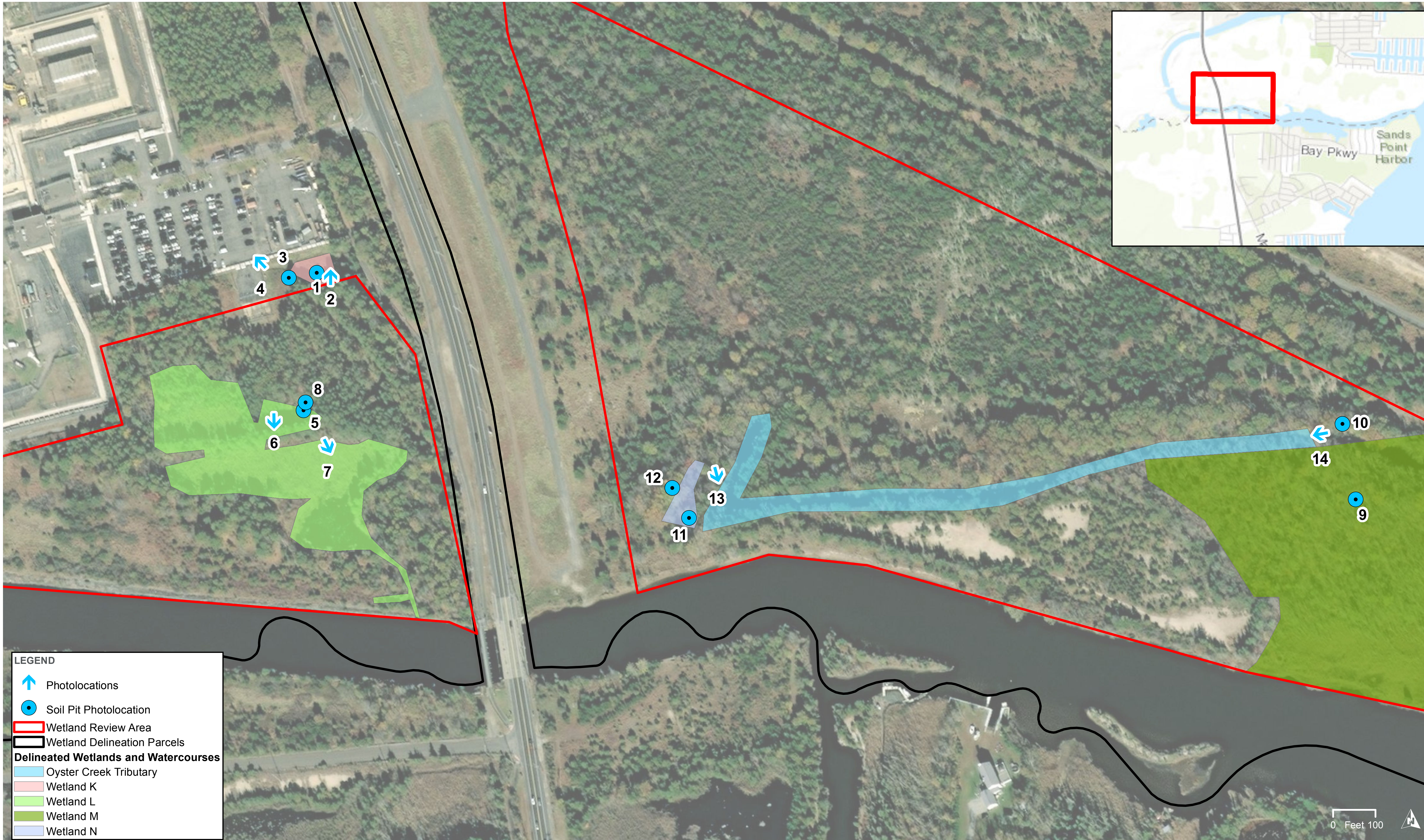


Photo 30: Photo of channel entrance connecting to Oyster Creek.

Photo 31: Photo of Wetland D on southern edge of Holtec property.

Photo 32: Photo of channel and culverts on south side of Discharge Drive.



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OCEAN WIND - OYSTER CREEK LANDING

PHOTOLOCATION MAP

APPENDIX C

PATH: \\NJ-MAHWAH\ACTIVEPROJECTS\109939\10092078\7.0_GIS_MODELS\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\WETLANDDELINEATION\2021_DELINEATION\OCW_APPC_11X17_PHOTOLOCATION_MAP.MXD - USER: JLANGE - DATE: 6/8/2021

Photo 1: Photo of wetland soil profile of Wetland K.


Photo 2: Photo of Wetland K vegetation.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**1 and 2**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 3: Photo of upland soil profile outside of Wetland K.

Photo 4: Photo of upland vegetation outside of Wetland K.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**3 and 4**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 5: Photo of Wetland L soil pit location.

Photo 6: Photo of Wetland L vegetation.

Photo 7: Photo of pond with white water lillies of Wetland L.

Photo 8: Photo of upland soil pit location outside of Wetland L.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**7 and 8**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 9: Photo of Wetland M soil profile.

Photo 10: Photo of upland soil pit location outside of Wetland M.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**9 and 10**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 11: Photo of Wetland N soil pit.

Photo 12: Photo of upland soil pit location outside of Wetland N.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	**11 and 12**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 13: Photo of Oyster Creek tributary.

Photo 14: Photo of Oyster Creek tributary.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Photography**	DATE:	05/08/20	**PHOTO**
		CREATED BY:	JC	
		REVIEWED BY:	DB	**13 and 14**
		JOB NO:	10092078	

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OCEAN WIND - OYSTER CREEK LANDING

DELINEATED WETLANDS AND WATERCOURSES PHOTOMAP

Photo 1: Photo of Wetland A upland soil profile.

Photo 2: Photo of Wetland A upland vegetation.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Landing Photography**	DATE:	01/25/22	**PHOTO**
		CREATED BY:	JC	**1 and 2**
		REVIEWED BY:	ZL	
		JOB NO:	10092078	

Photo 3: Photo of Wetland A vegetation facing east.

Photo 4: Photo of Wetland A soil profile.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Landing Photography**	DATE:	01/25/22	**PHOTO**
		CREATED BY:	JC	**3 and 4**
		REVIEWED BY:	ZL	
		JOB NO:	10092078	

Photo 5: Photo of Wetland E soil pit location.

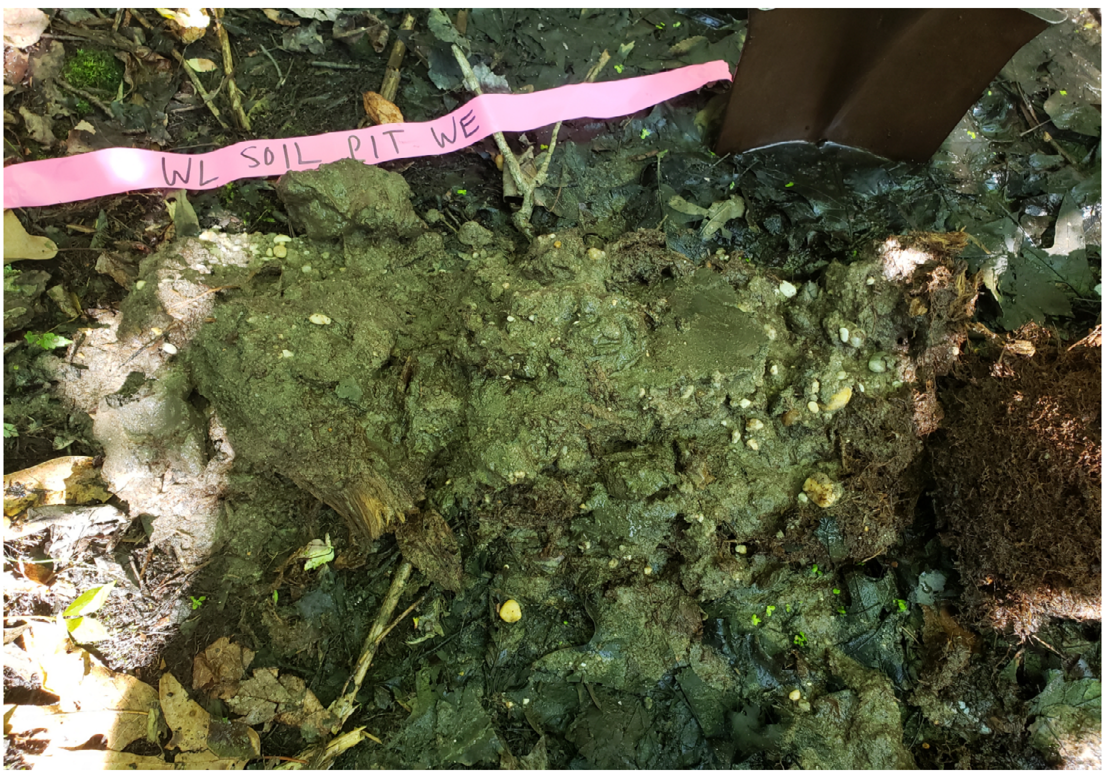


Photo 6: Photo of Wetland E soil profile.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Landing Photography**	DATE:	01/25/22	**PHOTO**
		CREATED BY:	JC	**5 and 6**
		REVIEWED BY:	ZL	
		JOB NO:	10092078	

Photo 7: Photo of Wetland E upland soil pit location.

Photo 8: Photo of Wetland E upland soil profile.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Landing Photography**	DATE:	01/25/22	**PHOTO**
		CREATED BY:	JC	**7 and 8**
		REVIEWED BY:	ZL	
		JOB NO:	10092078	

Photo 9: Photo of Wetland C upland soil profile.

Photo 10: Photo of Wetland A soil profile.

Photo 11: Photo of Wetland A soil pit location.

Photo 12: Photo of Wetland A soils.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Landing Photography**	DATE:	01/25/22	**PHOTO**
		CREATED BY:	JC	**11 and 12**
		REVIEWED BY:	ZL	
		JOB NO:	10092078	

Photo 13: Photo of green-fringed orchid in Wetland E

Photo 14: Photo of prickly pear cactus observed in the southwest corner of the site.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Landing Photography**	DATE:	01/25/22	**PHOTO**
		CREATED BY:	JC	**13 and 14**
		REVIEWED BY:	ZL	
		JOB NO:	10092078	

Photo 15: Photo of easten boundary along Barnegat Bay shoreline at Oyster Creek.

Photo 16: Photo of easten boundary along Barnegat Bay shoreline at Oyster Creek.

Orsted Ocean Wind Project	**Wetland Delineation - Oyster Creek Landing Photography**	DATE:	01/25/22	**PHOTO**
		CREATED BY:	JC	
		REVIEWED BY:	ZL	**15 and 16**
		JOB NO:	10092078	

OCEAN WIND - OYSTER CREEK

DELINEATED WETLANDS AND WATERCOURSES MAP

PATH: \\MAHPI-FILE01\ACTIVEPROJECTS\109939\10092078\7.0_GIS_MODELS\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LURP_PACKAGE\APPH_WETLANDS\OCW_OC_WETLANDS_20220124_PHOTOLOCATION_IBSP.MXD - USER: JLANGE - DATE: 1/24/2022

Photo 1: Photo facing northeast of Shore Road.

Photo 2: Photo of wetland soil profile of Wetland A

Orsted Ocean Wind Project	**Wetland Delineation - Island Beach State Park Photography**	DATE:	12/08/21	**PHOTO**
		CREATED BY:	DV	**1 and 2**
		REVIEWED BY:		
		JOB NO:	10092078	

Photo 3: Photo facing east of Wetland B.

Photo 4: Photo of upland soil pit for Wetland B.

Orsted Ocean Wind Project	**Wetland Delineation - Island Beach State Park Photography**	DATE:	12/08/21	**PHOTO**
		CREATED BY:	DV	**3 and 4**
		REVIEWED BY:		
		JOB NO:	10092078	

Photo 5: Photo facing east of the access road off Shore Road.

Photo 6: Photo of Wetland B facing Barnaget Bay.

Orsted Ocean Wind Project	**Wetland Delineation - Island Beach State Park Photography**	DATE:	12/09/21	**PHOTO**
		CREATED BY:	DV	
		REVIEWED BY:		**5 and 6**
		JOB NO:	10092078	

Photo 7: Photo facing northeast of Wetland B.

Photo 8: Photo of Wetland B vegetation.

Orsted Ocean Wind Project	**Wetland Delineation- Island Beach State Park Photography**	DATE:	12/08/21	**PHOTO**
		CREATED BY:	DV	**7 and 8**
		REVIEWED BY:		
		JOB NO:	10092078	


Photo 9: Photo of Wetland C vegetation.


Photo 10: Photo of Wetland C vegetation.

Orsted Ocean Wind Project	**Wetland Delineation - Island Beach State Park Photography**	DATE:	12/08/21	**PHOTO**
		CREATED BY:	DV	**9 and 10**
		REVIEWED BY:		
		JOB NO:	10092078	

Attachment C. Letter of Interpretation (LOI) Approval and Plan

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Land Use Regulation
Mail Code 501-02A, P. O. Box 420
Trenton, New Jersey 08625-0420
www.state.nj.us/dep/landuse

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

AUG 1 5 2017

Kyle Mitton
South Main Street
Forked River, NJ 08731

RE: Freshwater Wetlands Letter of Interpretation: Line Verification
File No.: 1512-17-0013.1
Activity Number: FWW170001
Applicant: Kyle Mitton
Block(s) and Lot(s): [1001, 4.05]
Lacey Township, Ocean County

Dear Mr. Mitton:

This letter is in response to your request for a Letter of Interpretation to have Division of Land Use Regulation (Division) staff verify the boundary of the freshwater wetlands and/or State open waters on the referenced property.

In accordance with agreements between the State of New Jersey Department of Environmental Protection, the U.S. Army Corps of Engineers Philadelphia and New York Districts, and the U.S. Environmental Protection Agency, the NJDEP, the Division is the lead agency for establishing the extent of State and Federally regulated wetlands and waters. The USEPA and/or USACOE retain the right to reevaluate and modify the jurisdictional determination at any time should the information prove to be incomplete or inaccurate.

Based upon the information submitted, and upon a site inspection conducted by Division staff on June 6, 2017, the Division has determined that the wetlands and waters boundary line(s) as shown on the plan map entitled: "WETLANDS SURVEY, TAX LOT 4.05, BLOCK 1001, REAR OF SOUTH MAIN STREET, TOWNSHIP OF LACEY, OCEAN COUNTY, NEW JERSEY", prepared by DPK Consulting, and dated 1/20/17, last revised 6/27/17 is accurate as shown.

Wetlands Resource Value Classification ("RVC")

In addition, the Division has determined that the resource value and the standard transition area or buffer required adjacent to the delineated wetlands are as follows:

Intermediate: All freshwater wetland flag points on or immediately adjacent to the above referenced site. [50 foot wetland buffer]

RVC may affect requirements for wetland and/or transition area permitting. This classification may affect the requirements for an Individual Wetlands Permit (see N.J.A.C. 7:7A-7), the types of Statewide General Permits available for the property (see N.J.A.C. 7:7A-4 & 5) and any modification available through a transition area waiver (see N.J.A.C. 7:7A-6). Please refer to the Freshwater Wetlands Protection Act (N.J.S.A. 13:9B-1 et seq.) and implementing rules for additional information.

Wetlands resource value classification is based on the best information available to the Department. The classification is subject to reevaluation at any time if additional or updated information is made available, including, but not limited to, information supplied by the applicant.

General Information

Pursuant to the Freshwater Wetlands Protection Act Rules, you are entitled to rely upon this jurisdictional determination for a period of five years from the date of this letter unless it is determined that the letter is based on inaccurate or incomplete information. Should additional information be disclosed or discovered, the Division reserves the right to void the original letter of interpretation and issue a revised letter of interpretation.

Regulated activities proposed within a wetland, wetland transition area or water area, as defined by N.J.A.C. 7:7A-2.2 and 2.6 of the Freshwater Wetlands Protection Act rules, require a permit from this office unless specifically exempted at N.J.A.C. 7:7A-2.8. The approved plan and supporting jurisdictional limit information are now part of the Division's public records.

This letter in no way legalizes any fill which may have been placed, or other regulated activities which may have occurred on-site. This determination of jurisdiction extent or presence does not make a finding that wetlands or water areas are "isolated" or part of a surface water tributary system unless specifically called out in this letter as such. Furthermore, obtaining this determination does not affect your responsibility to obtain any local, State, or Federal permits which may be required.

Appeal Process

In accordance with N.J.A.C. 7:7A-1.7, any person who is aggrieved by this decision may request a hearing within 30 days of the date the decision is published in the DEP Bulletin by writing to: New Jersey Department of Environmental Protection, Office of Legal Affairs, Attention: Adjudicatory Hearing Requests, P.O. Box 402, Trenton, NJ 08625-0402. This request must include a completed copy of the Administrative Hearing Request Checklist found at www.state.nj.us/dep/landuse/forms. Hearing requests received after 30 days of publication notice may be denied. The DEP Bulletin is available on the Department's website at www.state.nj.us/dep/bulletin. In addition to your hearing request, you may file a request with the Office of Dispute Resolution to engage in alternative dispute resolution. Please see the website www.nj.gov/dep/odr for more information on this process.

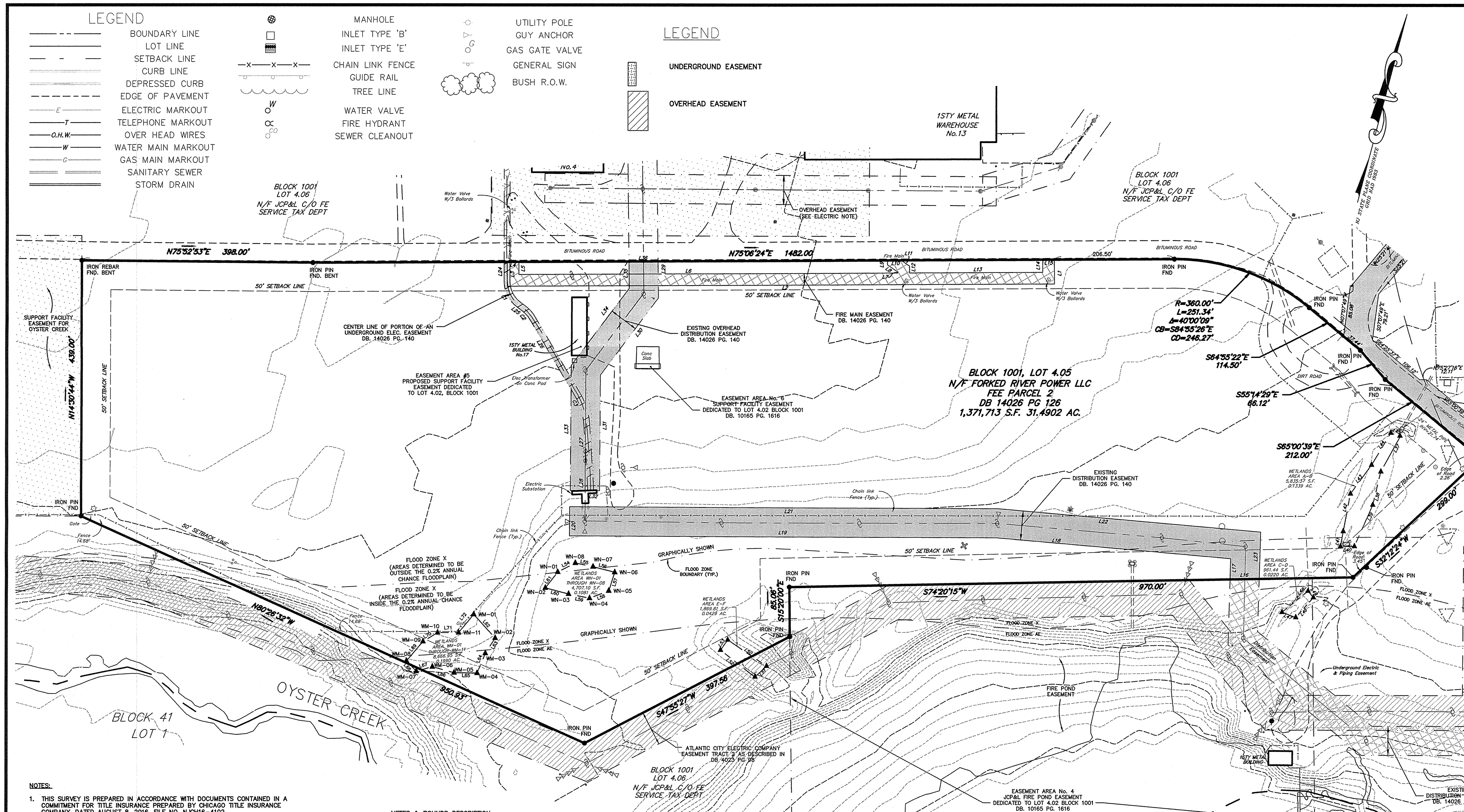
Please contact Lisa Dunne of our staff by e-mail at lisa.dunne@dep.nj.gov or by phone at (609) 777-0454 should you have any questions regarding this letter. Be sure to indicate the Department's file number in all communication.

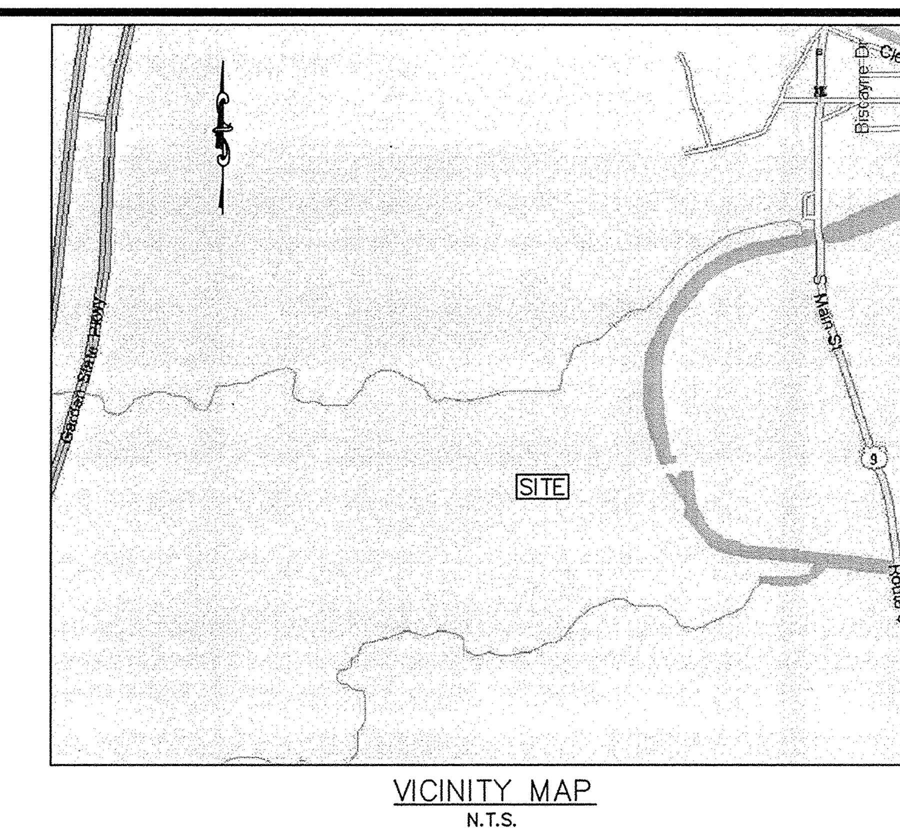
Sincerely,

April R. Dzalvonski

For Ryan J. Anderson, Manager
Coastal Bureau
Division of Land Use Regulation

c: Municipal Clerk
Municipal Construction Official
Agent (original)





VICINITY MAP
N.T.S.

NOTES:

1. THIS SURVEY IS PREPARED IN ACCORDANCE WITH DOCUMENTS CONTAINED IN A COMMITMENT FOR TITLE INSURANCE PREPARED BY CHICAGO TITLE INSURANCE COMPANY, DATED AUGUST 8, 2016, FILE NO. NJCH16-4102.
2. THIS SURVEY REPRESENTS FIELD CONDITIONS AS OF AUGUST 24, 2016. WETLANDS FLAGS SURVEYED NOVEMBER 15, 2016 AND JUNE 23, 2017.
3. THE UTILITIES SHOWN HAVE BEEN LOCATED FROM EVIDENCE OBSERVED ON THE SURFACE ONLY OR HAVE BEEN SHOWN GRAPHICALLY PER SUPPLIED MATERIALS. DPK CONSULTING MAKES NO GUARANTEES THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED. DPK CONSULTING FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. DPK CONSULTING HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.
4. ALSO KNOWN AS TAX LOT 4.05 IN BLOCK 1001 AS SHOWN ON THE OFFICIAL TAX MAPS OF THE TOWNSHIP OF LACEY, OCEAN COUNTY, NEW JERSEY.
5. A WRITTEN WAIVER AND DIRECTION NOT TO SET CORNER MARKERS HAS BEEN OBTAINED FROM THE ULTIMATE USER PURSUANT TO P.L. 2003, C.14 (C45:8-36.3) AND N.J.A.C. 13:40-5.1(D).
6. NO EVIDENCE OF CURRENT EARTH MOVING WORK WAS OBSERVED AT TIME OF FIELD WORK.
7. WETLANDS FLAGS DELINEATED BY AKRF DURING SEPTEMBER 2016. WETLANDS LINE TO BE VERIFIED BY NJDEP BUREAU OF FRESH WATER WETLANDS. WETLAND FLAGS NOT DELINEATED BY DPK CONSULTING.
8. THE PROJECT VERTICAL DATUM IS BASED UPON NAVD 88 DERIVED USING LEICA GX1230 GPS RECEIVERS AND NEW JERSEY SMARTNET NETWORK.
9. TOPOGRAPHY SHOWN WITHIN THE SITE IS COMPILED USING GIS DATA PROVIDED BY GEO COMMUNITY.(http://dl1.geocomm.com)VERTICAL DATUM: NGVD 1929, CONVERTED TO NAVD 1988.
10. CONTOURS WITHIN THE WETLANDS FLAGS HAVE BEEN GROUND SURVEYED, VERTICAL DATUM:NAVD 1988 DERIVED USING LEICA GX1230 GPS RECEIVERS AND OPUS-RS.
10. SETBACKS SHOWN PER MAP REF. #1.
11. IF THIS DOCUMENT DOES NOT CONTAIN A RAISED SEAL OF THE UNDERSIGNED PROFESSIONAL, IT IS NOT AN AUTHORIZED ORIGINAL DOCUMENT.

MAP REFERENCE:

1. MAP ENTITLED "MINOR SUBDIVISION, COMPOSITE SHEET, TAX MAP LOT 4.03 BLOCK 1001, SITUATED IN LACEY TOWNSHIP, OCEAN COUNTY, NEW JERSEY," PREPARED BY LGA ENGINEERING, INC. DATED MARCH 26, 2007, LAST REVISED APRIL 9, 2008 AND FILED IN THE OCEAN COUNTY CLERK'S OFFICE ON JUNE 27, 2008 AS FILED MAP NO. L3664.
2. MAP ENTITLED "SURVEY OF PROPERTY TAX MAP LOT 4.04 BLOCK 1001 SITUATED IN LACEY TOWNSHIP, OCEAN COUNTY, NEW JERSEY", PREPARED BY LGA ENGINEERING, INC., DATED APRIL 26, 2012.
3. MAP ENTITLED "SURVEY OF PROPERTY TAX MAP LOT 4.05 BLOCK 1001 SITUATED IN LACEY TOWNSHIP, OCEAN COUNTY, NEW JERSEY", PREPARED BY LGA ENGINEERING, INC., DATED APRIL 7, 2008 AND BEING LAST REVISED ON APRIL 16, 2008.
4. MAP ENTITLED "ALTA/ACSM LAND TITLE SURVEY FOR FORKED RIVER POWER LLC, LOTS 4.04 AND 4.05, BLOCK 1001, SITUATED IN TOWNSHIP OF LACEY, OCEAN COUNTY, NEW JERSEY", PREPARED BY PARTNER ENGINEERING AND SCIENCE, INC., DATED 09/20/13, SHEET 1 OF 1.

FLOOD NOTE:

BY GRAPHIC PLOTTING ONLY, THE PREMISES IS LOCATED IN FIRM ZONE AE (BASE FLOOD ELEVATIONS DETERMINED - BFE=6 NAVD88), FIRM ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AND FIRM ZONE X (AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD) PER MAP NUMBER 34029C0412F, EFFECTIVE DATE SEPTEMBER 29, 2006. NO FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS ZONE. AN ELEVATION CERTIFICATE MAY BE NEEDED TO VERIFY THIS DETERMINATION OR APPLY FOR VARIANCE FROM THE FEDERAL EMERGENCY MANAGEMENT AGENCY.

METES & BOUNDS DESCRIPTION
LOT 4.05, BLOCK 1001 (FEE PARCEL 2)
TOWNSHIP OF LACEY
OCEAN COUNTY, STATE OF NEW JERSEY

BEGINNING AT A POINT ON THE MOST EASTERLY CORNER OF NEW LOT 4.05, BLOCK 1001. SAID POINT BEING THE FOLLOWING FIVE (5) COURSES FROM A MONUMENT FOUND IN THE WESTERLY LINE OF LOT 1 IN BLOCK 61.01, (ALSO FORMERLY KNOWN AS THE BARNEGAT BRANCH OF THE CENTRAL RAILROAD OF NEW JERSEY), AT THE DIVISION LINE BETWEEN LOTS 42.03 AND 43 IN BLOCK 41, OCEAN TOWNSHIP, OCEAN COUNTY, NEW JERSEY. SAID MONUMENT ALSO BEING OPPOSITE CENTERLINE STATION 2012+18.87 OF NEW JERSEY STATE HIGHWAY ROUTE 9.

A. SOUTH 76 DEGREES 01 MINUTE 57 SECONDS WEST, A DISTANCE OF 1514.05 FEET ALONG THE NORTHERLY LINE OF LOT 42.03, BLOCK 41, IN OCEAN TOWNSHIP, TO A MONUMENT FOUND; THENCE
B. NORTH 04 DEGREES 06 MINUTES 08 SECONDS WEST, A DISTANCE OF 200.00 FEET TO A POINT; THENCE
C. NORTH 41 DEGREES 45 MINUTES 19 SECONDS WEST, A DISTANCE OF 507.65 FEET TO A POINT; THENCE
D. NORTH 66 DEGREES 05 MINUTES 00 SECONDS WEST, A DISTANCE OF 624.35 FEET TO A POINT; THENCE
E. NORTH 65 DEGREES 00 MINUTES 39 SECONDS WEST, A DISTANCE OF 245.66 FEET TO A POINT AND PLACE OF BEGINNING; THENCE RUNNING THE FOLLOWING TWELVE (12) COURSES ALONG THE DIVISION LINE BETWEEN NEW LOTS 4.05 AND 4.06, BLOCK 1001

1. SOUTH 32 DEGREES 12 MINUTES 24 SECONDS WEST, A DISTANCE OF 299.00 FEET TO A POINT; THENCE
2. SOUTH 74 DEGREES 20 MINUTES 15 SECONDS WEST, A DISTANCE OF 970.00 FEET TO A POINT; THENCE
3. SOUTH 15 DEGREES 20 MINUTES 00 SECONDS EAST, A DISTANCE OF 85.06 FEET TO A POINT; THENCE
4. SOUTH 47 DEGREES 55 MINUTES 27 SECONDS WEST, A DISTANCE OF 397.56 FEET TO A POINT; THENCE
5. NORTH 80 DEGREES 26 MINUTES 32 SECONDS WEST, A DISTANCE OF 950.93 FEET TO A POINT; THENCE
6. NORTH 14 DEGREES 30 MINUTES 44 SECONDS WEST, A DISTANCE OF 439.00 FEET TO A POINT; THENCE
7. NORTH 75 DEGREES 52 MINUTES 53 SECONDS EAST, A DISTANCE OF 398.00 FEET TO A POINT; THENCE
8. NORTH75 DEGREES 06 MINUTES 24 SECONDS EAST, A DISTANCE OF 1,482.00 FEET TO A POINT OF CURVATURE; THENCE
9. ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 360.00 FEET, A CENTRAL ANGLE OF 40 DEGREES 00 MINUTES 09 SECONDS, A CHORD BEARING OF SOUTH 84 DEGREES 55 MINUTES 26 SECONDS EAST A CHORD DISTANCE OF 246.27 FEET AND AN ARC LENGTH OF 251.34 FEET TO A POINT OF TANGENCY; THENCE
10. SOUTH 64 DEGREES 55 MINUTES 22 SECONDS EAST, A DISTANCE OF 114.50 FEET TO A POINT; THENCE
11. SOUTH 55 DEGREES 14 MINUTES 29 SECONDS EAST, A DISTANCE OF 66.12 FEET TO A POINT; THENCE
12. SOUTH 65 DEGREES 00 MINUTES 39 SECONDS EAST, A DISTANCE OF 212.00 FEET TO THE POINT OR PLACE OF BEGINNING.

WETLANDS
LINE TABLES

WETLAND AREA A-B		
LINE#	BEARING	LENGTH
L37	S14° 22' 11"W	69.00
L38	S1° 15' 14"E	59.23
L39	S9° 18' 14"W	77.83
L40	S74° 32' 18"W	24.15
L41	N4° 09' 57"W	26.36
L42	N3° 56' 54"W	65.79
L43	N21° 36' 12"E	61.87
L44	N16° 26' 25"E	63.97
L45	S85° 02' 01"E	17.32

WETLAND AREA C-D		
LINE#	BEARING	LENGTH
L46	S26° 55' 13"W	45.97
L47	N83° 13' 45"W	25.22
L48	N36° 14' 48"E	57.55
L49	S54° 36' 10"E	14.51

WETLAND AREA E-F		
LINE#	BEARING	LENGTH
L50	S70° 36' 39"E	80.35
L51	S31° 58' 55"W	27.23
L52	N66° 40' 44"W	74.90
L53	N20° 12' 06"E	21.45

WETLAND AREA WN-01 - WN-08		
LINE#	BEARING	LENGTH
L54	N48°00'04"E	33.76'
L55	N87°09'43"E	31.04'
L56	N89°43'41"E	38.55'
L57	N03°10'27"E	33.61'
L58	N54°18'30"E	35.27'
L59	N86°51'06"E	36.56'
L60	N89°54'10"W	41.21'
L61	N23°08'55"E	34.54'

WETLAND AREA WM-01 - WM-11		
LINE#	BEARING	LENGTH
L62	N57°01'34"W	54.96'
L63	N18°17'43"E	31.00'
L64	N07°50'45"E	36.84'
L65	N76°16'16"E	39.94'
L66	N89°23'47"W	38.82'
L67	N59°37'02"E	28.55'
L68	N58°22'30"W	24.50'
L69	N25°39'11"E	43.72'
L70	N43°59'49"E	29.24'
L71	N75°16'58"E	36.35'
L72	N25°15'15"E	40.72'

DISTRIBUTION EASEMENT
LINE TABLE B

TAG	BEARING	DISTANCE
L16	S 74°20'15" W	50.05'
L17	N 13°06'35" W	35.50'
L18	S 80°23'58" W	404.73'
L19	S 75°36'41" W	734.63'
L20	N 14°23'19" W	50.00'
L21	N 75°36'41" E	736.72'
L22	N 80°23'58" E	453.85'
L23	S 13°06'35" E	80.30'

25' WIDE OVERHEAD
EASEMENT LINE TABLE

TAG	BEARING	DISTANCE
L29	S 15°20'48" E	62.99'
L30	S 22°20'40" W	166.24'
L31	S 14°21'51" E	198.27'
L32	S 75°38'09" W	50.00'
L33	N 14°21'51" W	214.86'
L34	N 22°20'40" E	165.76'
L35	N 15°20'48" W	46.32'
L36	N 75°06'24" E	50.00'

20' WIDE FIRE MAIN EASEMENT
LINE TABLE C

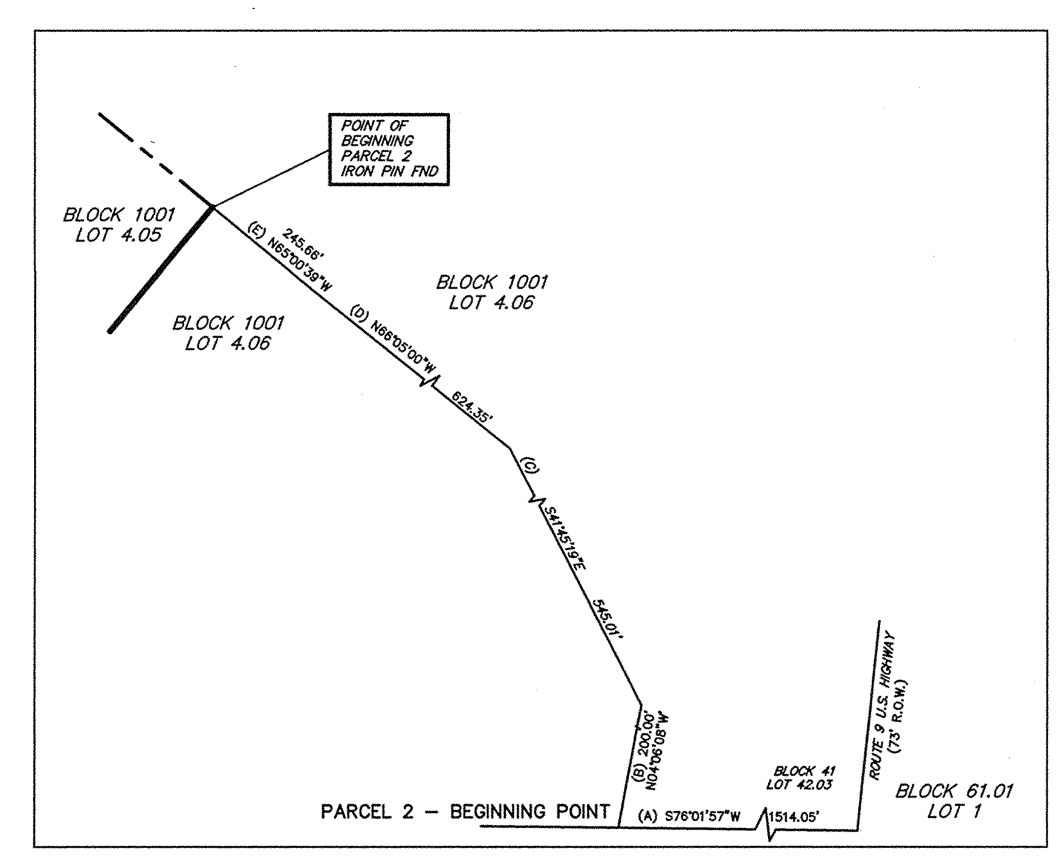
TAG	BEARING	DISTANCE
L1	S 14°53'36" E	41.91'
L2	S 75°06'24" W	941.32'
L3	N 14°53'36" W	41.91'
L4	N 75°06'24" E	20.00'
L5	S 14°53'36" E	21.91'
L6	N 75°06'24" E	652.01'
L7	N 14°53'36" W	1.42'
L8	N 69°36'49" W	22.12'
L9	N 14°53'36" W	7.72'
L10	N 75°06'24" E	23.72'
L11	S 69°36'49" E	17.57'
L12	S 14°53'36" E	11.77'
L13	N 75°06'24" E	229.31'
L14	N 14°53'36" W	21.91'
L15	N 75°06'24" E	20.00'

UNDERGROUND ELECTRIC
EASEMENT LINE TABLE D

TAG	BEARING	DISTANCE
L24	S 14°39'08" E	33.46'
L25	S 67°31'58" E	11.70'
L26	S 45°09'59" E	154.19'
L27	S 18°17'14" E	109.41'
L28	S 14°39'08" E	4.29'

UNDERGROUND ELECTRIC EASEMENT CURVE TABLE D

TAG	RADIUS	TANGENT	CHORD BEARING	CHORD DISTANCE	LENGTH
C1	50.00'	52°52'50"	S 41°05'33" E	44.53'	46.15'
C2	55.00'	22°21'59"	S 56°20'59" E	21.33'	21.47'
C3	112.00'	26°52'46"	S 31°43'37" E	52.06'	52.54'



PARCEL 2 - BEGINNING POINT

REV	DATE	DESCRIPTION	BY	CHKD
1	06/27/2017	ADDED WETLANDS AREAS WM AND WN	B.T.F	J.J.H.

Steven D. Parent
Professional Land Surveyor
N.J. Lic: 24GS03626900
SPARENT@DPKCONSULTING.NET

James J. Heiser
Professional Land Surveyor
N.J. Lic: 24GS04331100
JHEISER@DPKCONSULTING.NET
N.Y. Lic: 050932-1
6/27/17
date

DRAWN BY: T.J.D.
SCALE: 1" = 100'
CHK'D BY: J.J.H.
DATE: 01/20/2017

DPK CONSULTING
147 Union Ave, Ste. 1C, Middlesex, NJ 08846 P: 732-764-0100 F: 732-764-0990
NEW JERSEY CERTIFICATE OF AUTHORIZATION NO. 24GA28042200

WETLANDS SURVEY
TAX LOT 4.05
BLOCK 1001
REAR OF SOUTH MAIN STREET
TOWNSHIP OF LACEY
OCEAN COUNTY NEW JERSEY

DRAWING FILE: 16-7389WL01
PROJECT NUMBER: 16-7389
SHEET 1 / 1
REV. 1

Attachment D. Wetland Delineation Plan

Attachment E. Wetland Delineation Datasheets

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 6/24/2019

Applicant/Owner: Ocean Wind - Farm Property | State: NJ | Sampling Point: OP1-WA-UP

Investigators: David Brizzolara, Zachary Lehmann | Section, Township, Range: S ___ T Lacey R ___

Landform (hillslope, terrace, etc.): Terrace | Local Relief (concave, convex, none): None | Slope(%): 0-2%

Subregion (LRRor MLRA): LRR T | Lat: 39.815067 | Long: -74.166007 | Datum: Decimal Degrees

Soil Map Unit Name: Appoquinimink-Transquaking-Mispillion complex | NWI Classification: E2EM5P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:
Observation point taken along roadside, potential historic fill

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	

Wetland Hydrology Present? Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology indicators present

VEGETATION– Use scientific names of plants.

Sampling Point: OP1-WA-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rhus copallinum	60	Y	UPL
Rosa rugosa	30	Y	FACU
	90	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Solidago altissima	40	Y	FACU
Phragmites australis	10	N	FACW
	50	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Lonicera japonica	30	Y	FACU
Toxicodendron radicans	15	Y	FAC
Parthenocissus quinquefolia	10	N	FACU
	55	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	15	x 3 =	45
FACU species	110	x 4 =	440
UPL species	60	x 5 =	300
Column Totals:	195 (A)		805 (B)

Prevalence Index = B/A= 4.13

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

Negative for prevalence index and dominance test

SOIL

Sampling Point: OP1-WA-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 5	10YR 3/ 1	50	10YR 6/1	50	C	M	SAND	Organics
5 to 12	10YR 3/ 4	100					SAND	
12 to 20	10YR 3/ 3	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Organic Bodies (A6) (LRR P, T, U)
- [ ] 5 cm Mucky Mineral (A7) (LRR P, T, U)
- [ ] Muck Presence (A8) (LRR U)
- [ ] 1 cm Muck (A9) (LRR P, T)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Coast Prairie Redox (A16) (MLRA 150A)
- [ ] Sandy Mucky Mineral (S1) (LRR O, S)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR P, S, T, U)
- [ ] Polyvalue Below Surface (S8) (LRR S, T, U)
- [ ] Thin Dark Surface (S9) (LRR S, T, U)
- [ ] Loamy Mucky Mineral (F1) (LRR O)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Marl (F10) (LRR U)
- [ ] Depleted Ochric (F11) (MLRA 151)
- [ ] Iron-Manganese Masses (F12) (LRR O, P, T)
- [ ] Umbric Surface (F13) (LRR P, T, U)
- [ ] Delta Ochric (F17) (MLRA 151)
- [ ] Reduced Vertic (F18) (MLRA 150A, 150B)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149A)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- [ ] 1 cm Muck (A9) (LRR O)
- [ ] 2 cm Muck (A10) (LRR S)
- [ ] Reduced Vertic (F18) (outside MLRA 150A,B)
- [ ] Piedmont Floodplain Soils (F19) (LRR P, S, T)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12) (LRR T, U)
- [ ] Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [ ] **Restrictive Layer (if observed):**

Type: ________

Depth (inches): ________

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No hydric soil indicators observed

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 6/24/2019

Applicant/Owner: Ocean Wind - Farm Property | State: NJ | Sampling Point: OP2-WA-WET

Investigators: David Brizzolara Zachary Lehmann | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%)

Subregion (LRRor MLRA): LRR T | Lat: 39.815017 | Long: -74.165943 | Datum: Decimal Degrees

Soil Map Unit Name: Appoquinimink-Transquaking-Mispillion complex | NWI Classification: E2EM5P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ___

Hydric Soil Present? Yes X No ___

Wetland Hydrology Present? Yes X No ___

Is the Sampled Area within a Wetland? **Yes X No ___**

Remarks:
Emergent marsh area dominated by Phragmites australis, with patchy Spartina alterniflora at lower elevations. Hydrophytic vegetation, hydric soil, and wetland hydrology all present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [x] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?	X		3
Saturation Present? (includes capillary fringe)	X		0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology indicators present

VEGETATION– Use scientific names of plants. Sampling Point: OP2-WA-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	70	Y	FACW
	70	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	70 (A)		140 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test > 50%
X 3 - Prevalence Index ≤ 3.0
___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on dominance test and prevalence index

SOIL

Sampling Point: OP2-WA-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 20	10YR 2/ 1	100					SAND	Fiborous muck

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☑ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☑ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☑ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ____

Remarks:

Hydric soil indicators present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 6/27/2019

Applicant/Owner: Ocean Wind - Farm Property | State: NJ | Sampling Point: OP-WC-UP

Investigators: David Brizzolara, Zachary Lehmann | Section, Township, Range: S ___ T Lacey R ___

Landform (hillslope, terrace, etc.): Terrace | Local Relief (concave, convex, none): None | Slope(%): 0-2%

Subregion (LRRor MLRA): LRR T | Lat: 39.814399 | Long: -74.175766 | Datum: Decimal Degrees

Soil Map Unit Name: Berryland sand | NWI Classification: PFO1Bd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil X, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?**	**Yes** ___ **No** **X**
Hydric Soil Present?	Yes ___	No X		
Wetland Hydrology Present?	Yes ___	No X		

Remarks:
Filled area next to bermed trail.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** **X**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology indicators present

VEGETATION– Use scientific names of plants.

Sampling Point: OP-WC-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	25	Y	FAC
Pinus strobus	3	N	FACU
	28	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Vaccinium corymbosum	80	Y	FACW
Acer rubrum	5	N	FAC
Sassafras albidum	5	N	FACU
	90	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum amarum	15	Y	FAC
	15	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	45	x 3 =	135
FACU species	8	x 4 =	32
UPL species	0	x 5 =	0
Column Totals:	133 (A)		327 (B)

Prevalence Index = B/A= 2.46

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydric vegetation present based on dominance test and prevalence index

SOIL

Sampling Point: OP-WC-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 2	10YR 3/ 2	100					SAND	High root content
2 to 10	10YR 2/ 1	100					SAND	
10 to 20	10YR 2/ 1	80	10YR 4/1	20	D	M	SANDY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No hydric soil indicators present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 6/27/2019

Applicant/Owner: Ocean Wind - Farm Property | State: NJ | Sampling Point: OP-WC-WET

Investigators: David Brizzolara Zachary Lehmann | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Toe of Slope | Local Relief (concave, convex, none): Concave | Slope(%) 0-2%

Subregion (LRRor MLRA): LRR T | Lat: 39.814365 | Long: -74.175752 | Datum: Decimal Degrees

Soil Map Unit Name: Berryland sand | NWI Classification: PFO1Bd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
Hydrophytic vegetation, hydric soil, and wetland hydrology all present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [x] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	
Water Table Present?	Yes X	No ____	Depth (inches):	6
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches):	0

Wetland Hydrology Present? Yes X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology indicators present

VEGETATION – Use scientific names of plants.

Sampling Point: OP-WC-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	35	Y	FAC
	35	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Vaccinium corymbosum	30	Y	FACW
Sassafras albidum	5	N	FACU
	35	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	95	Y	FACW
Osmundastrum cinnamomeum	5	N	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	130	x 2 =	260
FAC species	35	x 3 =	105
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	170 (A)		385 (B)

Prevalence Index = B/A= 2.26

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on dominance test and prevalence index

SOIL

Sampling Point: OP-WC-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2/ 1	100			CS		SANDY LOAM	organic layer - mucky texture
4 to 20	10YR 2/ 1	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☑ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☑ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? Yes X No ____

Remarks:

Hydric soils present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 6/27/2019

Applicant/Owner: Ocean Wind - Farm Property | State: NJ | Sampling Point: OP-WDE-UP

Investigators: David Brizzolara, Zachary Lehmann | Section, Township, Range: S ___ T Lacey R ___

Landform (hillslope, terrace, etc.): Terrace | Local Relief (concave, convex, none): None | Slope(%): 0-2%

Subregion (LRRor MLRA): LRR T | Lat: 39.811729 | Long: -74.170307 | Datum: Decimal Degrees

Soil Map Unit Name: Appoquinimink-Transquaking-Mispillion complex | NWI Classification: E2EM5P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:
Upland Island

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators present

VEGETATION – Use scientific names of plants.

Sampling Point: OP-WDE-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Baccharis halimifolia	5	Y	FAC
	5	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Lolium perenne	65	Y	FACU
Desmodium canadense	25	Y	FAC
Euthamia graminifolia	10	N	FAC
Verbena hastata	5	N	FAC
	105	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	45	x 3 =	135	
FACU species	65	x 4 =	260	
UPL species	0	x 5 =	0	
Column Totals:	110	(A)	395	(B)

Prevalence Index = B/A= 3.59

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

__ 3 - Prevalence Index ≤ 3.0

__ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** __

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

Hydrophytic vegetation present based on dominance test > 50%

SOIL

Sampling Point: OP-WDE-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	10YR 2/ 1	100					SAND	
8 to 14	10YR 4/ 2	80	10yr 3/4	20	C	M	SANDY LOAM	
14 to 20	10YR 8/ 3	60	10yr 5/8	40	C	M	SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No hydric soils present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted   City/County: Ocean County   Sampling Date: 6/27/2019

Applicant/Owner: Ocean Wind - Farm Property   State: NJ   Sampling Point: OP-WD-WET

Investigators: David Brizzolara   Zachary Lehmann   Section, Township, Range S   T Lacey   R

Landform (hillslope, terrace, etc.): Depression   Local Relief (concave, convex, none): Concave   Slope(%) 0-2%

Subregion (LRRor MLRA): LRR T   Lat: 39.812020   Long: -74.170243   Datum: Decimal Degrees

Soil Map Unit Name: Appoquinimink-Transquaking-Mispillion complex   NWI Classification: E2EM5P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed?   Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic?   (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?**	**Yes X No**
Hydric Soil Present?	Yes X	No		
Wetland Hydrology Present?	Yes X	No		

Remarks:
Hydrophytic vegetaion, hydric soil, and wetland hydrology all present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [x] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [x] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)	X		10

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology present

VEGETATION– Use scientific names of plants.

Sampling Point: OP-WD-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Vaccinium corymbosum	25	Y	FACW
	25	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	100	Y	FACW
Onoclea sensibilis	50	Y	FACW
	150	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	175	x 2 =	350
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	175 (A)		350 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on dominance test and prevalence index

SOIL

Sampling Point: OP-WD-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2/ 1	100					SAND	roots
4 to 20	10YR 2/ 1	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☑ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ____

Depth (inches): ____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

Hydric soils present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 6/26/2019

Applicant/Owner: Ocean Wind - Farm Property State: NJ Sampling Point: OP-WE-UP

Investigators: David Brizzolara Zachary Lehmann Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): None Slope(%) 0-2%

Subregion (LRRor MLRA): LRR T Lat: 39.812156 Long: -74.186940 Datum: Decimal Degrees

Soil Map Unit Name: Berryland sand NWI Classification: E2EM5P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
No hydrophytic vegetation, hyric soil, or wetland hydrology present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	

Wetland Hydrology Present? Yes ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology indicators present

VEGETATION – Use scientific names of plants.

Sampling Point: OP-WE-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	40	Y	FACU
Nyssa sylvatica	20	Y	FAC
Sassafras albidum	5	N	FACU
	65	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Vaccinium corymbosum	25	Y	FACW
Quercus stellata	20	Y	UPL
Ilex sp.	2	N	
	47	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Fescue sp.	1	N	
	1	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Smilax rotundifolia	1	N	FAC
	1	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	21	x 3 =	63
FACU species	45	x 4 =	180
UPL species	20	x 5 =	100
Column Totals:	111 (A)		393 (B)

Prevalence Index = B/A= 3.54

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

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

Hydrophytic vegetation not present due to dominance test of 0% and prevalance index

SOIL

Sampling Point: OP-WE-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 2	10YR 2/ 2	100					SAND	Organics
2 to 16	10YR 5/ 3	100					SAND	
16 to 20	10YR 3/ 1	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Organic Bodies (A6) (LRR P, T, U)
- [ ] 5 cm Mucky Mineral (A7) (LRR P, T, U)
- [ ] Muck Presence (A8) (LRR U)
- [ ] 1 cm Muck (A9) (LRR P, T)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Coast Prairie Redox (A16) (MLRA 150A)
- [ ] Sandy Mucky Mineral (S1) (LRR O, S)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR P, S, T, U)
- [ ] Polyvalue Below Surface (S8) (LRR S, T, U)
- [ ] Thin Dark Surface (S9) (LRR S, T, U)
- [ ] Loamy Mucky Mineral (F1) (LRR O)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Marl (F10) (LRR U)
- [ ] Depleted Ochric (F11) (MLRA 151)
- [ ] Iron-Manganese Masses (F12) (LRR O, P, T)
- [ ] Umbric Surface (F13) (LRR P, T, U)
- [ ] Delta Ochric (F17) (MLRA 151)
- [ ] Reduced Vertic (F18) (MLRA 150A, 150B)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149A)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- [ ] 1 cm Muck (A9) (LRR O)
- [ ] 2 cm Muck (A10) (LRR S)
- [ ] Reduced Vertic (F18) (outside MLRA 150A,B)
- [ ] Piedmont Floodplain Soils (F19) (LRR P, S, T)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12) (LRR T, U)
- [ ] Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [ ] **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** X

Remarks:

No hydric soils present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 6/27/2019

Applicant/Owner: Ocean Wind - Farm Property State: NJ Sampling Point: OP-WE-WET

Investigators: Steve Seymour James Eberhardt Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): None Slope(%) 0-2%

Subregion (LRRor MLRA): LRR T Lat: 39.811366 Long: -74.185059 Datum: Decimal Degrees

Soil Map Unit Name: Atsion sand NWI Classification: E2EM5P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
Site hydrology affected by extensive/historical ditching. Pit located in WLE.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [x] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes X No ___	Depth (inches):	2
Water Table Present?	Yes X No ___	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches):	0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Standing water in old ditch 0.5-6" deep, no discerable flow.

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: OP-WE-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	50	Y	FAC
	50	=Total Cover	
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	50	Y	FACW
Lemna sp.	10	N	OBL
	60	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	50	x 2 =	100
FAC species	50	x 3 =	150
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		260 (B)

Prevalence Index = B/A= 2.36

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on dominance test and prevalence test

SOIL

Sampling Point: OP-WE-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 6	10YR 5/ 4	100					SAND	peat, plant fibers
6 to 10	10YR 4/ 1	100					SAND	
10 to 20	10YR 3/ 1	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Organic Bodies (A6) (LRR P, T, U)
- [ ] 5 cm Mucky Mineral (A7) (LRR P, T, U)
- [ ] Muck Presence (A8) (LRR U)
- [ ] 1 cm Muck (A9) (LRR P, T)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Coast Prairie Redox (A16) (MLRA 150A)
- [ ] Sandy Mucky Mineral (S1) (LRR O, S)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR P, S, T, U)
- [ ] Polyvalue Below Surface (S8) (LRR S, T, U)
- [ ] Thin Dark Surface (S9) (LRR S, T, U)
- [ ] Loamy Mucky Mineral (F1) (LRR O)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Marl (F10) (LRR U)
- [ ] Depleted Ochric (F11) (MLRA 151)
- [ ] Iron-Manganese Masses (F12) (LRR O, P, T)
- [ ] Umbric Surface (F13) (LRR P, T, U)
- [ ] Delta Ochric (F17) (MLRA 151)
- [ ] Reduced Vertic (F18) (MLRA 150A, 150B)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149A)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- [ ] 1 cm Muck (A9) (LRR O)
- [ ] 2 cm Muck (A10) (LRR S)
- [ ] Reduced Vertic (F18) (outside MLRA 150A,B)
- [ ] Piedmont Floodplain Soils (F19) (LRR P, S, T)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12) (LRR T, U)
- [ ] Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [x] **Restrictive Layer (if observed):**

Type: silty clay

Depth (inches): 10-20

Hydric Soil Present? **Yes** X **No** ____

Remarks:

Deep (>2') organic deposits in bends of the ditches. No discerable flow; water appears stagnant. Gravel in sand layer consists of glacially rounded quartz; 20% of layer.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 5/5/2020

Applicant/Owner: Ocean Wind - Holtec Property | State: NJ | Sampling Point: WL-A-UPL

Investigators: Stephen Seymour, Jaclyn Chapman | Section, Township, Range: S ___ T Lacey R ___

Landform (hillslope, terrace, etc.): Level | Local Relief (concave, convex, none): None | Slope(%): 0

Subregion (LRRor MLRA): LRR T | Lat: 39.810717 | Long: -74.199280 | Datum: WGS 1984

Soil Map Unit Name: Psamments, 0-2% slope | NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?**	**Yes** ___ **No** **X**
Hydric Soil Present?	Yes ___ No X		
Wetland Hydrology Present?	Yes ___ No X		

Remarks:
Area sampled is not a wetland based on lack of hydrophytic vegetation, hydric soils, and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): ___	**Wetland Hydrology Present? Yes** ___ **No X**
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): ___	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology present.

VEGETATION – Use scientific names of plants.

Sampling Point: WL-A-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	20	Y	FACU
Pinus sylvestris	20	Y	NI
	40	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Juniperus virginiana	20	Y	FACU
Myrica pensylvanica	15	Y	FAC
	35	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum dichotomiflorum	30	Y	FACW
Fragaria virginiana	20	Y	FACU
	50	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	15	x 3 =	45
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	105 (A)		345 (B)

Prevalence Index = B/A= 3.29

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

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

Hydrophytic vegetation not dominant and prevlance test greater than 3

SOIL

Sampling Point: WL-A-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 3/ 2	100					ORGANIC/SANDY LOAM	
6 to 20	10YR 5/ 6	100					SANDY SILT	40% rounded pebbles

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:

Upland soil pit about 30' southeast of wetland pit. Hydric soils not present.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 5/5/2020

Applicant/Owner: Ocean Wind - Holtec Property State: NJ Sampling Point: WL-A-WET

Investigators: Stephen Seymour Jaclyn Chapman Section, Township, Range S T Lacey R New J

Landform (hillslope, terrace, etc.): Level Local Relief (concave, convex, none): Concave Slope(%) 0

Subregion (LRRor MLRA): LRR T Lat: 39.810717 Long: -74.199280 Datum: WGS 1984

Soil Map Unit Name: Psamments 0-2% slopes NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No ___**
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
Depressional wetland dominated by fall panicum.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes X No ___	Depth (inches):	1
Water Table Present?	Yes X No ___	Depth (inches):	To Surface
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches):	To Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Ponding observed. Wetland hydrology present.

VEGETATION – Use scientific names of plants. Sampling Point: WL-A-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	10	Y	FAC
Juniperus virginiana	10	Y	FACU
	20	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Myrica pensylvanica	30	Y	FAC
	30	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum dichotomiflorum	90	Y	FACW
	90	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	40	x 3 =	120
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	140 (A)		340 (B)

Prevalence Index = B/A= 2.43

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

__ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X **No** __

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

Hydrophytic vegetation present based on dominance of species that are OBL, FACW, or FAC greater than 50% and a prevalence index less than or equal to 3.

SOIL

Sampling Point: WL-A-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	10YR 4/ 2	100					FINE SANDY LOAM	
8 to 20	10YR 4/ 2	80	10YR 4/6	20	C	M	FINE CLAY SAND	20% rounded pebbles

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☑ **Restrictive Layer (if observed):**

Type: Clay

Depth (inches): 9

Hydric Soil Present? **Yes** X **No** ____

Remarks:

Hydric soils present based on soils meeting criteria for the depleted matrix (F3) indicator

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 5/5/2020

Applicant/Owner: Ocean Wind - Holtec Property State: NJ Sampling Point: WL-B-UPL

Investigators: Stephen Seymour Jaclyn Chapman Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): Concave Slope(%) 10

Subregion (LRRor MLRA): LRR T Lat: 39.810893 Long: -74.200239 Datum: WGS 1984

Soil Map Unit Name: Psamments, 0-2% slopes NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?**	**Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No X		
Wetland Hydrology Present?	Yes ___	No X		

Remarks:
Soils probably all old fill from nearby road construction. Area is not a wetland based on lack of hydrophytic vegetation, hydric soils, and wetland hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present.

VEGETATION – Use scientific names of plants.

Sampling Point: WL-B-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Pinus resinosa	30	Y	FACU
Prunus virginiana	20	Y	FACU
Pinus sylvestris	10	Y	NI
	60	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Prunus virginiana	25	Y	FACU
	25	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Acer rubrum	30	Y	FAC
Juniperus virginiana	10	Y	FACU
Thuja occidentalis	10	Y	FACW
	50	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Celastrus orbiculatus	10	Y	FACU
	10	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 28.6% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	30	x 3 =	90
FACU species	95	x 4 =	380
UPL species	0	x 5 =	0
Column Totals:	135 (A)		490 (B)

Prevalence Index = B/A= 3.63

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

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

Hydrophytic vegetation not dominant based on less than 50% of species that are OBL, FACW, or FAC and prevalence index greater than 3

SOIL

Sampling Point: WL-B-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	10YR 3/ 2	100					FINE SANDY LOAM	
8 to 18	10YR 5/ 3	100					FINE CLAY LOAM	
18 to 20	10YR 2/ 1	100					GRANULAR BLACK	Granular coal residue

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Layer of coal residue (black, granular) encountered at 18-20" below ground surface. No hydric soils present due to not meeting any indicator criteria.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - Holtect Property | State: NJ | Sampling Point: WL-B-WET2

Investigators: Zak Lehmann, Jaclyn Chapman | Section, Township, Range: S ___ T Lacey R ___

Landform (hillslope, terrace, etc.): Level | Local Relief (concave, convex, none): Concave | Slope(%): 0

Subregion (LRRor MLRA): LRR T | Lat: 39.810737 | Long: -74.200351 | Datum: WGS 1984

Soil Map Unit Name: Psamments, 0-2% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No ___**
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
Area is a wetland based on presence of hydrophytic vegetation, hydric soils, and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes X No ___	Depth (inches):	2
Water Table Present?	Yes X No ___	Depth (inches):	To surface
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches):	To surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology present

VEGETATION – Use scientific names of plants. Sampling Point: WL-B-WET2

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test > 50%
X 3 - Prevalence Index ≤ 3.0
___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point: WL-B-WET2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 4	10YR 2 / 1	100		70	CS	M	SANDY CLAY	Fibrous black muck; 70% particles masked with organic
4 to 20	10YR 5 / 2	100		70	CS	M	SANDY CLAY	70% particles masked with organic

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☑ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

Hydric soil indicators present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - Holtec Property State: NJ Sampling Point: WL-C-UP

Investigators: Zak Lehmann Jaclyn Chapman Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Level Local Relief (concave, convex, none): None Slope(%) 0

Subregion (LRRor MLRA): LRR T Lat: 39.810631 Long: -74.201509 Datum: WGS 1984

Soil Map Unit Name: Psamments, 0-2% slopes NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?**	**Yes ____ No X**
Hydric Soil Present?	Yes ____ No X		
Wetland Hydrology Present?	Yes ____ No X		

Remarks:
Area is not a wetland based on lack of hydrophytic vegetation, soils, and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ____ No X	Depth (inches): ____	
Water Table Present?	Yes ____ No X	Depth (inches): ____	**Wetland Hydrology Present? Yes ____ No X**
Saturation Present? (includes capillary fringe)	Yes ____ No X	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION – Use scientific names of plants.

Sampling Point: WL-C-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	10	Y	FACU
Prunus serotina	5	Y	FACU
	15	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Myrica pensylvanica	50	Y	FAC
Rhus copallinum	40	Y	UPL
	90	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Mollugo verticillata	1	Y	FAC
Osmundastrum cinnamomeum	1	Y	FACW
	2	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus idaeus	80	Y	FACU
Parthenocissus quinquefolia	5	N	FACU
	85	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.9% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	51	x 3 =	153
FACU species	100	x 4 =	400
UPL species	40	x 5 =	200
Column Totals:	192 (A)		755 (B)

Prevalence Index = B/A= 3.93

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

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

No hydric vegetation dominance

SOIL

Sampling Point: WL-C-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 20	10YR 5 / 1	60	10YR2/1	40	C	M	SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:

No hydric soils

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 5/5/2020

Applicant/Owner: Ocean Wind - Holtec Property | State: NJ | Sampling Point: WL-C-WET

Investigators: Stephen Seymour Jaclyn Chapman | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%) 5

Subregion (LRRor MLRA): LRR T | Lat: 39.810860 | Long: -74.200654 | Datum: WGS 1984

Soil Map Unit Name: Psamments, 0-2% slope | NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?**	**Yes X No ____**
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____		

Remarks:
Wetland has two lobes ~ easterly originates at a flowing culvert under "Discharge Drive". Westerly lobe originates in a wet meadow. Lobes converge about 30' south of wetland discharge to Oyster Creek. Area is a wetland due to presence of hydrophytic vegetation, hydric soils, and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ____ No X	Depth (inches):	
Water Table Present?	Yes X No ____	Depth (inches):	Surface
Saturation Present? (includes capillary fringe)	Yes X No ____	Depth (inches):	Surface

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology present

VEGETATION – Use scientific names of plants. Sampling Point: WL-C-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	60	Y	FAC
	60	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Clethra alnifolia	70	Y	FACW
Acer rubrum	20	Y	FAC
	90	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	40	Y	FACW
Onoclea sensibilis	20	Y	FACW
	60	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Toxicodendron pubescens	1	N	FACU
	1	=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: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	130	x 2 =	260
FAC species	80	x 3 =	240
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	211 (A)		504 (B)

Prevalence Index = B/A= 2.39

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

__ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** __

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

Hydrophytic vegetation present based on dominance of species that are OBL, FACW, or FC greater than 50% and a prevalence index less than or equal to 3.

SOIL

Sampling Point: WL-C-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 9	10YR 4 / 1	100					ORGANIC LOAM	Plant roots, 20% sand
9 to 20	10YR 3 / 1	100					SANDY CLAY	Very soft saturated sand with clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☑ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:

Extensive organic material found within the first 9 in of the soil profile. Hydric soils present based on soils meeting criteria for the Histic Epipedon (A2) indicator.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - JCP&L Property | State: NJ | Sampling Point: WL-D-UP

Investigators: Zak Lehmann, Jaclyn Chapman | Section, Township, Range: S ___ T Lacey R ___

Landform (hillslope, terrace, etc.): Level | Local Relief (concave, convex, none): None | Slope(%): 0

Subregion (LRRor MLRA): LRR T | Lat: 39.810493 | Long: -74.200617 | Datum: WGS 1984

Soil Map Unit Name: Manahawkin muck, 0-2% slopes, frequently flooded | NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

	Yes	No
Hydrophytic Vegetation Present?	X	
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:
Area contains presence of hydrophytic vegetation based on prevalence index; however, area Is not a wetland based on lack of hydric soils and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology present

VEGETATION – Use scientific names of plants. Sampling Point: WL-D-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	20	Y	FACU
	20	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Juniperus virginiana	5	Y	FACU
Myrica pensylvanica	5	Y	FAC
Acer rubrum	1	N	FAC
Pinus rigida	1	N	FACU
	12	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	60	Y	FACW
Solidago sempervirens	10	N	FACW
Polygonum achoreum	1	N	FAC
	71	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus idaeus	1	Y	FACU
	1	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	7	x 3 =	21
FACU species	27	x 4 =	108
UPL species	0	x 5 =	0
Column Totals:	104 (A)		269 (B)

Prevalence Index = B/A= 2.59

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydric vegetation present based on prevalence index alone

SOIL

Sampling Point: WL-D-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 10	10YR 4/ 3						SANDY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☑ **Restrictive Layer (if observed):**

Type: Fill

Depth (inches): 10

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

Restrictive layer at 10 inches; no inclusions or concretions

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted   City/County: Ocean County   Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - Holtec Property   State: NJ   Sampling Point: WL-D-WET

Investigators: Zak Lehmann   Jaclyn Chapman   Section, Township, Range S   T Lacey   R

Landform (hillslope, terrace, etc.): Toe of Slope   Local Relief (concave, convex, none): Concave   Slope(%) 0

Subregion (LRRor MLRA): LRR T   Lat: 39.810428   Long: -74.200485   Datum: WGS 1984

Soil Map Unit Name: Manahawkin muck, 0 2 percent slopes, frequently flooded   NWI Classification: PSS1Eh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed?   Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic?   (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No ___**
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
The area is a wetland based on dominance of hydrophytic vegetation and presence of hydric soils and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches):	2
Water Table Present?	Yes ___	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water in the soil pit location; wetland hydrology present

VEGETATION – Use scientific names of plants.

Sampling Point: WL-D-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test > 50%
X 3 - Prevalence Index ≤ 3.0
___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present

SOIL

Sampling Point: WL-D-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	10YR 2 / 1	100		70	CS	M	SAND	Fibrous muck; 70% particles masked with organic
8 to 20	10YR 4 / 1	100		70	CS	M	SAND	Fibrous muck; 70% of particles masked with organic

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☑ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:

Hydric soils present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 5/7/2020

Applicant/Owner: Ocean Wind - Holtec Property State: NJ Sampling Point: WL-E-UPL

Investigators: Stephen Seymour Jaclyn Chapman Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Road side Local Relief (concave, convex, none): Concave Slope(%) 5

Subregion (LRRor MLRA): LRR T Lat: 39.808934 Long: -74.198696 Datum: WGS 1984

Soil Map Unit Name: Psamments, 0-2% slope NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** **X**
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:
Area is not a wetland due to no presence of hydrophytic vegetation, hydric soils, and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): ___	**Wetland Hydrology Present? Yes ___ No X**
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): ___	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION – Use scientific names of plants.

Sampling Point: WL-E-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Quercus palustris	30	Y	FACW
Pinus resinosa	20	Y	FACU
Prunus virginiana	20	Y	FACU
Sassafras albidum	20	Y	FACU
Acer rubrum	10	N	FAC
	100	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Clethra alnifolia	30	Y	FACW
	30	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Fragaria virginiana	20	Y	FACU
Artemisia annua	10	Y	FACU
Juniperus virginiana	10	Y	FACU
	40	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Celastrus orbiculatus	15	Y	FACU
Parthenocissus quinquefolia	1	N	FACU
	16	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 22.2% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	10	x 3 =	30
FACU species	116	x 4 =	464
UPL species	0	x 5 =	0
Column Totals:	186 (A)		614 (B)

Prevalence Index = B/A= 3.30

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

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

Hydric vegetation not present based on less than 50% of species that are OBL, FACW, or FAC and a prevalence index greater than 3.

SOIL

Sampling Point: WL-E-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 7	10YR 3/ 2	100					FINE SANDY LOAM	
7 to 20	10YR 6/ 8	100					COARSE SILTY SAND	10% rounded quartz pebbles

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No hydric soils present based on soils not meeting any of the hydric soil indicators

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 5/7/2020

Applicant/Owner: Ocean Wind - Holtec Property | State: NJ | Sampling Point: WL-E-WET

Investigators: Stephen Seymour Jaclyn Chapman | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Level | Local Relief (concave, convex, none): None | Slope(%) 0

Subregion (LRRor MLRA): LRR T | Lat: 39.808934 | Long: -74.498696 | Datum: WGS 1984

Soil Map Unit Name: Manahawkin Muck, 0-2% slope | NWI Classification: PFO4Cg

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
Wetland is an Atlantic white cedar swamp with a few red maple. Very dense tree canopy/closure with sparse shrub layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	
Water Table Present?	Yes X No ___	Depth (inches):	To Surface
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches):	To Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Very shallow (<10") root zone for Atlantic white cedars. Wetland hydrology present based on a high water table, saturation, and water-stained leaves.

VEGETATION – Use scientific names of plants.

Sampling Point: WL-E-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Chamaecyparis thyoides	80	Y	OBL
Acer rubrum	10	N	FAC
	90	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Clethra alnifolia	20	Y	FACW
Vaccinium corymbosum	20	Y	FACW
Viburnum dentatum	10	Y	FAC
	50	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Osmundastrum cinnamomeum	40	Y	FACW
	40	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Toxicodendron radicans	20	Y	FAC
	20	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	80	x 2 =	160
FAC species	40	x 3 =	120
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	200 (A)		360 (B)

Prevalence Index = B/A= 1.80

Hydrophytic Vegetation Indicators:

- __ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test > 50%
- X 3 - Prevalence Index ≤ 3.0
- __ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** __

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

Fairly even-aged stand of Atlantic white cedar; most trees are 6-10" DBH; few are 12" DBH. Hydric vegetation present based on 100% of species that are OBL, FACW, or FAC and a prevalence index less than or equal to 3.

SOIL

Sampling Point: WL-E-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 to 20	10YR 2/ 1	100					PEATY MUCK	Soft saturated peaty muck

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [x] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Organic Bodies (A6) (LRR P, T, U)
- [ ] 5 cm Mucky Mineral (A7) (LRR P, T, U)
- [ ] Muck Presence (A8) (LRR U)
- [ ] 1 cm Muck (A9) (LRR P, T)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Coast Prairie Redox (A16) (MLRA 150A)
- [ ] Sandy Mucky Mineral (S1) (LRR O, S)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR P, S, T, U)
- [ ] Polyvalue Below Surface (S8) (LRR S, T, U)
- [ ] Thin Dark Surface (S9) (LRR S, T, U)
- [ ] Loamy Mucky Mineral (F1) (LRR O)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Marl (F10) (LRR U)
- [ ] Depleted Ochric (F11) (MLRA 151)
- [ ] Iron-Manganese Masses (F12) (LRR O, P, T)
- [ ] Umbric Surface (F13) (LRR P, T, U)
- [ ] Delta Ochric (F17) (MLRA 151)
- [ ] Reduced Vertic (F18) (MLRA 150A, 150B)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149A)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- [ ] 1 cm Muck (A9) (LRR O)
- [ ] 2 cm Muck (A10) (LRR S)
- [ ] Reduced Vertic (F18) (outside MLRA 150A,B)
- [ ] Piedmont Floodplain Soils (F19) (LRR P, S, T)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12) (LRR T, U)
- [ ] Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:

Soils are a very soft mucky peat to > 3 ft below ground surface. Large open water to east consistent with aerial photos and NWI mapping. Hydric soils present based on criteria meeting the histosol (H1) indicator.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - Forked River, LLC State: NJ Sampling Point: WL-F-UP

Investigators: Zak Lehmann Jaclyn Chapman Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Level Local Relief (concave, convex, none): None Slope(%) 0

Subregion (LRRor MLRA): LRR T Lat: 39.811434 Long: -74.209815 Datum: WGS 1984

Soil Map Unit Name: Lakehurst sand, 0 to 5 percent slopes NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:
Area does contain hydrophytic vegetation; however, this area is not a wetland based on lack of hydric soils and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	___
Water Table Present?	Yes ___	No X	Depth (inches):	___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION – Use scientific names of plants.

Sampling Point: WL-F-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Pinus rigida	80	Y	FACU
	80	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Myrica pensylvanica	40	Y	FAC
Pinus rigida	5	N	FACU
	45	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum dichotomiflorum	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	40	x 3 =	120
FACU species	85	x 4 =	340
UPL species	0	x 5 =	0
Column Totals:	225 (A)		660 (B)

Prevalence Index = B/A= 2.93

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

__ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** __

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

Hydrophytic vegetation presented based on dominance test and prevalence index

SOIL

Sampling Point: WL-F-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 3/ 1	50	10YR7/2	50	C	M	SAND	
4 to 20	10YR 6/ 6	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No hydric soil indicators present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 5/7/2020

Applicant/Owner: Ocean Wind - Forked River Property | State: NJ | Sampling Point: WL-F-WET

Investigators: Stephen Seymour, Jaclyn Chapman | Section, Township, Range: S __ T Lacey R __

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%): 0

Subregion (LRRor MLRA): LRR T | Lat: 39.811394 | Long: -74.209175 | Datum: WGS 1984

Soil Map Unit Name: Lakehurst Sand 0-5% slopes | NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No __ (If No, explain in Remarks)

Are Vegetation __, Soil __, Hydrology __, significantly disturbed? Are "Normal Circumstances" present? Yes X No __

Are Vegetation __, Soil __, Hydrology __, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No __	**Is the Sampled Area within a Wetland?** **Yes** X **No** __
Hydric Soil Present?	Yes X No __	
Wetland Hydrology Present?	Yes X No __	

Remarks:
Narrow reed grass-dominated wetland. Source is a corrugated steel culvert and a concrete headwall with very weak outflow.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes __ No X	Depth (inches):	
Water Table Present?	Yes __ No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes __ No X	Depth (inches):	

Wetland Hydrology Present? **Yes** X **No** __

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Adjacent uplands are early successional red cedar and pitch pines ~5-15' tall. Saturation at approximately 15 inches below the ground surface. Wetland hydrology present based on water-stained leaves.

VEGETATION – Use scientific names of plants.

Sampling Point: WL-F-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Juniperus virginiana	20	Y	FACU
Pinus resinosa	20	Y	FACU
	40	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum dichotomiflorum	60	Y	FACW
Phragmites australis	30	Y	FACW
	90	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals:	130 (A)		340 (B)

Prevalence Index = B/A= 2.62

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X **No** ___

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

Hydrophytic vegetation present based on a prevalence index less than or equal to 3.

SOIL

Sampling Point: WL-F-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 4/ 1	100					FINE SANDY LOAM	
4 to 11	10YR 5/ 2	70	10YR 5/6	30	C	M	FINE SANDY LOAM	
11 to 20	10YR 3/ 2	100					FINE SANDY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:

Hydric soils present based on soils meeting the Depleted Matrix (F3) indicator

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 8/11/2020

Applicant/Owner: Ocean Wind - Forked River, LLC | State: NJ | Sampling Point: WL-G1-UP

Investigators: Zak Lehmann Jaclyn Chapman | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): None | Local Relief (concave, convex, none): None | Slope(%) 0

Subregion (LRRor MLRA): LRR T | Lat: 39.811379 | Long: -74.212809 | Datum: WGS 1984

Soil Map Unit Name: Lakehurst Sand, 0-5% slopes | NWI Classification: None mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:
Hydrophytic vegetation present based on prevalence index alone; however, area is not a wetland based on lack of hydric soils and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION – Use scientific names of plants.

Sampling Point: WL-G1-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	20	Y	FACU
Prunus serotina	5	Y	FACU
	25	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Rubus idaeus	20	Y	FACU
	20	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum dichotomiflorum	80	Y	FACW
Eupatorium perfoliatum	10	N	FACW
Phragmites australis	10	N	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	45	x 4 =	180
UPL species	0	x 5 =	0
Column Totals:	145 (A)		380 (B)

Prevalence Index = B/A= 2.62

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

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

Hydrophytic vegetation based on prevalence index alone

SOIL

Sampling Point: WL-G1-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 4 / 3	100					SAND	
4 to 12	10YR 6 / 6	100					SAND	
12 to 20	10YR 7 / 2	60	10YR5/6	40	C	M	SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No hydric soil indicators present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 5/7/2020

Applicant/Owner: Ocean Wind - Forked River Property State: NJ Sampling Point: WL-G-WET

Investigators: Stephen Seymour Jaclyn Chapman Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): None Local Relief (concave, convex, none): None Slope(%) 0

Subregion (LRRor MLRA): LRR T Lat: 39.811349 Long: -74.213354 Datum: WGS 1984

Soil Map Unit Name: Lakehurst sand 0-5% slopes NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?**	**Yes X No ___**
Hydric Soil Present?	Yes X	No ___		
Wetland Hydrology Present?	Yes X	No ___		

Remarks:
Area is a wetland based on presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Wetland appears to be isolated with no apparent oulet.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	
Water Table Present?	Yes X	No ___	Depth (inches):	3
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	To surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Extensive areas with shallow (1-4" inundation) in the three polygons that comprise Wetland G. Block 1001, Lot 4.06 is level. Surrounding uplands in early successional stage ~6-12 ft red cedar and pitch pine.

VEGETATION – Use scientific names of plants.

Sampling Point: WL-G-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Juniperus virginiana	10	Y	FACU
	10	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum dichotomiflorum	40	Y	FACW
Phragmites australis	30	Y	FACW
	70	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	80 (A)		180 (B)

Prevalence Index = B/A= 2.25

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on dominance of species that are OBL, FACW, or FAC greater than 50% and a prevalence index less than or equal to 3.

SOIL

Sampling Point: WL-G-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 6 / 6	100					FINE SAND	Wet fine sand
4 to 20	10YR 4 / 1	70	10YR 5/4	30	C	M	FINE SAND	Wet silty sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Organic Bodies (A6) (LRR P, T, U)
- [ ] 5 cm Mucky Mineral (A7) (LRR P, T, U)
- [ ] Muck Presence (A8) (LRR U)
- [ ] 1 cm Muck (A9) (LRR P, T)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Coast Prairie Redox (A16) (MLRA 150A)
- [ ] Sandy Mucky Mineral (S1) (LRR O, S)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR P, S, T, U)
- [ ] Polyvalue Below Surface (S8) (LRR S, T, U)
- [ ] Thin Dark Surface (S9) (LRR S, T, U)
- [ ] Loamy Mucky Mineral (F1) (LRR O)
- [ ] Loamy Gleyed Matrix (F2)
- [x] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Marl (F10) (LRR U)
- [ ] Depleted Ochric (F11) (MLRA 151)
- [ ] Iron-Manganese Masses (F12) (LRR O, P, T)
- [ ] Umbric Surface (F13) (LRR P, T, U)
- [ ] Delta Ochric (F17) (MLRA 151)
- [ ] Reduced Vertic (F18) (MLRA 150A, 150B)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149A)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- [ ] 1 cm Muck (A9) (LRR O)
- [ ] 2 cm Muck (A10) (LRR S)
- [ ] Reduced Vertic (F18) (outside MLRA 150A,B)
- [ ] Piedmont Floodplain Soils (F19) (LRR P, S, T)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12) (LRR T, U)
- [ ] Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:

One box turtle and northern harrier observed in vicinity. Hydric soils present based on soils meeting criteria for the Depleted Matrix (F3) indicator.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted   City/County: Ocean County   Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - JCP&L Property   State: NJ   Sampling Point: WL-H-UP

Investigators: Zak Lehmann   Jaclyn Chapman   Section, Township, Range S   T Lacey   R

Landform (hillslope, terrace, etc.): Level   Local Relief (concave, convex, none): None   Slope(%) 0

Subregion (LRRor MLRA): LRR T   Lat: 39.810120   Long: -74.204154   Datum: WGS 1984

Soil Map Unit Name: Psamments, 0 - 2% slopes   NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed?   Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic?   (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No X**
Hydric Soil Present?	Yes	No X		
Wetland Hydrology Present?	Yes	No X		

Remarks:
Area contains hydrophytic vegetation present based on prevalence indicator alone; hoever, area is not a wetland based on lack of hydric soils and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____	
Water Table Present?	Yes ____	No X	Depth (inches): ____	**Wetland Hydrology Present? Yes ____ No X**
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION – Use scientific names of plants. Sampling Point: WL-H-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	20	Y	FACU
Pinus rigida	20	Y	FACU
Acer rubrum	10	Y	FAC
	50	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Viburnum dentatum	1	Y	FAC
	1	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	60	Y	FACW
Rubus idaeus	20	Y	FACU
Polygonum achoreum	5	N	FAC
	85	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	16	x 3 =	48
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	136 (A)		408 (B)

Prevalence Index = B/A= 3.00

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

__ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** __

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

Hydrophytic vegetation present based on pravelaence index alone

SOIL

Sampling Point: WL-H-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2/ 1	60	10YR6/2	40	C	M	SAND	
4 to 12	10YR 6/ 2	60	10YR2/1	40	C	M	SAND	
12 to 20	10YR 5/ 6	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:

No hydric soil indicators present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted   City/County: Ocean County   Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - Holtec Property   State: NJ   Sampling Point: WL-H-WET

Investigators: Zak Lehmann   Jaclyn Chapman   Section, Township, Range S   T Lacey   R

Landform (hillslope, terrace, etc.): Depression   Local Relief (concave, convex, none): None   Slope(%) 0

Subregion (LRRor MLRA): LRR T   Lat: 39.810053   Long: -74.204066   Datum: WGS 1984

Soil Map Unit Name: Manahawkin muck, 0-2 percent slopes, frequently flooded   NWI Classification: PEM1Fh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed?   Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic?   (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No ___**
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
Area is a wetland based on dominance of hydrophytic vegetation and presence of hydric soils and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☑ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present.

VEGETATION – Use scientific names of plants. Sampling Point: WL-H-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	10	Y	FACU
Acer rubrum	5	Y	FAC
	15	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Clethra alnifolia	50	Y	FACW
	50	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Carex stricta	20	N	OBL
Phragmites australis	5	N	FACW
	25	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	20	x 1 = 20
FACW species	55	x 2 = 110
FAC species	5	x 3 = 15
FACU species	10	x 4 = 40
UPL species	0	x 5 = 0
Column Totals:	90 (A)	185 (B)

Prevalence Index = B/A= 2.06

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

__ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** __

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

Hydrophytic vegetation present

SOIL

Sampling Point: WL-H-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2 / 1	100					LOAMY SAND	Black organic
4 to 20	10YR 2 / 1	100		70	CS	M	LOAMY SAND	70% particles masked with organic

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☑ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:

0-4 inches consists of a black organic sediment. Hydric soils present.

VEGETATION – Use scientific names of plants.

Sampling Point: OP1-WA-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Rhus copallinum	60	Y	UPL
Rosa rugosa	30	Y	FACU
	90	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Solidago altissima	40	Y	FACU
Phragmites australis	10	N	FACW
	50	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Lonicera japonica	30	Y	FACU
Toxicodendron radicans	15	Y	FAC
Parthenocissus quinquefolia	10	N	FACU
	55	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	15	x 3 =	45
FACU species	110	x 4 =	440
UPL species	60	x 5 =	300
Column Totals:	195 (A)		805 (B)

Prevalence Index = B/A= 4.13

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

Negative for prevalence index and dominance test

SOIL

Sampling Point: OP1-WA-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 5	10YR 3/ 1	50	10YR 6/1	50	C	M	SAND	Organics
5 to 12	10YR 3/ 4	100					SAND	
12 to 20	10YR 3/ 3	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No hydric soil indicators observed

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 6/24/2019

Applicant/Owner: Ocean Wind - Farm Property | State: NJ | Sampling Point: OP2-WA-WET

Investigators: David Brizzolara Zachary Lehmann | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): Concave | Slope(%)

Subregion (LRRor MLRA): LRR T | Lat: 39.815017 | Long: -74.165943 | Datum: Decimal Degrees

Soil Map Unit Name: Appoquinimink-Transquaking-Mispillion complex | NWI Classification: E2EM5P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
Emergent marsh area dominated by Phragmites australis, with patchy Spartina alterniflora at lower elevations. Hydrophytic vegetation, hydric soil, and wetland hydrology all present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [x] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	
Water Table Present?	Yes X	No ____	Depth (inches):	3
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches):	0

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology indicators present

VEGETATION – Use scientific names of plants.

Sampling Point: OP2-WA-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	70	Y	FACW
	70	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	70 (A)		140 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on dominance test and prevalence index

SOIL

Sampling Point: OP2-WA-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 20	10YR 2/ 1	100					SAND	Fiborous muck

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Organic Bodies (A6) (LRR P, T, U)
- [x] 5 cm Mucky Mineral (A7) (LRR P, T, U)
- [ ] Muck Presence (A8) (LRR U)
- [x] 1 cm Muck (A9) (LRR P, T)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Coast Prairie Redox (A16) (MLRA 150A)
- [ ] Sandy Mucky Mineral (S1) (LRR O, S)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR P, S, T, U)
- [ ] Polyvalue Below Surface (S8) (LRR S, T, U)
- [ ] Thin Dark Surface (S9) (LRR S, T, U)
- [ ] Loamy Mucky Mineral (F1) (LRR O)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Marl (F10) (LRR U)
- [ ] Depleted Ochric (F11) (MLRA 151)
- [ ] Iron-Manganese Masses (F12) (LRR O, P, T)
- [ ] Umbric Surface (F13) (LRR P, T, U)
- [ ] Delta Ochric (F17) (MLRA 151)
- [ ] Reduced Vertic (F18) (MLRA 150A, 150B)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149A)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- [ ] 1 cm Muck (A9) (LRR O)
- [ ] 2 cm Muck (A10) (LRR S)
- [ ] Reduced Vertic (F18) (outside MLRA 150A,B)
- [ ] Piedmont Floodplain Soils (F19) (LRR P, S, T)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12) (LRR T, U)
- [ ] Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [ ] **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ____

Remarks:

Hydric soil indicators present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 6/27/2019

Applicant/Owner: Ocean Wind - Farm Property State: NJ Sampling Point: OP-WC-UP

Investigators: David Brizzolara Zachary Lehmann Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Terrace Local Relief (concave, convex, none): None Slope(%) 0-2%

Subregion (LRRor MLRA): LRR T Lat: 39.814399 Long: -74.175766 Datum: Decimal Degrees

Soil Map Unit Name: Berryland sand NWI Classification: PFO1Bd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil X , Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** **X**
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Filled area next to bermed trail.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):
Water Table Present?	Yes ___	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators present

VEGETATION – Use scientific names of plants.

Sampling Point: OP-WC-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	25	Y	FAC
Pinus strobus	3	N	FACU
	28	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Vaccinium corymbosum	80	Y	FACW
Acer rubrum	5	N	FAC
Sassafras albidum	5	N	FACU
	90	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum amarum	15	Y	FAC
	15	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	45	x 3 =	135
FACU species	8	x 4 =	32
UPL species	0	x 5 =	0
Column Totals:	133 (A)		327 (B)

Prevalence Index = B/A= 2.46

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydric vegetation present based on dominance test and prevalence index

SOIL

Sampling Point: OP-WC-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 2	10YR 3/2	100					SAND	High root content
2 to 10	10YR 2/1	100					SAND	
10 to 20	10YR 2/1	80	10YR 4/1	20	D	M	SANDY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No hydric soil indicators present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 6/27/2019

Applicant/Owner: Ocean Wind - Farm Property State: NJ Sampling Point: OP-WC-WET

Investigators: David Brizzolara Zachary Lehmann Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Toe of Slope Local Relief (concave, convex, none): Concave Slope(%) 0-2%

Subregion (LRRor MLRA): LRR T Lat: 39.814365 Long: -74.175752 Datum: Decimal Degrees

Soil Map Unit Name: Berryland sand NWI Classification: PFO1Bd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
Hydrophytic vegetation, hydric soil, and wetland hydrology all present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [x] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):		
Water Table Present?	Yes X	No ___	Depth (inches):	6	**Wetland Hydrology Present?** **Yes** X **No** ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	0	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology indicators present

VEGETATION– Use scientific names of plants. Sampling Point: OP-WC-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	35	Y	FAC
	35	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Vaccinium corymbosum	30	Y	FACW
Sassafras albidum	5	N	FACU
	35	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	95	Y	FACW
Osmundastrum cinnamomeum	5	N	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	130	x 2 =	260
FAC species	35	x 3 =	105
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	170 (A)		385 (B)

Prevalence Index = B/A= 2.26

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on dominance test and prevalence index

SOIL

Sampling Point: OP-WC-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2/ 1	100			CS		SANDY LOAM	organic layer - mucky texture
4 to 20	10YR 2/ 1	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☑ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☑ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes X No ____

Remarks:

Hydric soils present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 6/27/2019

Applicant/Owner: Ocean Wind - Farm Property | State: NJ | Sampling Point: OP-WDE-UP

Investigators: David Brizzolara Zachary Lehmann | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Terrace | Local Relief (concave, convex, none): None | Slope(%) 0-2%

Subregion (LRRor MLRA): LRR T | Lat: 39.811729 | Long: -74.170307 | Datum: Decimal Degrees

Soil Map Unit Name: Appoquinimink-Transquaking-Mispillion complex | NWI Classification: E2EM5P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?**	**Yes** ___ **No X**
Hydric Soil Present?	Yes	No X		
Wetland Hydrology Present?	Yes	No X		

Remarks:
Upland Island

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	
Water Table Present?	Yes ___	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology indicators present

VEGETATION– Use scientific names of plants.

Sampling Point: OP-WDE-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Baccharis halimifolia	5	Y	FAC
	5	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Lolium perenne	65	Y	FACU
Desmodium canadense	25	Y	FAC
Euthamia graminifolia	10	N	FAC
Verbena hastata	5	N	FAC
	105	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	45	x 3 =	135
FACU species	65	x 4 =	260
UPL species	0	x 5 =	0
Column Totals:	110 (A)		395 (B)

Prevalence Index = B/A= 3.59

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on dominance test > 50%

SOIL

Sampling Point: OP-WDE-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 to 8	10YR 2/ 1	100					SAND	
8 to 14	10YR 4/ 2	80	10yr 3/4	20	C	M	SANDY LOAM	
14 to 20	10YR 8/ 3	60	10yr 5/8	40	C	M	SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No hydric soils present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 6/27/2019

Applicant/Owner: Ocean Wind - Farm Property State: NJ Sampling Point: OP-WD-WET

Investigators: David Brizzolara Zachary Lehmann Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): Concave Slope(%) 0-2%

Subregion (LRRor MLRA): LRR T Lat: 39.812020 Long: -74.170243 Datum: Decimal Degrees

Soil Map Unit Name: Appoquinimink-Transquaking-Mispillion complex NWI Classification: E2EM5P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** X **No** ____

Remarks:
Hydrophytic vegetaion, hydric soil, and wetland hydrology all present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [x] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [x] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)	X		10

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology present

VEGETATION – Use scientific names of plants.

Sampling Point: OP-WD-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Vaccinium corymbosum	25	Y	FACW
	25	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	100	Y	FACW
Onoclea sensibilis	50	Y	FACW
	150	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	175	x 2 =	350
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	175 (A)		350 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on dominance test and prevalence index

SOIL

Sampling Point: OP-WD-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2/ 1	100					SAND	roots
4 to 20	10YR 2/ 1	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☑ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** X **No** ____

Remarks:

Hydric soils present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 6/26/2019

Applicant/Owner: Ocean Wind - Farm Property | State: NJ | Sampling Point: OP-WE-UP

Investigators: David Brizzolara, Zachary Lehmann | Section, Township, Range: S ___ T Lacey R ___

Landform (hillslope, terrace, etc.): Terrace | Local Relief (concave, convex, none): None | Slope(%): 0-2%

Subregion (LRRor MLRA): LRR T | Lat: 39.812156 | Long: -74.186940 | Datum: Decimal Degrees

Soil Map Unit Name: Berryland sand | NWI Classification: E2EM5P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:
No hydrophytic vegetation, hyric soil, or wetland hydrology present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	

Wetland Hydrology Present? Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology indicators present

VEGETATION – Use scientific names of plants.

Sampling Point: OP-WE-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	40	Y	FACU
Nyssa sylvatica	20	Y	FAC
Sassafras albidum	5	N	FACU
	65	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Vaccinium corymbosum	25	Y	FACW
Quercus stellata	20	Y	UPL
Ilex sp.	2	N	
	47	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Fescue sp.	1	N	
	1	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Smilax rotundifolia	1	N	FAC
	1	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	21	x 3 =	63
FACU species	45	x 4 =	180
UPL species	20	x 5 =	100
Column Totals:	111 (A)		393 (B)

Prevalence Index = B/A= 3.54

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test > 50%

____ 3 - Prevalence Index ≤ 3.0

____ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

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

Hydrophytic vegetation not present due to dominance test of 0% and prevalance index

SOIL

Sampling Point: OP-WE-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 2	10YR 2/ 2	100					SAND	Organics
2 to 16	10YR 5/ 3	100					SAND	
16 to 20	10YR 3/ 1	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No hydric soils present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 6/27/2019

Applicant/Owner: Ocean Wind - Farm Property State: NJ Sampling Point: OP-WE-WET

Investigators: Steve Seymour James Eberhardt Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): None Slope(%) 0-2%

Subregion (LRRor MLRA): LRR T Lat: 39.811366 Long: -74.185059 Datum: Decimal Degrees

Soil Map Unit Name: Atsion sand NWI Classification: E2EM5P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
Site hydrology affected by extensive/historical ditching. Pit located in WLE.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [x] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [x] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes X No ___	Depth (inches):	2
Water Table Present?	Yes X No ___	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches):	0

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:
Standing water in old ditch 0.5-6" deep, no discerable flow.

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: OP-WE-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	50	Y	FAC
	50	=Total Cover	
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	50	Y	FACW
Lemna sp.	10	N	OBL
	60	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	50	x 2 =	100
FAC species	50	x 3 =	150
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		260 (B)

Prevalence Index = B/A= 2.36

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on dominance test and prevalence test

SOIL

Sampling Point: OP-WE-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 6	10YR 5/4	100					SAND	peat, plant fibers
6 to 10	10YR 4/1	100					SAND	
10 to 20	10YR 3/1	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☑ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☑ **Restrictive Layer (if observed):**

Type: silty clay

Depth (inches): 10-20

Hydric Soil Present? **Yes** X **No** ____

Remarks:

Deep (>2') organic deposits in bends of the ditches. No discerable flow; water appears stagnant. Gravel in sand layer consists of glacially rounded quartz; 20% of layer.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 5/5/2020
Applicant/Owner: Ocean Wind - Holtec Property | State: NJ | Sampling Point: WL-A-UPL
Investigators: Stephen Seymour Jaclyn Chapman | Section, Township, Range S T Lacey R
Landform (hillslope, terrace, etc.): Level | Local Relief (concave, convex, none): None | Slope(%) 0
Subregion (LRRor MLRA): LRR T | Lat: 39.810717 | Long: -74.199280 | Datum: WGS 1984
Soil Map Unit Name: Psamments, 0-2% slope | NWI Classification: Not mapped
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)
Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** **X**
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:
Area sampled is not a wetland based on lack of hydrophytic vegetation, hydric soils, and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present.

VEGETATION – Use scientific names of plants.

Sampling Point: WL-A-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	20	Y	FACU
Pinus sylvestris	20	Y	NI
	40	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Juniperus virginiana	20	Y	FACU
Myrica pensylvanica	15	Y	FAC
	35	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum dichotomiflorum	30	Y	FACW
Fragaria virginiana	20	Y	FACU
	50	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	15	x 3 =	45
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	105 (A)		345 (B)

Prevalence Index = B/A= 3.29

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

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

Hydrophytic vegetation not dominant and prevlance test greater than 3

SOIL

Sampling Point: WL-A-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 6	10YR 3/ 2	100					ORGANIC/SANDY LOAM	
6 to 20	10YR 5/ 6	100					SANDY SILT	40% rounded pebbles

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Upland soil pit about 30' southeast of wetland pit. Hydric soils not present.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 5/5/2020

Applicant/Owner: Ocean Wind - Holtec Property | State: NJ | Sampling Point: WL-A-WET

Investigators: Stephen Seymour Jaclyn Chapman | Section, Township, Range S T Lacey R New J

Landform (hillslope, terrace, etc.): Level | Local Relief (concave, convex, none): Concave | Slope(%) 0

Subregion (LRRor MLRA): LRR T | Lat: 39.810717 | Long: -74.199280 | Datum: WGS 1984

Soil Map Unit Name: Psamments 0-2% slopes | NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes X No ____**
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
Depressional wetland dominated by fall panicum.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes X No ____	Depth (inches):	1
Water Table Present?	Yes X No ____	Depth (inches):	To Surface
Saturation Present? (includes capillary fringe)	Yes X No ____	Depth (inches):	To Surface

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Ponding observed. Wetland hydrology present.

VEGETATION – Use scientific names of plants. Sampling Point: WL-A-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	10	Y	FAC
Juniperus virginiana	10	Y	FACU
	20	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Myrica pensylvanica	30	Y	FAC
	30	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum dichotomiflorum	90	Y	FACW
	90	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	40	x 3 =	120
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	140 (A)		340 (B)

Prevalence Index = B/A= 2.43

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X **No** ___

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

Hydrophytic vegetation present based on dominance of species that are OBL, FACW, or FAC greater than 50% and a prevalence index less than or equal to 3.

SOIL

Sampling Point: WL-A-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	10YR 4/ 2	100					FINE SANDY LOAM	
8 to 20	10YR 4/ 2	80	10YR 4/6	20	C	M	FINE CLAY SAND	20% rounded pebbles

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☑ **Restrictive Layer (if observed):**

Type: Clay

Depth (inches): 9

Hydric Soil Present? **Yes** X **No** ____

Remarks:

Hydric soils present based on soils meeting criteria for the depleted matrix (F3) indicator

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 5/5/2020

Applicant/Owner: Ocean Wind - Holtec Property | State: NJ | Sampling Point: WL-B-UPL

Investigators: Stephen Seymour Jaclyn Chapman | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%) 10

Subregion (LRRor MLRA): LRR T | Lat: 39.810893 | Long: -74.200239 | Datum: WGS 1984

Soil Map Unit Name: Psamments, 0-2% slopes | NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No X**
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:
Soils probably all old fill from nearby road construction. Area is not a wetland based on lack of hydrophytic vegetation, hydric soils, and wetland hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	
Water Table Present?	Yes ____	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches):	

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present.

VEGETATION – Use scientific names of plants.

Sampling Point: WL-B-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Pinus resinosa	30	Y	FACU
Prunus virginiana	20	Y	FACU
Pinus sylvestris	10	Y	NI
	60	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Prunus virginiana	25	Y	FACU
	25	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Acer rubrum	30	Y	FAC
Juniperus virginiana	10	Y	FACU
Thuja occidentalis	10	Y	FACW
	50	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Celastrus orbiculatus	10	Y	FACU
	10	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 28.6% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	30	x 3 =	90
FACU species	95	x 4 =	380
UPL species	0	x 5 =	0
Column Totals:	135 (A)		490 (B)

Prevalence Index = B/A= 3.63

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

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

Hydrophytic vegetation not dominant based on less than 50% of species that are OBL, FACW, or FAC and prevalence index greater than 3

SOIL

Sampling Point: WL-B-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	10YR 3/ 2	100					FINE SANDY LOAM	
8 to 18	10YR 5/ 3	100					FINE CLAY LOAM	
18 to 20	10YR 2/ 1	100					GRANULAR BLACK	Granular coal residue

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

Layer of coal residue (black, granular) encountered at 18-20" below ground surface. No hydric soils present due to not meeting any indicator criteria.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - Holtect Property | State: NJ | Sampling Point: WL-B-WET2

Investigators: Zak Lehmann Jaclyn Chapman | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Level | Local Relief (concave, convex, none): Concave | Slope(%) 0

Subregion (LRRor MLRA): LRR T | Lat: 39.810737 | Long: -74.200351 | Datum: WGS 1984

Soil Map Unit Name: Psamments, 0-2% slopes | NWI Classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?**	**Yes X No ___**
Hydric Soil Present?	Yes X No ___		
Wetland Hydrology Present?	Yes X No ___		

Remarks:
Area is a wetland based on presence of hydrophytic vegetation, hydric soils, and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes X No ___	Depth (inches):	2
Water Table Present?	Yes X No ___	Depth (inches):	To surface
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches):	To surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology present

VEGETATION – Use scientific names of plants.

Sampling Point: WL-B-WET2

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point: WL-B-WET2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2 / 1	100		70	CS	M	SANDY CLAY	Fibrous black muck; 70% particles masked with organic
4 to 20	10YR 5 / 2	100		70	CS	M	SANDY CLAY	70% particles masked with organic

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains.   [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [ ] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [x] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Organic Bodies (A6) (LRR P, T, U)
- [ ] 5 cm Mucky Mineral (A7) (LRR P, T, U)
- [ ] Muck Presence (A8) (LRR U)
- [ ] 1 cm Muck (A9) (LRR P, T)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Coast Prairie Redox (A16) (MLRA 150A)
- [ ] Sandy Mucky Mineral (S1) (LRR O, S)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR P, S, T, U)
- [ ] Polyvalue Below Surface (S8) (LRR S, T, U)
- [ ] Thin Dark Surface (S9) (LRR S, T, U)
- [ ] Loamy Mucky Mineral (F1) (LRR O)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Marl (F10) (LRR U)
- [ ] Depleted Ochric (F11) (MLRA 151)
- [ ] Iron-Manganese Masses (F12) (LRR O, P, T)
- [ ] Umbric Surface (F13) (LRR P, T, U)
- [ ] Delta Ochric (F17) (MLRA 151)
- [ ] Reduced Vertic (F18) (MLRA 150A, 150B)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149A)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- [ ] 1 cm Muck (A9) (LRR O)
- [ ] 2 cm Muck (A10) (LRR S)
- [ ] Reduced Vertic (F18) (outside MLRA 150A,B)
- [ ] Piedmont Floodplain Soils (F19) (LRR P, S, T)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12) (LRR T, U)
- [ ] Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:

Hydric soil indicators present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - Holtec Property State: NJ Sampling Point: WL-C-UP

Investigators: Zak Lehmann Jaclyn Chapman Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Level Local Relief (concave, convex, none): None Slope(%) 0

Subregion (LRRor MLRA): LRR T Lat: 39.810631 Long: -74.201509 Datum: WGS 1984

Soil Map Unit Name: Psamments, 0-2% slopes NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ___ No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** **X**
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:
Area is not a wetland based on lack of hydrophytic vegetation, soils, and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): ___	**Wetland Hydrology Present? Yes ___ No X**
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): ___	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION – Use scientific names of plants. Sampling Point: WL-C-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	10	Y	FACU
Prunus serotina	5	Y	FACU
	15	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Myrica pensylvanica	50	Y	FAC
Rhus copallinum	40	Y	UPL
	90	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Mollugo verticillata	1	Y	FAC
Osmundastrum cinnamomeum	1	Y	FACW
	2	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus idaeus	80	Y	FACU
Parthenocissus quinquefolia	5	N	FACU
	85	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.9% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	51	x 3 =	153
FACU species	100	x 4 =	400
UPL species	40	x 5 =	200
Column Totals:	192 (A)		755 (B)

Prevalence Index = B/A= 3.93

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** **X**

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

No hydric vegetation dominance

SOIL

Sampling Point: WL-C-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 20	10YR 5 / 1	60	10YR2/1	40	C	M	SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:

No hydric soils

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 5/5/2020
Applicant/Owner: Ocean Wind - Holtec Property | State: NJ | Sampling Point: WL-C-WET
Investigators: Stephen Seymour, Jaclyn Chapman | Section, Township, Range: S ___ T Lacey R ___
Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%) 5
Subregion (LRRor MLRA): LRR T | Lat: 39.810860 | Long: -74.200654 | Datum: WGS 1984
Soil Map Unit Name: Psamments, 0-2% slope | NWI Classification: Not mapped

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

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

Hydrophytic Vegetation Present? Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No ___**
Hydric Soil Present? Yes X No ___	
Wetland Hydrology Present? Yes X No ___	

Remarks:
Wetland has two lobes ~ easterly originates at a flowing culvert under "Discharge Drive". Westerly lobe originates in a wet meadow. Lobes converge about 30' south of wetland discharge to Oyster Creek. Area is a wetland due to presence of hydrophytic vegetation, hydric soils, and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		Surface
Saturation Present? (includes capillary fringe)	X		Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology present

VEGETATION – Use scientific names of plants. Sampling Point: WL-C-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Acer rubrum	60	Y	FAC
	60	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Clethra alnifolia	70	Y	FACW
Acer rubrum	20	Y	FAC
	90	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	40	Y	FACW
Onoclea sensibilis	20	Y	FACW
	60	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Toxicodendron pubescens	1	N	FACU
	1	=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: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	130	x 2 =	260
FAC species	80	x 3 =	240
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	211 (A)		504 (B)

Prevalence Index = B/A= 2.39

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on dominance of species that are OBL, FACW, or FC greater than 50% and a prevalence index less than or equal to 3.

SOIL Sampling Point: WL-C-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 9	10YR 4 / 1	100					ORGANIC LOAM	Plant roots, 20% sand
9 to 20	10YR 3 / 1	100					SANDY CLAY	Very soft saturated sand with clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☑ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:

Extensive organic material found within the first 9 in of the soil profile. Hydric soils present based on soils meeting criteria for the Histic Epipedon (A2) indicator.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - JCP&L Property | State: NJ | Sampling Point: WL-D-UP

Investigators: Zak Lehmann Jaclyn Chapman | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Level | Local Relief (concave, convex, none): None | Slope(%) 0

Subregion (LRRor MLRA): LRR T | Lat: 39.810493 | Long: -74.200617 | Datum: WGS 1984

Soil Map Unit Name: Manahawkin muck, 0-2% slopes, frequently flooded | NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** **X**
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:
Area contains presence of hydrophytic vegetation based on prevalence index; however, area Is not a wetland based on lack of hydric soils and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	
Water Table Present?	Yes ___	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION – Use scientific names of plants. Sampling Point: WL-D-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	20	Y	FACU
	20	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Juniperus virginiana	5	Y	FACU
Myrica pensylvanica	5	Y	FAC
Acer rubrum	1	N	FAC
Pinus rigida	1	N	FACU
	12	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	60	Y	FACW
Solidago sempervirens	10	N	FACW
Polygonum achoreum	1	N	FAC
	71	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Rubus idaeus	1	Y	FACU
	1	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	7	x 3 =	21
FACU species	27	x 4 =	108
UPL species	0	x 5 =	0
Column Totals:	104 (A)		269 (B)

Prevalence Index = B/A= 2.59

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test > 50%
- X 3 - Prevalence Index ≤ 3.0
- ___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydric vegetation present based on prevalence index alone

SOIL

Sampling Point: WL-D-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 10	10YR 4/3						SANDY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☑ **Restrictive Layer (if observed):**

Type: Fill

Depth (inches): 10

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

Restrictive layer at 10 inches; no inclusions or concretions

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - Holtec Property State: NJ Sampling Point: WL-D-WET

Investigators: Zak Lehmann Jaclyn Chapman Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Toe of Slope Local Relief (concave, convex, none): Concave Slope(%) 0

Subregion (LRRor MLRA): LRR T Lat: 39.810428 Long: -74.200485 Datum: WGS 1984

Soil Map Unit Name: Manahawkin muck, 0 2 percent slopes, frequently flooded NWI Classification: PSS1Eh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
The area is a wetland based on dominance of hydrophytic vegetation and presence of hydric soils and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [x] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes X No ____	Depth (inches): 2	
Water Table Present?	Yes ____ No X	Depth (inches): ____	**Wetland Hydrology Present?** **Yes** X **No** ____
Saturation Present? (includes capillary fringe)	Yes ____ No X	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Standing water in the soil pit location; wetland hydrology present

VEGETATION – Use scientific names of plants.

Sampling Point: WL-D-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present

SOIL

Sampling Point: WL-D-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	10YR 2 / 1	100		70	CS	M	SAND	Fibrous muck; 70% particles masked with organic
8 to 20	10YR 4 / 1	100		70	CS	M	SAND	Fibrous muck; 70% of particles masked with organic

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☑ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ______

Remarks:

Hydric soils present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted City/County: Ocean County Sampling Date: 5/7/2020
Applicant/Owner: Ocean Wind - Holtec Property State: NJ Sampling Point: WL-E-UPL
Investigators: Stephen Seymour Jaclyn Chapman Section, Township, Range S T Lacey R
Landform (hillslope, terrace, etc.): Road side Local Relief (concave, convex, none): Concave Slope(%) 5
Subregion (LRRor MLRA): LRR T Lat: 39.808934 Long: -74.198696 Datum: WGS 1984
Soil Map Unit Name: Psamments, 0-2% slope NWI Classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)
Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ____ No X	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** X
Hydric Soil Present? Yes ____ No X		
Wetland Hydrology Present? Yes ____ No X		

Remarks:
Area is not a wetland due to no presence of hydrophytic vegetation, hydric soils, and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____	
Water Table Present?	Yes ____	No X	Depth (inches): ____	**Wetland Hydrology Present? Yes ____ No X**
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION – Use scientific names of plants. Sampling Point: WL-E-UPL

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Quercus palustris	30	Y	FACW
Pinus resinosa	20	Y	FACU
Prunus virginiana	20	Y	FACU
Sassafras albidum	20	Y	FACU
Acer rubrum	10	N	FAC
	100	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Clethra alnifolia	30	Y	FACW
	30	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Fragaria virginiana	20	Y	FACU
Artemisia annua	10	Y	FACU
Juniperus virginiana	10	Y	FACU
	40	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Celastrus orbiculatus	15	Y	FACU
Parthenocissus quinquefolia	1	N	FACU
	16	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 22.2% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	10	x 3 =	30
FACU species	116	x 4 =	464
UPL species	0	x 5 =	0
Column Totals:	186 (A)		614 (B)

Prevalence Index = B/A= 3.30

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

Hydric vegetation not present based on less than 50% of species that are OBL, FACW, or FAC and a prevalence index greater than 3.

SOIL

Sampling Point: WL-E-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 to 7	10YR 3/ 2	100					FINE SANDY LOAM	
7 to 20	10YR 6/ 8	100					COARSE SILTY SAND	10% rounded quartz pebbles

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:

No hydric soils present based on soils not meeting any of the hydric soil indicators

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 5/7/2020

Applicant/Owner: Ocean Wind - Holtec Property | State: NJ | Sampling Point: WL-E-WET

Investigators: Stephen Seymour Jaclyn Chapman | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Level | Local Relief (concave, convex, none): None | Slope(%) 0

Subregion (LRRor MLRA): LRR T | Lat: 39.808934 | Long: -74.498696 | Datum: WGS 1984

Soil Map Unit Name: Manahawkin Muck, 0-2% slope | NWI Classification: PFO4Cg

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No ___**
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
Wetland is an Atlantic white cedar swamp with a few red maple. Very dense tree canopy/closure with sparse shrub layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		To Surface
Saturation Present? (includes capillary fringe)	X		To Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Very shallow (<10") root zone for Atlantic white cedars. Wetland hydrology present based on a high water table, saturation, and water-stained leaves.

VEGETATION – Use scientific names of plants. Sampling Point: WL-E-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Chamaecyparis thyoides	80	Y	OBL
Acer rubrum	10	N	FAC
=Total Cover	90		
Shrub Stratum (Plot size: 30 Ft)			
Clethra alnifolia	20	Y	FACW
Vaccinium corymbosum	20	Y	FACW
Viburnum dentatum	10	Y	FAC
=Total Cover	50		
Herb Stratum (Plot size: 6 Ft)			
Osmundastrum cinnamomeum	40	Y	FACW
=Total Cover	40		
Vine Stratum (Plot size: 30 Ft)			
Toxicodendron radicans	20	Y	FAC
=Total Cover	20		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	80	x 1 =	80
FACW species	80	x 2 =	160
FAC species	40	x 3 =	120
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	200 (A)		360 (B)

Prevalence Index = B/A= 1.80

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Fairly even-aged stand of Atlantic white cedar; most trees are 6-10" DBH; few are 12" DBH. Hydric vegetation present based on 100% of species that are OBL, FACW, or FAC and a prevalence index less than or equal to 3.

SOIL

Sampling Point: WL-E-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 20	10YR 2/ 1	100					PEATY MUCK	Soft saturated peaty muck

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [x] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Organic Bodies (A6) (LRR P, T, U)
- [ ] 5 cm Mucky Mineral (A7) (LRR P, T, U)
- [ ] Muck Presence (A8) (LRR U)
- [ ] 1 cm Muck (A9) (LRR P, T)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Coast Prairie Redox (A16) (MLRA 150A)
- [ ] Sandy Mucky Mineral (S1) (LRR O, S)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR P, S, T, U)
- [ ] Polyvalue Below Surface (S8) (LRR S, T, U)
- [ ] Thin Dark Surface (S9) (LRR S, T, U)
- [ ] Loamy Mucky Mineral (F1) (LRR O)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Marl (F10) (LRR U)
- [ ] Depleted Ochric (F11) (MLRA 151)
- [ ] Iron-Manganese Masses (F12) (LRR O, P, T)
- [ ] Umbric Surface (F13) (LRR P, T, U)
- [ ] Delta Ochric (F17) (MLRA 151)
- [ ] Reduced Vertic (F18) (MLRA 150A, 150B)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149A)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- [ ] 1 cm Muck (A9) (LRR O)
- [ ] 2 cm Muck (A10) (LRR S)
- [ ] Reduced Vertic (F18) (outside MLRA 150A,B)
- [ ] Piedmont Floodplain Soils (F19) (LRR P, S, T)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12) (LRR T, U)
- [ ] Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [ ] **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:

Soils are a very soft mucky peat to > 3 ft below ground surface. Large open water to east consistent with aerial photos and NWI mapping. Hydric soils present based on criteria meeting the histosol (H1) indicator.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - Forked River, LLC | State: NJ | Sampling Point: WL-F-UP

Investigators: Zak Lehmann Jaclyn Chapman | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Level | Local Relief (concave, convex, none): None | Slope(%) 0

Subregion (LRRor MLRA): LRR T | Lat: 39.811434 | Long: -74.209815 | Datum: WGS 1984

Soil Map Unit Name: Lakehurst sand, 0 to 5 percent slopes | NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?**	**Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No X		
Wetland Hydrology Present?	Yes ___	No X		

Remarks:
Area does contain hydrophytic vegetation; however, this area is not a wetland based on lack of hydric soils and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION– Use scientific names of plants.

Sampling Point: WL-F-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Pinus rigida	80	Y	FACU
	80	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Myrica pensylvanica	40	Y	FAC
Pinus rigida	5	N	FACU
	45	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum dichotomiflorum	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	40	x 3 =	120
FACU species	85	x 4 =	340
UPL species	0	x 5 =	0
Column Totals:	225 (A)		660 (B)

Prevalence Index = B/A= 2.93

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation presented based on dominance test and prevalence index

SOIL

Sampling Point: WL-F-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 3/ 1	50	10YR7/2	50	C	M	SAND	
4 to 20	10YR 6/ 6	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No hydric soil indicators present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 5/7/2020

Applicant/Owner: Ocean Wind - Forked River Property | State: NJ | Sampling Point: WL-F-WET

Investigators: Stephen Seymour, Jaclyn Chapman | Section, Township, Range: S ___ T Lacey R ___

Landform (hillslope, terrace, etc.): Hillslope | Local Relief (concave, convex, none): Concave | Slope(%) 0

Subregion (LRRor MLRA): LRR T | Lat: 39.811394 | Long: -74.209175 | Datum: WGS 1984

Soil Map Unit Name: Lakehurst Sand 0-5% slopes | NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
Narrow reed grass-dominated wetland. Source is a corrugated steel culvert and a concrete headwall with very weak outflow.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Adjacent uplands are early successional red cedar and pitch pines ~5-15' tall. Saturation at approximately 15 inches below the ground surface. Wetland hydrology present based on water-stained leaves.

VEGETATION – Use scientific names of plants. Sampling Point: WL-F-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Juniperus virginiana	20	Y	FACU
Pinus resinosa	20	Y	FACU
	40	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum dichotomiflorum	60	Y	FACW
Phragmites australis	30	Y	FACW
	90	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across all Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50.0%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals:	130 (A)		340 (B)

Prevalence Index = B/A= 2.62

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X **No** ___

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

Hydrophytic vegetation present based on a prevalence index less than or equal to 3.

SOIL

Sampling Point: WL-F-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 4/ 1	100					FINE SANDY LOAM	
4 to 11	10YR 5/ 2	70	10YR 5/6	30	C	M	FINE SANDY LOAM	
11 to 20	10YR 3/ 2	100					FINE SANDY LOAM	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:

Hydric soils present based on soils meeting the Depleted Matrix (F3) indicator

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 8/11/2020

Applicant/Owner: Ocean Wind - Forked River, LLC | State: NJ | Sampling Point: WL-G1-UP

Investigators: Zak Lehmann Jaclyn Chapman | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): None | Local Relief (concave, convex, none): None | Slope(%) 0

Subregion (LRRor MLRA): LRR T | Lat: 39.811379 | Long: -74.212809 | Datum: WGS 1984

Soil Map Unit Name: Lakehurst Sand, 0-5% slopes | NWI Classification: None mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___ No X	
Wetland Hydrology Present?	Yes ___ No X	

Remarks:
Hydrophytic vegetation present based on prevalence index alone; however, area is not a wetland based on lack of hydric soils and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION– Use scientific names of plants.

Sampling Point: WL-G1-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	20	Y	FACU
Prunus serotina	5	Y	FACU
	25	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Rubus idaeus	20	Y	FACU
	20	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum dichotomiflorum	80	Y	FACW
Eupatorium perfoliatum	10	N	FACW
Phragmites australis	10	N	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	45	x 4 =	180
UPL species	0	x 5 =	0
Column Totals:	145 (A)		380 (B)

Prevalence Index = B/A= 2.62

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation based on prevalence index alone

SOIL

Sampling Point: WL-G1-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 4 / 3	100					SAND	
4 to 12	10YR 6 / 6	100					SAND	
12 to 20	10YR 7 / 2	60	10YR5/6	40	C	M	SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No hydric soil indicators present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted   City/County: Ocean County   Sampling Date: 5/7/2020

Applicant/Owner: Ocean Wind - Forked River Property   State: NJ   Sampling Point: WL-G-WET

Investigators: Stephen Seymour   Jaclyn Chapman   Section, Township, Range S   T Lacey   R

Landform (hillslope, terrace, etc.): None   Local Relief (concave, convex, none): None   Slope(%) 0

Subregion (LRRor MLRA): LRR T   Lat: 39.811349   Long: -74.213354   Datum: WGS 1984

Soil Map Unit Name: Lakehurst sand 0-5% slopes   NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed?   Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic?   (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes	X	No		**Is the Sampled Area within a Wetland?** **Yes X No**
Hydric Soil Present?	Yes	X	No		
Wetland Hydrology Present?	Yes	X	No		

Remarks:
Area is a wetland based on presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Wetland appears to be isolated with no apparent oulet.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [x] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes		No	X	Depth (inches):	
Water Table Present?	Yes	X	No		Depth (inches):	3
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	To surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Extensive areas with shallow (1-4" inundation) in the three polygons that comprise Wetland G. Block 1001, Lot 4.06 is level. Surrounding uplands in early successional stage ~6-12 ft red cedar and pitch pine.

VEGETATION – Use scientific names of plants.

Sampling Point: WL-G-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Juniperus virginiana	10	Y	FACU
	10	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Panicum dichotomiflorum	40	Y	FACW
Phragmites australis	30	Y	FACW
	70	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	80 (A)		180 (B)

Prevalence Index = B/A= 2.25

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on dominance of species that are OBL, FACW, or FAC greater than 50% and a prevalence index less than or equal to 3.

SOIL

Sampling Point: WL-G-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 6 / 6	100					FINE SAND	Wet fine sand
4 to 20	10YR 4 / 1	70	10YR 5/4	30	C	M	FINE SAND	Wet silty sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** X **No**

Remarks:

One box turtle and northern harrier observed in vicinity. Hydric soils present based on soils meeting criteria for the Depleted Matrix (F3) indicator.

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted　City/County: Ocean County　Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - JCP&L Property　State: NJ　Sampling Point: WL-H-UP

Investigators: Zak Lehmann　Jaclyn Chapman　Section, Township, Range S　T Lacey　R

Landform (hillslope, terrace, etc.): Level　Local Relief (concave, convex, none): None　Slope(%) 0

Subregion (LRRor MLRA): LRR T　Lat: 39.810120　Long: -74.204154　Datum: WGS 1984

Soil Map Unit Name: Psamments, 0 - 2% slopes　NWI Classification: Not mapped

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed?　Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic?　(If needed, explain any answers in Remarks.)

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

	Yes	No	
Hydrophytic Vegetation Present?	X		**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric Soil Present?		X	
Wetland Hydrology Present?		X	

Remarks:
Area contains hydrophytic vegetation present based on prevalence indicator alone; hoever, area is not a wetland based on lack of hydric soils and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION – Use scientific names of plants.

Sampling Point: WL-H-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	20	Y	FACU
Pinus rigida	20	Y	FACU
Acer rubrum	10	Y	FAC
	50	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Viburnum dentatum	1	Y	FAC
	1	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	60	Y	FACW
Rubus idaeus	20	Y	FACU
Polygonum achoreum	5	N	FAC
	85	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	16	x 3 =	48
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	136 (A)		408 (B)

Prevalence Index = B/A= 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present based on pravelaence index alone

SOIL

Sampling Point: WL-H-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2/ 1	60	10YR6/2	40	C	M	SAND	
4 to 12	10YR 6/ 2	60	10YR2/1	40	C	M	SAND	
12 to 20	10YR 5/ 6	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No hydric soil indicators present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted | City/County: Ocean County | Sampling Date: 8/10/2020

Applicant/Owner: Ocean Wind - Holtec Property | State: NJ | Sampling Point: WL-H-WET

Investigators: Zak Lehmann Jaclyn Chapman | Section, Township, Range S T Lacey R

Landform (hillslope, terrace, etc.): Depression | Local Relief (concave, convex, none): None | Slope(%) 0

Subregion (LRRor MLRA): LRR T | Lat: 39.810053 | Long: -74.204066 | Datum: WGS 1984

Soil Map Unit Name: Manahawkin muck, 0-2 percent slopes, frequently flooded | NWI Classification: PEM1Fh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes X No ___**
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
Area is a wetland based on dominance of hydrophytic vegetation and presence of hydric soils and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [x] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): ___	**Wetland Hydrology Present? Yes X No ___**
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): ___	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology present.

VEGETATION – Use scientific names of plants.

Sampling Point: WL-H-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 30 Ft)			
Juniperus virginiana	10	Y	FACU
Acer rubrum	5	Y	FAC
	15	=Total Cover	
Shrub Stratum (Plot size: 30 Ft)			
Clethra alnifolia	50	Y	FACW
	50	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Carex stricta	20	N	OBL
Phragmites australis	5	N	FACW
	25	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	55	x 2 =	110
FAC species	5	x 3 =	15
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	90 (A)		185 (B)

Prevalence Index = B/A= 2.06

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

Hydrophytic vegetation present

SOIL

Sampling Point: WL-H-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 4	10YR 2 / 1	100					LOAMY SAND	Black organic
4 to 20	10YR 2 / 1	100		70	CS	M	LOAMY SAND	70% particles masked with organic

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☑ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

0-4 inches consists of a black organic sediment. Hydric soils present.

Wetland A

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Island Beach State Park City/County: Seaside Park, NJ Ocean Co. Sampling Date: 11/19/21

Applicant/Owner: Orsted State: NJ Sampling Point: WL-1

Investigator(s): Steve Seymour, Deidra Valiant Section, Township, Range: ______

Landform (hillslope, terrace, etc.): level Local relief (concave, convex, none): level Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 39.904417 Long: -74.081667 Datum: ______

Soil Map Unit Name: Hooksan Fine Sand, 0-10% slope NWI classification: PSS1/3B, E2EM1Pd

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 X No ______	Is the Sampled Area within a Wetland?	Yes X No ______
Hydric Soil Present?	Yes X No ______		
Wetland Hydrology Present?	Yes X No ______		

Remarks:

Wetland A

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ______ No X	Depth (inches): ______	
Water Table Present?	Yes ______ No X	Depth (inches): ______	
Saturation Present? (includes capillary fringe)	Yes X No ______	Depth (inches): 10"	Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

crescent-shaped wetland adjacent to west side of main roadway. There is a 3-5' high berm west of wetland. No outlet - apparently isolated.

Wetland A

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

Sampling Point: WL-1

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	20	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1. Viburnum dentatum	20	Y	FAC
2. Vaccinium corymbosum	25	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	45 = Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	50	Y	FACW
2. Onoclea sensibilis	10	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60 = Total Cover		
50% of total cover:	20% of total cover:		
Woody Vine Stratum (Plot size: 30)			
1. Smilax rotundifolia	30	Y	FAC
2.			
3.			
4.			
5.			
	30 = Total Cover		
50% of total cover:	20% of 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	85	x 2 = 170
FAC species	70	x 3 = 210
FACU species	—	x 4 =
UPL species		x 5 =
Column Totals:	155 (A)	380 (B)

Prevalence Index = B/A = 2.45

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four 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 X No ___

Remarks: (If observed, list morphological adaptations below).

Wetland A

SOIL

Sampling Point: WL-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0"-6"	2/1 10YR	100					fine	organic loam
6"-20"	3/1 10YR	100					fine	fine silty sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- X Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: none

Depth (inches):

Hydric Soil Present? Yes X No ___

Remarks:

organic streaking visible in stripped sandy subsoil.

Wetland A

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Island Beach State Park City/County: Seaside Park, Ocean Sampling Date: 11/19/21

Applicant/Owner: Orsted State: NJ Sampling Point: OPL-1

Investigator(s): Stephen Seymour, Deidra Valianti Section, Township, Range: ______

Landform (hillslope, terrace, etc.): level Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 39.904417 Long: -74.081667 Datum: ______

Soil Map Unit Name: Hooksan Fine Sand, 0-10% slope NWI classification: PSS1/3B; E2EM1Pd

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 ______ No X		Is the Sampled Area within a Wetland? Yes ______ No X
Hydric Soil Present? Yes ______ No X		
Wetland Hydrology Present? Yes ______ No X		

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): —

Water Table Present? Yes ______ No X Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): —

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: UPL-1

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana	60	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	60 = Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1. Myrica pensylvanica	30	Y	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	30 = Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	Ø = Total Cover		
50% of total cover:	20% of total cover:		
Woody Vine Stratum (Plot size: 30)			
1. Smilax rotundifolia	10	Y	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	10	x 3 = 30
FACU species	60	x 4 = 240
UPL species		x 5 =
Column Totals:	70 (A)	270 (B)

Prevalence Index = B/A = 3.86

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four 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 X

Remarks: (If observed, list morphological adaptations below).

Wetland A

SOIL

Sampling Point: UPL-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4"	3/2 10YR	100					fine	sandy organic loam
4"-20"	5/2 10YR	100					medium	dry sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: —

Depth (inches): —

none

Hydric Soil Present? Yes ___ No X

Remarks:

Wetland B

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Island Beach State Park City/County: Seaside Park/Ocean Sampling Date: 11/19/21

Applicant/Owner: Orsted State: NJ Sampling Point: WLD-wet

Investigator(s): Steve Seymour, Deidra Valiant Section, Township, Range: ______

Landform (hillslope, terrace, etc.): level Local relief (concave, convex, none): level Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 39.904417 Long: -74.081667 Datum: ______

Soil Map Unit Name: Hooksan Fine Sand, 0-10% slope NWI classification: PSS1/3B, E2EM1Pd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (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 X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

Wetland B

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ Marl Deposits (B15) **(LRR U)**
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Sparsely Vegetated Concave Surface (B8)
___ Drainage Patterns (B10)
___ Moss Trim Lines (B16)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Geomorphic Position (D2)
___ Shallow Aquitard (D3)
___ FAC-Neutral Test (D5)
___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): –
Water Table Present? Yes X No ___ Depth (inches): 16"
Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 10"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland area west of main roadway. Surrounds the storage laydown area. Portions close to upland edge have dense catbrier, grades off into reed monoculture. Westerly edge opens up to bay. Dense common reed 10-12 ft high right to the waterline.

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

Sampling Point: WLB WET

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana	20	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
50% of total cover:	20% of total cover:		

Sapling/Shrub Stratum (Plot size: 15)			
1. Vaccinium corymbosum	15	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	15 = Total Cover		
50% of total cover:	20% of total cover:		

Herb Stratum (Plot size: 5)			
1. Phragmites australis	40	Y	FACW
2. Onoclea sensibilis	5	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45 = Total Cover		
50% of total cover:	20% of total cover:		

Woody Vine Stratum (Plot size: 30)			
1. Smilax rotundifolia	25	Y	FAC
2.			
3.			
4.			
5.			
	25 = Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	60	x 2 = 120
FAC species	25	x 3 = 75
FACU species	20	x 4 = 80
UPL species		x 5 =
Column Totals:	105 (A)	275 (B)

Prevalence Index = B/A = 2.62

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four 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 X No ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL B WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 4"								
4"-20"	6/1 10YR	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ______________

Depth (inches): ______________

Hydric Soil Present? Yes ______ No ______

Remarks:

Wetland B

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Island Beach State Park City/County: Seaside Park/Ocean Sampling Date: 11/19/21

Applicant/Owner: Orsted State: NJ Sampling Point: WLB-UPL

Investigator(s): Steve Seymour, Deidra Valente Section, Township, Range: ______

Landform (hillslope, terrace, etc.): level Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 39.904417 Long: -74.081667 Datum: ______

Soil Map Unit Name: Hooksan Fine Sand, 0-10% slope NWI classification: PSS1/3B; E2EM1Pd

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 ___ No X	Is the Sampled Area within a Wetland?	Yes ___ No X
Hydric Soil Present?	Yes ___ No X		
Wetland Hydrology Present?	Yes ___ No X		

Remarks:

Wetland B

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): —

Water Table Present? Yes ___ No X Depth (inches): —

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): —

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WLB-UPL

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana	60	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	60 = Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1. Myrica pensylvanica	20	Y	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	20	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20 = Total Cover		
50% of total cover:	20% of total cover:		
Woody Vine Stratum (Plot size: 30)			
1. Parthenocissus quinquefolia	10	Y	FACU
2.			
3.			
4.			
5.			
	10 = Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	20	x 2 = 40
FAC species		x 3 =
FACU species	70	x 4 = 280
UPL species		x 5 =
Column Totals:	90 (A)	320 (B)

Prevalence Index = B/A = 3.56

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four 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 X

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WLB-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
6"-3"	3/2 10YR	100						sandy organic loam
3"-20"	5/2 10YR	100						sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: —
Depth (inches): —
none observed

Hydric Soil Present? Yes ___ No X

Remarks:

Wetland C

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Island Beach State Park City/County: Seaside Park, Ocean Sampling Date: 11/19/21

Applicant/Owner: Orsted State: NJ Sampling Point: WLC-WET

Investigator(s): Steve Seymour, Deidra Valiant Section, Township, Range: ______

Landform (hillslope, terrace, etc.): level Local relief (concave, convex, none): level Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 39.852531 Long: -74.088430 Datum: ______

Soil Map Unit Name: Hooksan Fine Sand, 0-10% slope NWI classification: PSS1/3B, E2EM1Pd

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 X No ______		Is the Sampled Area within a Wetland? Yes X No ______
Hydric Soil Present? Yes X No ______		
Wetland Hydrology Present? Yes X No ______		

Remarks:
Wetland C - north of access road to maintenance area on west side of main road.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- __ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Aquatic Fauna (B13)
- __ Marl Deposits (B15) **(LRR U)**
- X Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Drainage Patterns (B10)
- __ Moss Trim Lines (B16)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)
- __ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ______	No X	Depth (inches): —	
Water Table Present?	Yes X	No ______	Depth (inches): 8" BGS	
Saturation Present? (includes capillary fringe)	Yes X	No ______	Depth (inches): to surface	Wetland Hydrology Present? Yes X No ______

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland C

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WLC - WET

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	Ø = Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15)			
1. Vaccinium corymbosum	20	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	90	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		
50% of total cover:	20% of total cover:		
Woody Vine Stratum (Plot size: 30)			
1. Smilax rotundifolia	20	Y	FAC
2.			
3.			
4.			
5.			
	20 = Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (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 110	x 2 = 220
FAC species 20	x 3 = 60
FACU species	x 4 =
UPL species	x 5 =
Column Totals: 130 (A)	280 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four 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 X No ___

Remarks: (If observed, list morphological adaptations below).

Wetland C

SOIL

Sampling Point: WLC - WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0'00"-0'08"	2/2 10YR	100					fine	peaty saturated loam
8"-20"	4/1 10YR	100					medium	silty sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- X Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): —

Type: NONE OBSERVED

Depth (inches): —

Hydric Soil Present? Yes X No ___

Remarks:

live reed grass rhizomes, plant fibers + peat in surficial soils.

WetIand C

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Island Beach State Park City/County: Seaside Park, Ocean Sampling Date: 11/19/21

Applicant/Owner: Orsted State: NJ Sampling Point: WLC-UPL

Investigator(s): Steve Seymour, Deidra Valiant Section, Township, Range: ______

Landform (hillslope, terrace, etc.): level Local relief (concave, convex, none): level Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 39.852531 Long: -74.088430 Datum: ______

Soil Map Unit Name: Hooksan Fine Sand, 0-10% slope NWI classification: PSS1/3B, E2EM1Pd

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 ______ No X		Is the Sampled Area within a Wetland? Yes ______ No X
Hydric Soil Present? Yes ______ No X		
Wetland Hydrology Present? Yes ______ No X		

Remarks:
WetIand C - north side of access road to maintenance area on west side of main road.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Aquatic Fauna (B13)
- __ Marl Deposits (B15) **(LRR U)**
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Drainage Patterns (B10)
- __ Moss Trim Lines (B16)
- __ Dry-Season Water Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)
- __ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present? Yes ______ No X Depth (inches): –

Water Table Present? Yes ______ No X Depth (inches): –

Saturation Present? (includes capillary fringe) Yes ______ No X Depth (inches): –

Wetland Hydrology Present? Yes ______ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland C

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WLC-UPL

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana	70	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	70 = Total Cover		
50% of total cover:	20% of total cover:		

Sapling/Shrub Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. Viburnum dentatum	10	Y	FAC
2. Myrica pensylvanica	20	Y	NI
3.			
4.			
5.			
6.			
7.			
8.			
	30 = Total Cover		
50% of total cover:	20% of total cover:		

Herb Stratum (Plot size: 5)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	Ø = Total Cover		
50% of total cover:	20% of total cover:		

Woody Vine Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Smilax rotundifolia	10	Y	FAC
2. Parthenocissus quinquefolia	10	Y	FACU
3.			
4.			
5.			
	20 = Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	20	x 3 = 60
FACU species	80	x 4 = 320
UPL species		x 5 =
Column Totals:	100 (A)	380 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ~~X~~ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four 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 X

Remarks: (If observed, list morphological adaptations below).

Wetland C

SOIL

Sampling Point: WLC-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0'00'-7'	3/2 10YR	100						sandy organic loam
7"-20"	5/2 10YR	100						dry sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: —
Depth (inches): —
none observed

Hydric Soil Present? Yes ___ No X

Remarks:

Ocean Wind
An Ørsted & PSEG project

BL England

Ocean Wind
An Ørsted & PSEG project

Ocean Wind Offshore Wind (OCW01)

Wetland and Watercourse Delineation Report

BL England and Roosevelt Boulevard- Block 1750, Lot 1, Block 3350.01, Lot 17, Block 3350.01, Lot 17.01

Document Version

File Name	Preparer	Editor	Checker	Accepter	Approver
OCW01- BL England Delineation Report_20220111	DV, JC	ALD	KV, DB		

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1. Project Description

Ocean Wind LLC (Ocean Wind), a subsidiary of Ørsted Wind Power North America LLC (Ørsted) [formerly Dong Energy Wind Power (U.S.) Inc.] is developing the Ocean Wind Offshore Wind Farm Project (OCW01) pursuant to the Bureau of Ocean Energy Management (BOEM) requirements for the commercial lease of submerged lands for renewable energy development on the outer continental shelf (Lease Area OCS-A-0498). Ocean Wind intends to develop, build, operate, and own (through one or more affiliated special purpose entities) a utility-scale offshore wind farm located approximately 15 miles off the coast of New Jersey within the OCS-A 0498 Lease area (**Figure 1-1**).

As a part of Project development, Ocean Wind is looking to best utilize the available points of interconnection to the onshore grid. A point of interconnection is referred to as "BL England" or "the Project", located on a property owned by RC Cape May Holdings, LLC. The BL England property is located in the Beesley's Point section of Upper Township in the northern portion of Cape May County (Block 479, lot 76) (**Figure 1-1**). A wetland delineation was previously completed in July and August of 2018 by Water's Edge Environmental, LLC and NJDEP issued a Letter of Interpretation (LOI) on March 19, 2019 (LOI File #0511-03-0011.4). The LOI will expire on March 24, 2024 (see **Attachment C**). To support the potential development of the site, a wetland delineation, LOI verification, and habitat assessment were conducted for the eastern portion of the property that includes the golf course, wooded areas along Clay Avenue, and a section of the rail line (**Figure 1-1**) in November 2021. The BL England Wetland Review Area (WRA) consists of the BLE Onshore Substation and Onshore Export Cable Route.

The BL England property is zoned as Utility, Conservation, and Center Residential. As part of the settlement agreement to build the generating station, Upper Township stipulated that the Atlantic Electric Company must provide an area set aside for public recreational purposes. This included the nine-hole golf course and clubhouse, a softball field, a picnic area, and a fishing pier. Currently, the golf course is not operational, and the clubhouse has been demolished. The golf course continues to be maintained by mowing. The BL England generating station was permanently decommissioned on May 1, 2019 (Water's Edge Environmental LLC, 2019).

A wetland delineation and habitat assessment were also conducted within the BLE WRA along Roosevelt Boulevard south of the BL England property in Upper Township and Ocean City, as part of the onshore export cable route (**Figure 1-1**). Both assessments were conducted within the road right-of-way east and west of the Roosevelt Bridge. The wetland delineation east of the Roosevelt Bridge is within Block 3350.01, Lot 17 owned by the City of Ocean and Block 3350.01, Lot 17.01 owned by Cape May County (**Figure 1-1**).

Ocean Wind
An Ørsted & PSEG project

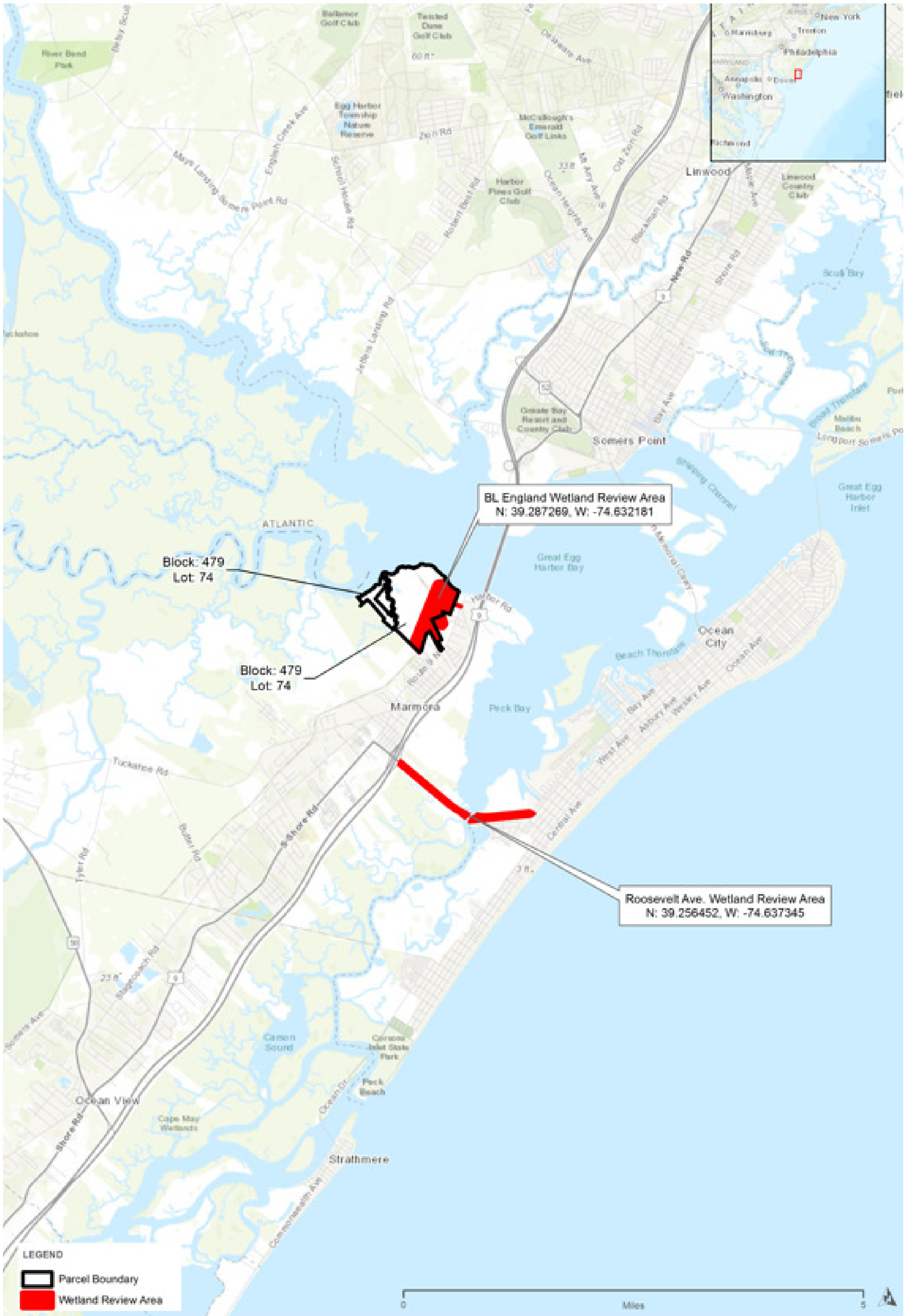

Figure 1-1. Project Overview Figure with WRAs.

2. Methods

HDR Engineering, Inc. (HDR) delineated the boundaries of wetlands and watercourses within the Project Area in two phases, Desktop Review and Field Survey, as described below.

2.1 Desktop Review

Prior to conducting the wetland and watercourse delineation, relevant materials were reviewed, and are included as attachments for reference:

- NJDEP Watershed Management Area Map
- New Jersey State Department of Environmental Protection (NJDEP) Wetlands Map
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Map
- U.S. Department of Agriculture (USDA) Natural Resources Conservation (NRCS) Web Soil Survey (WSS) Custom Soil Resource Report (**Attachment A**)
- Federal Emergency Management Agency (FEMA) 2013 Preliminary Working Data Flood Insurance Rate Maps (FIRM)

2.2 Field Survey

On September 16 and 17, 2019, and March 21, 2022 the boundaries of the BLE WRA were delineated.

All delineation flag locations were surveyed by a license New Jersey Land Surveyor and additionally recorded using sub-meter accuracy GPS units.

All delineations used the three-parameter methodology described in the 1987 United States Army Corps of Engineers (USACE) wetland delineation manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual, Atlantic and Gulf Coastal Plain Region (USACE 2010). The lines were walked and verified based on the three-parameter approach (soils, vegetation, and hydrology) described in the 1989 Federal Interagency Manual. Upland and wetland observation points were recorded for each delineated wetland. Watercourses were delineated using the indicators of the ordinary high-water mark as described in Regulatory Guidance Letter 05-05 (USACE 2005). Mapped wetland observation locations were then verified by a New Jersey licensed professional land surveyor. Photographs of the site, wetland observation soil pits, and vegetation were taken and are included in **Attachment B**.

2.3 Ecological Community Assessment

During the site visits an assessment of the ecological communities in the Project Areas was conducted by mapping and classifying the dominant wetlands and deepwater habitat types as defined by Cowardin et al. (1979). The upland communities were mapped based on the observed dominant plant species and size of trees where applicable. Additionally, incidental wildlife species observations were documented during the site visits. Assessment of potential habitat for species identified through New Jersey Department of Environmental Protection (NJDEP) Natural Heritage Program (NHP) and the United States Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) searches were completed for each mapped ecological community.

3. Results

3.1 Desktop Review

3.1.1 BLE WRA

3.1.1.1 Proposed Onshore Substation at BL England Generating Station

The Proposed Onshore Substation at the BLE England Generating Station, is bound by residential development to the south, North Shore Road and commercial properties to the east, Great Egg Harbor to the north, and coastal wetlands to the west. The Project Review Area is within the NJDEP Great Egg Harbor Watershed Management Area (WMA-15) (**Figure 3.1-1**).

According to the NJDEP's Surface Quality Standards (N.J.A.C. 7:9B, adopted amendments N.J.A.C. 7:9B-1.15), Great Egg Harbor is classified as freshwater- non trout/ saline estuary (FW2-NT/SE1) waters. Designated uses for this classification include maintenance, migration and propagation of the natural and established biota, primary contact recreation, industrial and agricultural water supply, public potable water supply after conventional filtration treatment, migration of diadromous fish, and secondary contact recreation. There are no other New Jersey mapped waterbodies in the Project Review Area.

The NJDEP Wetlands Land Use/Land Cover Map shows pocket areas of wetlands within the Project Review Area. Sections of the golf course are identified as managed wetland in built-up maintained recreation area (**Figure 3.1-2**). On the easternmost side of the Project Review Area, wetlands are identified as deciduous dominated mixed wooded wetlands, deciduous wooded wetlands, coniferous dominated mixed wooded wetlands, and *Phragmites* dominate interior wetlands (**Figure 3.1-2**). Wetlands along and west of the rail line are identified as *Phragmites* dominate coastal wetlands, coniferous dominated mixed scrub/shrub wetlands, deciduous dominated mixed scrub/shrub wetland, deciduous dominated mixed wooded wetlands, and low marsh saline marsh (**Figure 3.1-2**).

The USFWS National Wetlands Inventory (NWI) Map classifies the two small freshwater ponds on the golf course portion of the Project Review Area (Cowardin classification PUBHx). The wetlands to the west of the rail line are identified as freshwater forested/shrub wetland (PSS1/4B) and estuarine and marine wetland (E2Em1Pd) (**Figure 3.1-3**). The eastern portion of the Project Review Area contains freshwater forested/shrub wetlands (PF01E and PF01B) and the northern edge of the Project Review Area where Great Egg Harbor is located is identified as estuarine and marine deepwater (E1UBL).

The United States Department of Agriculture Web Soil Survey (USDA WSS) report indicates the majority of soil map units (greater than 10 percent contributing area) within the Project Review Area are classified as Berryland and Mullica soils, Galloway loamy sand, Pawcatuck-Transquaking complex, and Hammonton sandy loam (Attachment A). Lesser amounts of mapped soils include Downer sandy loam, Hooksan sand, and urban land. Berryland and Mullica soils are hydric and very poorly drained, sandy fluviomarine sediments with overlying organic materials dominantly from herbaceous vegetation. Galloway loamy sand is somewhat poorly drained and consists of unconsolidated sandy marine sediments. Galloway loamy sands are typically found in dunes and flats and are not hydric. Hammonton sandy loam soils are non-hydric, moderately well drained and found on flats and depressions. The acreage, percent composition, soil series, and hydric rating for the Project Review Area soil map units are presented in Error! Reference source not found.**3.1.1-1.** The USDA Custom Soil Resource Report is provided in Attachment A.

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) (2015 Preliminary Work Map Data) showed that the majority of the Project Review Area is within Special Flood Hazard Area Zone AE (1% annual chance flood level), with the northern extent of the Project Review Area within Zone X (0.2%

annual chance flood level) (**Figure 3.1-4**). The northeastern edge of the Project Review Area is designed Flood Zone VE (1.0% annual chance of flood with a velocity hazard) (**Figure 3.1-4). Table 3.1.1-3** summarizes the extents of each flood hazard area (FHA) within the Project Review Area.

Table 3.1.1-1. Soil Map Units within Project Review Area – BL England

Map Unit Symbol	Map Unit Name	Percent of Project Review Area	Soil Series Component	% Component	Hydric Rating
BEXAS	Berryland and Mullica soils, 0 top 2 percent slopes, occasionally flooded	33.4%	Berryland	50	Yes
			Mullica	40	Yes
			Atsion	5	Yes
			Manahawkin	5	Yes
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	3.7%	Downer	80	No
			Galestown	10	No
			Ingleside	5	No
			Hammonton	5	No
GamB	Galloway loamy sand, 0 to 5 percent slopes	23.9%	Galloway	85	No
			Downer	5	No
			Atsion	5	Yes
			Mullica	5	Yes
HboA	Hammonton sandy loam, 0 to 2 percent slopes	11.1%	Hammonton and similar soils	85	No
			Mullica	5	Yes
			Atsion	5	Yes
			Fallsington	5	Yes

Map Unit Symbol	Map Unit Name	Percent of Project Review Area	Soil Series Component	% Component	Hydric Rating
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	0.3%	Hooksan	90	No
			Pawcatuck	5	Yes
			Beaches	5	Yes
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	14.7%	Pawcatuck	60	Yes
			Transquaking	25	Yes
			Berryland	5	Yes
			Appoquinimink	5	Yes
			Mullica	5	Yes
UR	Urban Land	5.1%	Urban land	95	No
			Udorthents	5	No
WATER	Water	14.5%	Water	100	N/A
Totals for Project Review Area		**100.0%**			

Figure 3.1.1-1. NJDEP Watershed Management Areas Map

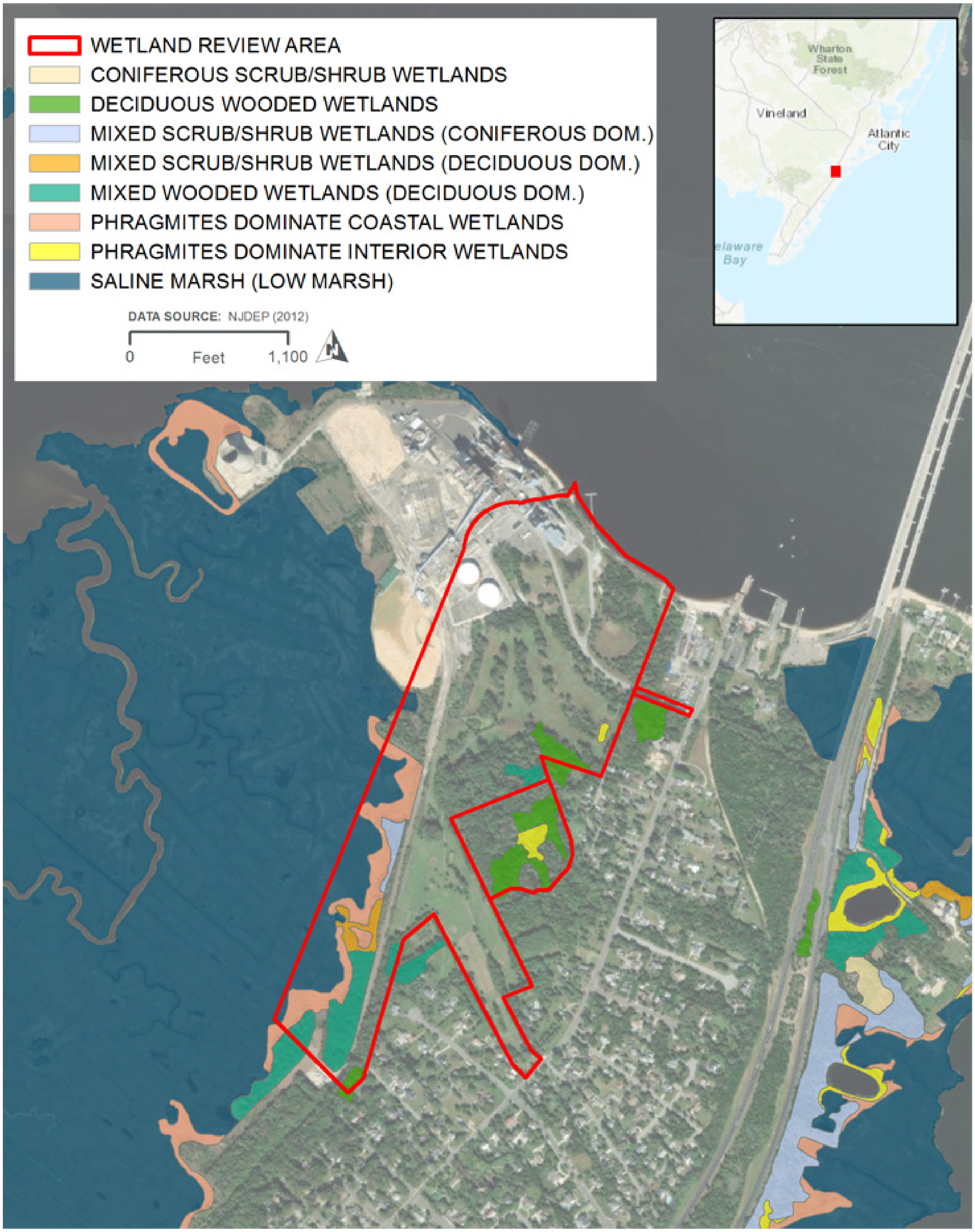

Figure 3.1.1-2. NJDEP Wetlands Map – BL England

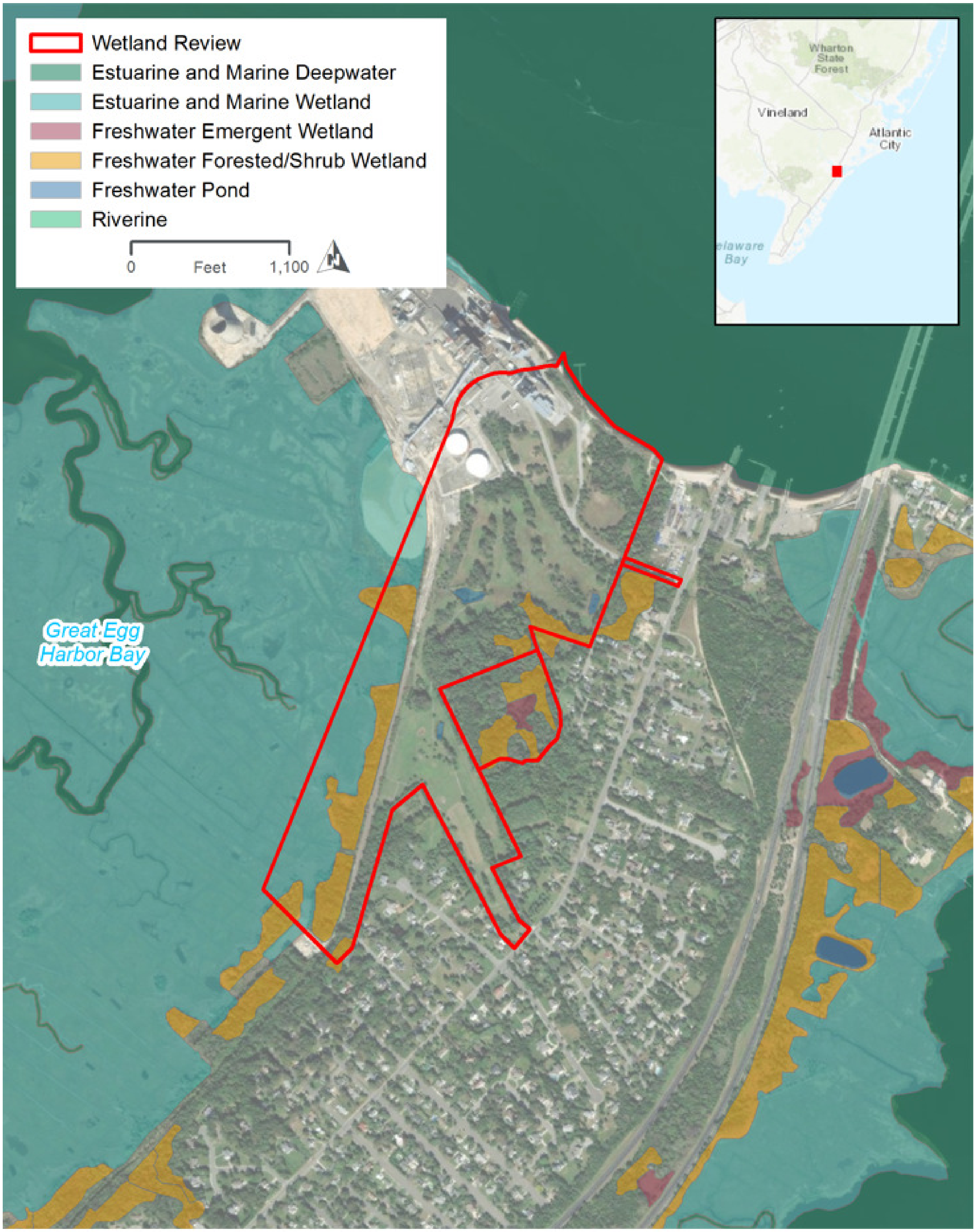

Figure 3.1.1-3. NWI Wetlands Map – BL England

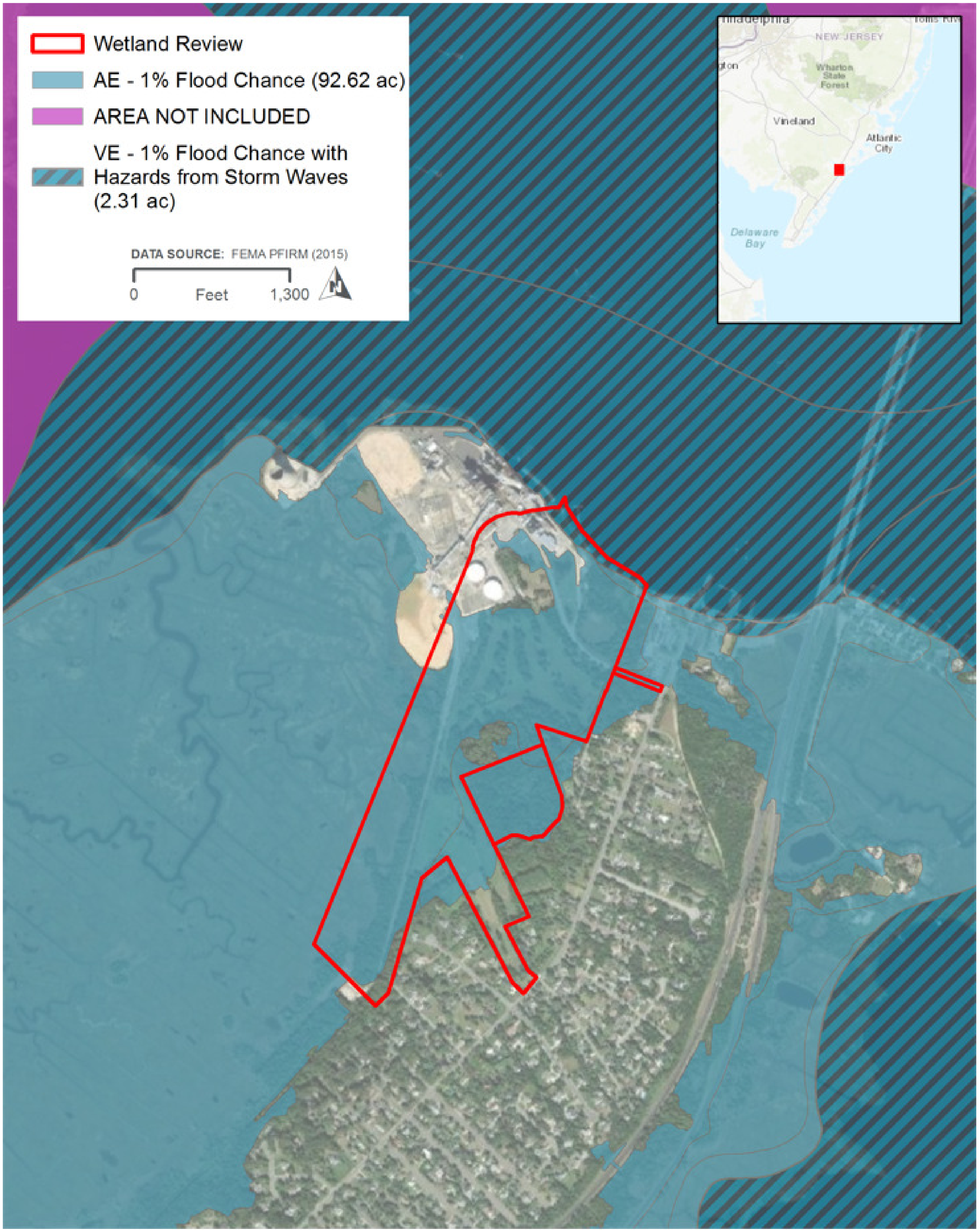

Figure 3.1.1-4. FEMA Preliminary Flood Hazard Map – BL England

3.1.1.2 Proposed Export Cable Route - Roosevelt Boulevard

The proposed export cable route (ECR) travels northwest from Ocean City into Upper Township along Roosevelt Boulevard. On the western side of the Roosevelt Boulevard Bridge, the Project Review Area is bound by commercial development and coastal wetlands to the north, south, west, and Peck Bay to the east. The Project Review Area on the eastern side of Roosevelt Boulevard Bridge is bordered by coastal wetlands to the north, residential and commercial development to the south and east, and Peck Bay to the west. The Project Review Area is within the NJDEP Great Egg Harbor and Cape May Watershed Management Area (WMA-15 and WMA-16) (**Figure 3.1-5**).

According to the NJDEP's Surface Quality Standards, Peck Bay is classified as FW2-NT/SE1 waters. Designated uses for this classification includes maintenance, migration and propagation of the natural and established biota, primary contact recreation, industrial and agricultural water supply, public potable water supply after conventional filtration treatment, migration of diadromous fish, and secondary contact recreation.

The NJDEP Wetlands Land Use/Land Cover Map for the Roosevelt Boulevard Project Review Area does not have any mapped wetlands within the road right-of-way (**Figure 3.1-6**). Wetlands that surround the road right-of-way are mapped as predominately saline low marsh with pockets of *Phragmites* dominate coastal wetlands, coniferous wooded wetlands, and mixed scrub/shrub deciduous dominated wetlands.

The USFWS NWI Map classifies the wetlands north and south of Roosevelt Boulevard as estuarine and marine wetlands (Cowardin classification E2Em1Pd) and estuarine and marine deepwater (Cowardin classification E1UBL). Small pockets of freshwater forested/shrub wetland classification PFO4B) are located on the western edge of the Roosevelt Boulevard Project Review Area, and freshwater emergent wetland (Cowardin classification PEM1R) are located on the eastern edge of Roosevelt Boulevard Project Review Area (**Figure 3.1-7)**.

The USDA WSS report indicates the majority of soil map units within the Project Review Area are classified as urban land and urban land-Psamments (greater than 10 percent contributing area) (Attachment A). Lesser amounts of mapped soil includes Pawcatuck-Transquaking complex and Appoquinimink-Transquaking-Mispillion complex. Urban land is surface that is covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material. Urban land-Psamments, sulfidic substratum complex is nonhydric and moderately well-drained, with sandy human-transported parent material. Pawcatuck-Transquaking complex is hydric, very poorly drained, and has a typical profile of mucky peat from the surface to a depth of 45 inches. The acreage, percent composition, soil series, and hydric rating for soil map units within the Project Review Area are presented in **Table 3.1.1-2**. The USDA Custom Soil Resource Report is provided in Attachment A.

FEMA floodplain maps (FEMA 2015 Preliminary Work Map Data) show that the entire Project Review Area is within Special Flood Hazard Area Zone AE (1% annual chance flood level) (**Figure 3.1-8**). **Table 3.1.1-3** summarizes the extents of each flood hazard zone within the Project Review Area.

Table 3.1.1-2. Soil Map Units within Project Review Area – Roosevelt Boulevard

Map Unit Symbol	Map Unit Name	Percent of Project Review Area	Soil Series Component	% Component	Hydric Rating
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	1.6%	Appoquinimink	40	Yes
			Transquaking	30	Yes
			Mispillion	25	Yes
			Hammonton	5	Yes
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	27.5%	Pawcatuck	60	Yes
			Transquaking	25	Yes
			Berryland	5	Yes
			Appoquinimink	5	Yes
			Mullica	5	Yes
UR	Urban land	38.0%	Urban Land	95	No
			Udorthents	5	No
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded	28.1%	Urban Land, sulfidic substratum	60	No
			Psamments, sulfidic substratum	30	No
			Transquaking	5	Yes
			Appoquinimink	5	Yes
WATER	Water	0.1%	Water	100	N/A
Totals for Project Review Area		**100.0%**			

Table 3.1.1-3. Summary of FEMA Flood Hazard Zones within Project Review Area

Map Unit Symbol	Percent of Project Review Area – BL England	Percent of Project Review Area – Roosevelt Blvd
Zone AE (1.0%)	76.6%	100
Zone X (0.2%)	9.3%	< 0.01
Zone X (minimal flood risk)	12.4%	--
Zone VE (1.0% risk with velocity hazard)	2.1%	--
Totals for Project Review Area	**100.0%**	**100.0%**

Figure 3.1.1-5. NJDEP Wetlands Map – Roosevelt Boulevard

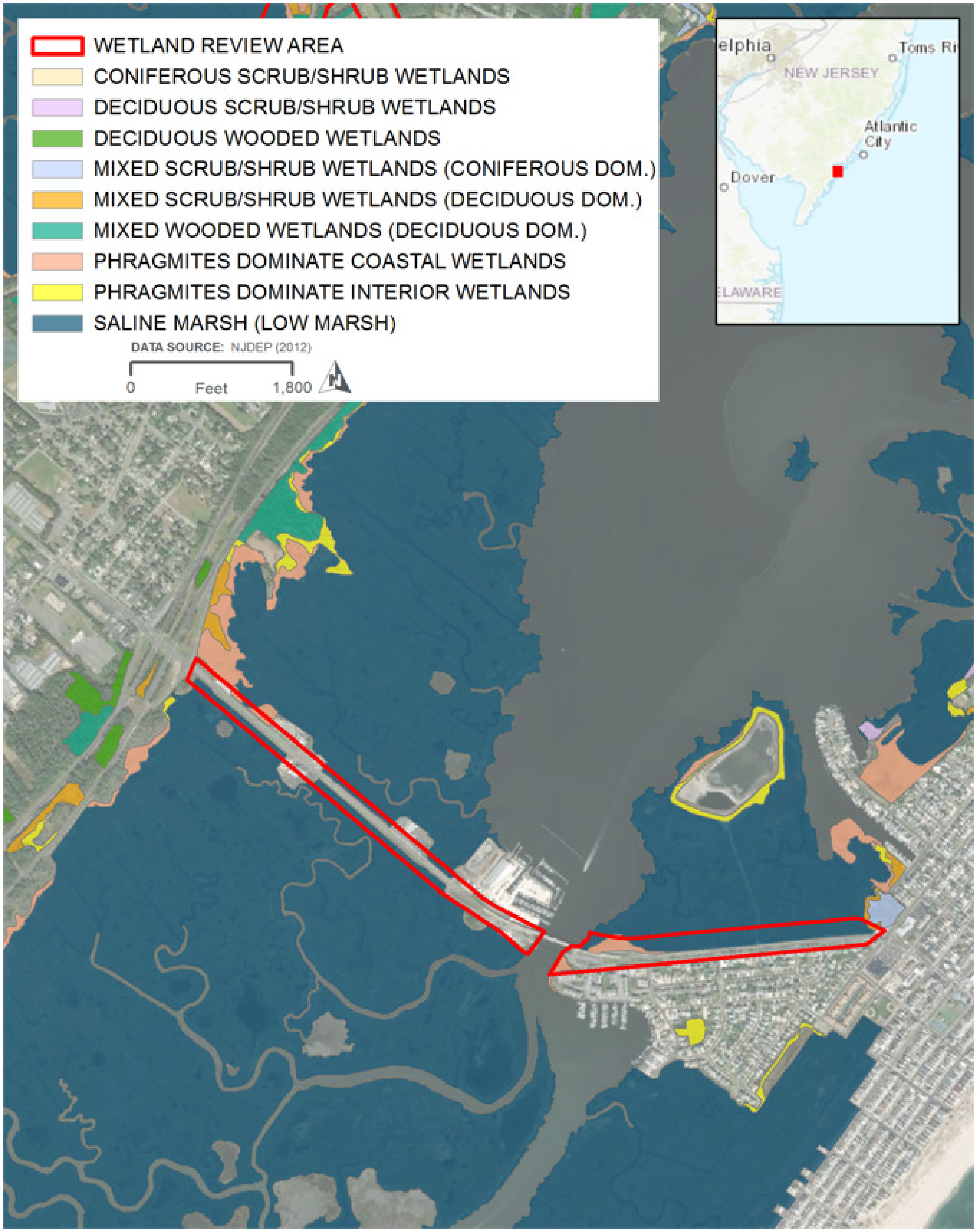

Figure 3.1.1-6. NJDEP Wetlands Map – Roosevelt Boulevard

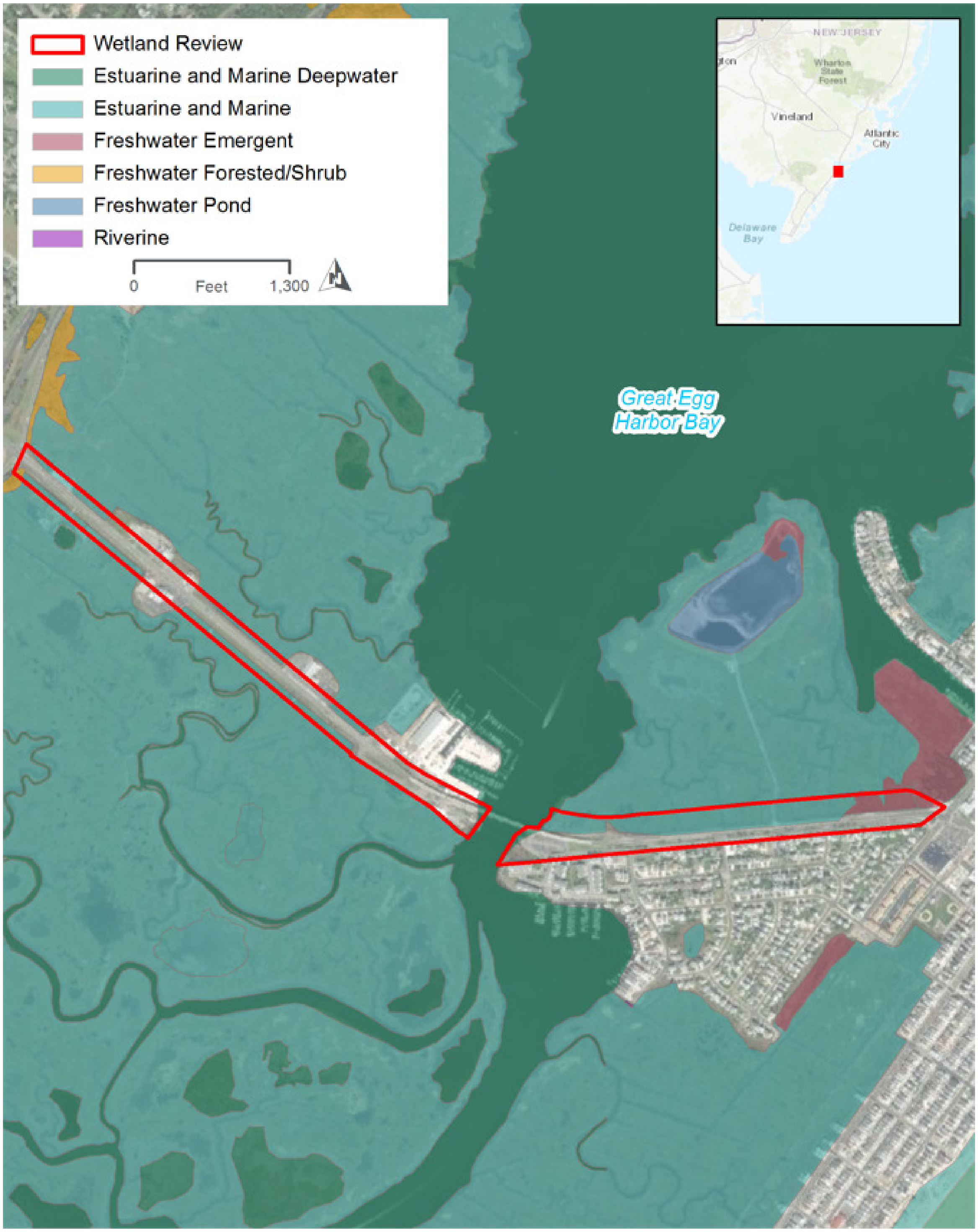

Figure 3.1.1-7. NWI Wetlands Map – Roosevelt Boulevard

Figure 3.1.1-8. FEMA Preliminary Flood Hazard Map – Roosevelt Boulevard

3.2 Wetland Delineation Field Survey

3.2.1 BLE WRA

3.2.1.1 Proposed Onshore Substation at BL England Generating Station

The NJDEP Wetlands LOI (LOI File #0511-03-0011.4; issued March 19, 2019) for the BL England Generating Station parcel was reviewed prior to the field work and the LOI line uploaded on the field GPS units. The lines were walked and verified based on the three-parameter approach (soils, vegetation, and hydrology) described in the 1989 Federal Interagency Manual. The wetland boundaries cited in the LOI were generally accurate. However, during the site walk-over on 16 November 2021 with NJDEP, four additional areas deemed to be wetland by NJDEP were identified and mapped by GPS. NJDEP identified four wetland areas outlined below.

Wetland Verification Area A - NJDEP identified an area that contained wetland indicative vegetation (red maple and sweetgum and hydrophytic grasses), F6 (redox dark surface) indicative soils, and evidence of hydrology (water-stained leaves, high water table, and soil saturation). This area is 0.44 acre in size and extended from the forested area to the periodically mowed golf course fairway.

Wetland Verification Area B – Is a depressed area within a periodically mowed golf course fairway featuring some wetland-indicative herbs and F6 (redox dark surface)-indicative soils. The area is 0.15 acre in size and contained a small area of trees including red maple and sweetgum. Hydrology indicator was high water table.

Wetland Verification Area C - NJDEP also identified a small (0.003-acre) area within a wooded patch that contained wetland characteristics (soils [F6; redox dark surface} vegetation [sedges and rushes], and water-stained fallen leaves.

Wetland Verification Area D - NJDEP identified a narrow, slightly depressed drainage swale running northeast to southwest through one of the periodically mowed fairways on the former golf course. The area is 0.16 acre in size. Wetland-indicative vegetation consisted of lamp rush (*Juncus effusus*) and yellow nut sedge (*Cyperus esculentus*); soils had a dark surface layer that met the F6 Indicator (redox dark surface). The subsoil consisted of dense sand with evident organic streaking and iron staining.

Upland areas identified outside of these wetland areas had no hydric soil indicators were observed. Dominant species within the adjacent upland meadow areas area include white clover (*Trifolium repens*) and Timothy grass. White clover and Timothy grass have a FACU indicator status. Upland dominant vegetation in the scrub/shrub and forested areas included multiflora rose (FACU), mugwort (UPL), American holly (FACU), Timothy grass (FACU), Virginia creeper (FACU), mountain holly saplings (OBL), Northern bayberry (FACU), Russian olive (FAC). Based on the dominance test not meeting 50% of species that are OBL, FACW, or FAC or a prevalence index not less than or equal to 3.0, this area is an upland.

Table 3.2.1-1. Summary of Wetland Delineation Field Survey Results – BL England

Wetland ID	Hydrology Indicators	Dominant Vegetation	Hydric Soil Indicator	Size (Acres)	NWI Cowardin Classifi-cation
Wetland Verification Area A	Water Stained leaves (B9), high water table (A2) and soil saturation (A3)	Acer Rubrum (FAC) and Liquidambar styraciflua (FAC)	Redox dark surface (F6)	0.4	E1UBL6

Wetland ID	Hydrology Indicators	Dominant Vegetation	Hydric Soil Indicator	Size (Acres)	NWI Cowardin Classifi-cation
Wetland Verification Area B	Soil saturation (A3)	Acer Rubrum (FAC) and Liquidambar styraciflua (FAC)	Redox dark surface (F6)	0.2	None mapped
Wetland Verification Area C	Water-stained leaves (B9)	Carex stricta (OBL), Acer Rubrum (FAC) and Liquidambar styraciflua (FAC), mountain holly (OBL),	Redox dark surface (F6)	0.003	PUBHx
Wetland Verification Area D	iron deposits (B5), Water-stained leaves (B9)	Lamp rush (OBL), yellow nut sedge (FAC)	Redox dark surface (F6)	0.2	PUBHx
Totals for Project Review Area				**1.2**	

FACW= Facultative Wetland species

FAC = Facultative species

OBL = Obligate species

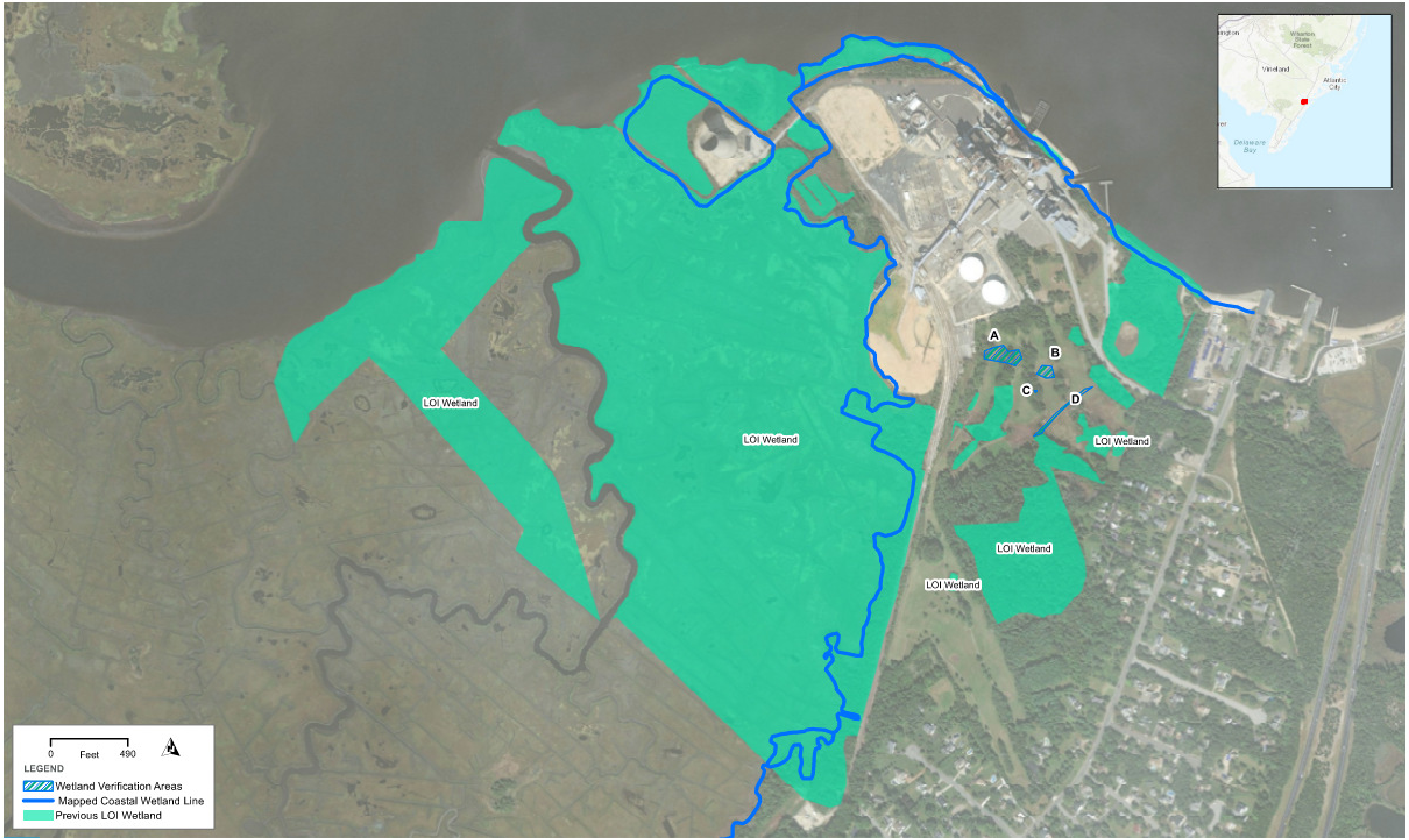

Figure 3.2.1-1. Summary of Wetland Delineation Field Survey Results – BL England

3.2.1.2 Proposed Export Cable Route - Roosevelt Boulevard

Wetland A – Wetland A is located on the southern side of Roosevelt Boulevard and on the western side of the Roosevelt Boulevard Bridge (**Figure 3.2.1-2**). The wetland line was delineated within 150 feet of Roosevelt Boulevard and everything beyond the line is saline marsh. Wetland A is identified as "E2EM1Pd" (Estuarine, Intertidal, Emergent, Persistent, Irregularly Flooded, Partially Drained/Ditched) by NWI. Wetland A is dominated by salt meadow cordgrass (*Spartina patens*), having an OBL indicator status, providing a hydrophytic vegetation indicator through positive dominance test and prevalence index. Soils in Wetland A were indicative of hydric soils due to the presence of histosols (Indicator A1). Hydrology indicators include the presence of saturation, aquatic fauna, and a hydrogen sulfide odor. A summary of wetland indicators is provided in **Table 3.2.1-2**.

An upland observation point was taken outside of Wetland A and no hydric soil indicators were observed (**Figure 14**). The dominant species within the upland area includes Kentucky bluegrass (*Poa pratensis*). Kentucky bluegrass has a FACU indicator status. Based on the dominance test not meeting 50% of species that are OBL, FACW, or FAC or a prevalence index not less than or equal to 3.0, this area is an upland.

Wetland B – Wetland B is located on the northern side of Roosevelt Boulevard on the western side of the Roosevelt Boulevard Bridge (**Figure 3.2.1-2**). Wetland B is identified as "E2EM1Pd" (Estuarine, Intertidal, Emergent, Persistent, Irregularly Flooded, Partially Drained/Ditched) by NWI. Wetland B is dominated by common reed, having a FACW indicator status, providing a hydrophytic vegetation indicator through positive dominance test and prevalence index. Soils in Wetland B were indicative of hydric soils due to the presence of histosols (Indicator A1). Hydrology indicators include the presence of a high water table, saturation, and a sparsely vegetated concave surface. A summary of wetland indicators is provided in **Table 3.2.1-2**.

An upland observation point was taken outside of Wetland B and no hydric soil indicators were observed (**Figure 14**). Dominant species within the upland area include Kentucky bluegrass. Kentucky bluegrass has a FACU indicator status. Based on the dominance test not meeting 50% of species that are OBL, FACW, or FAC or a prevalence index not less than or equal to 3.0, this area is an upland.

Wetland C – Wetland C is located on the eastern side of Roosevelt Boulevard Bridge and extends on the north side of Roosevelt Boulevard west around the footings of the bridge and south along the shoreline of Crook Horn Creek (**Figure 3.2.1-2**). Wetland C is identified as "E2EM1P" (Estuarine, Intertidal, Emergent, Persistent, Irregularly flooded) by NWI. Wetland C is dominated by salt meadow cordgrass, having an OBL indicator status, providing a hydrophytic vegetation indicator through positive dominance test and prevalence index. Soils in Wetland C were indicative of hydric soils due to the presence of a depleted matrix (Indicator F3). Hydrology indicators include the saturation and drift deposits. A summary of wetland indictors is provided in **Table 3.2.1-2**.

An upland observation point was taken outside of Wetland C and no hydric soil indicators were observed (**Figure 3.2.1-2**). Dominant species within the upland area include Kentucky bluegrass and Virginia creeper (*Parthenocissus quinquefolia*). Kentucky bluegrass and Virginia creeper have a FACU indicator status. Based on the dominance test not meeting 50% of species that are OBL, FACW, or FAC or a prevalence index not less than or equal to 3.0, this area is an upland. There were no other watercourses or waterbodies present within the Project Study Area.

Table 3.2.1-2. Summary of Wetland Delineation Field Survey Results – Roosevelt Boulevard

Wetland ID	Hydrology Indicators	Dominant Vegetation	Hydric Soil Indicator	NWI Cowardin Classification
Wetland A	Saturation, aquatic fauna, hydrogen sulfide odor	*Spartina patens (OBL)*	Histosol (A1)	E2EM1Pd
Wetland B	High water table, saturation, sparsely vegetated concave surface	*Phragmites australis (FACW)*	Histosol (A1)	E2EM1Pd
Wetland C	Saturation, drift deposits	*Spartina patens (OBL)*	Depleted Matrix (F3)	E2EM1P

FACW= Facultative Wetland species

OBL = Obligate species

Ocean Wind
An Ørsted & PSEG project

Figure 3.2.1-2. Field Survey Wetland Delineation Map – Roosevelt Boulevard

3.3 Wildlife

3.3.1 BLE WRA

3.3.1.1 Proposed Onshore substation at BL England Generating Facility

Fish – There were no fish species observed during the Project Review Area surveys.

Amphibians –green frogs (*Rana clamitans*) were observed in or proximate to Wetlands C and D during the Project Review Area surveys. No toads or salamanders were observed; the lack of ground cover (fallen trees, bark, or deep leaf litter) may limit the Project Review Area's attractiveness to some amphibians.

Reptiles – Parts of one turtle shell, possibly a box turtle, was observed near the railroad grade on the BL England parcel. No lizards or snakes were observed; the lack of ground cover (fallen trees, bark, or deep leaf litter) may limit the Project Review Area's attractiveness to some reptiles.

Birds – A total of 17 species of birds were observed during the September 2019 Project Review Area surveys; 12 of which were common passerine species. Raptors observed in the Project Review Area include turkey vultures (*Cathartes aura*), kestrel (*Falco sparverius*), and peregrine falcon (*Falco peregrinus;* State Endangered*).* Dominant passerine bird species present were the gray catbird (*Dumetella carolinensis*), cardinal (*Cardinalis cardinalis*), mourning dove (*Zenaida macroura*), and black-capped chickadee (*Poecile atricapillus*). Snowy egrets (*Egretta thula;* State Special Concern Breeding*)*, great egrets (*Ardea alba*), ring-billed gull (*Larus delawarensis*) and laughing gull (*Leucophaeus atricilla*) were observed flying over Great Egg Harbor Bay.

Mammals – mammals observed within the Project Review Area were white-tailed deer (*Odocoileus virginianus*) grazing on the golf course, gray squirrels (*Sciurus carolinensis*), and chipmunks (*Tamias striatus*). Raccoon (*Procyon lotor*) tracks were observed in the mud bordering the ditches and small ponds. No large animal burrows were observed during the Project Review Area surveys.

3.3.1.2 Proposed Export Cable Route - Roosevelt Boulevard

There were no fish, amphibians, reptiles, or mammal species observed along Roosevelt Boulevard during the Project Review Area survey. There are numerous osprey nesting platforms in the salt marshes along Roosevelt Boulevard. There was no evidence of heron or egret rookeries or potential nesting areas. Northern harrier (*Circus hudsonius;* State endangered)*,* snowy egret, great egret, and osprey (*Pandion haliaetus*) were observed by Roosevelt Boulevard.

3.4 Species-Specific Assessment

3.4.1 BLE WRA

Under the Endangered Species Act (ESA) and the New Jersey Endangered and Nongame Species Program, species and their habitats potentially impacted by construction and operation of the proposed Project were evaluated. Ocean Wind conducted site- and species-specific endangered species habitat surveys to determine the location and extent of these resources so they can be avoided or mitigated during construction, operations, maintenance and decommissioning. Readily available data was also reviewed to identify threatened or endangered species within the Project Area. The Project site specific habitat assessment surveys were conducted and coordinated with NJDEP, USFWS, USACE and NOAA.

Additional threatened and endangered species information is provided by the USFWS IPaC and the New Jersey Natural Heritage Program Landscape Project database. These databases generate lists of Federally and State protected species potentially occurring within a particular area. Species identified using these tools within the Onshore Project Areas are outlined in **Table 3.6.1-1, 3.6.2-1 and 3.6.2-2**. In addition to those listed species in the table below, special concern species of birds, reptiles, amphibians, mammals, and invertebrates are also monitored by the NJDEP. Special concern species that could potentially occur in these areas include but are not limited to spotted turtle (*Clemmys guttata*) and the eastern box turtle (*Terrapene carolina carolina).* Additionally, the monarch butterfly (*Donaus plexippus plexippus)* has been listed as a candidate species by the USFWS and has the potential to occur within the Project Areas.

Species that were directly observed at the Project Review Areas or that require habitat specific surveys are discussed in further detail below.

Table 3.6.1-1. Federal and State endangered and threatened species with potential to occur within the BL England Project Area.

Species Common	Species Scientific	Status
Mammals		
Northern long-eared bat	*Myotis septentrionalis*	FT
Fin whale	*Balaenoptera physalus*	FE, SE
Humpback whale	*Megaptera novaeangliae*	FE, SE
North Atlantic right whale	*Eubalaena glacialis*	FE, SE
Birds		
Bald eagle	*Haliaeetus leucocephalus*	SE
Barred owl	*Strix varia*	ST
Cattle egret	*Bubulcus ibis*	ST
Osprey	*Pandion haliaetus*	ST
Black skimmer	*Rynchops niger*	SE
Black-crowned night heron	*Nycticorax nycticorax*	ST
Grasshopper sparrow	*Ammodramus savannarum*	ST
Least tern	*Sternula antillarum*	SE
Northern harrier	*Circus cyaneus*	SE
Peregrine falcon	*Falco peregrinus*	SE
Roseate tern	*Sterna dougallii dougallii*	FE, SE
Yellow-crowned night heron	*Nyctanassa violacea*	ST
Reptiles		
Northern pine snake	*Pituophis melanoleucus melanoleucus*	ST
Timber rattlesnake	*Crotalus horridus horridus*	SE
Atlantic green turtle	*Chelonia mydas*	FT, ST
Atlantic loggerhead	*Caretta caretta*	FT, SE
Atlantic leatherback	*Dermochelys coriacea*	FE, SE
Kemp's Ridley sea turtle	*Lepidochelys kempii*	FE, ST
Amphibians		
Pine barrens treefrog	*Hyla andersonii*	ST
Cope's gray treefrog (southern gray treefrog)	*Hyla chrysoscelis*	SE
Fish		
Atlantic sturgeon	*Acipenser oxyrinchus*	FE, SE

Status: FT - Federally Threatened, FE - Federally Endangered, SE - State Endangered, ST - State Threatened

Swamp Pink – is listed as a Federally-threatened species and as an endangered species in New Jersey. Upper Township, NJ is cited by USFWS as being documented for the presence of swamp pink. Two crews of HDR field personnel with experience in identifying rare plants such as swamp pink and their suitable habitats observed no specimens of swamp pink in the Project Review Area over the course of two days. Only one of the sympatric species, red maple, is present at the BL England Project Review Area, and suitable habitat is very limited. Further, the wetland hummocks/microtopographic relief cited in the USFWS dossier is lacking in the BL England Project Review Area (USFWS, 2019). The wetland areas along Roosevelt Boulevard are tidal marshes and thus would be unsuitable for swamp pink.

Bald Eagle - is listed as an Endangered Species in New Jersey. There were no bald eagles observed in the BL England or Roosevelt Boulevard Project Review Areas. The Project Review Areas themselves do not offer foraging opportunities for bald eagles though they may forage over the open waters of Great Egg Harbor Bay north of the Project Review Areas.

Northern Harrier – is listed as an Endangered Species in New Jersey. Northern harrier were observed over the tidal marshes along Roosevelt Boulevard and over the BL England Generating Station parcel. Northern harriers nest on the ground in undisturbed areas typically near wetlands; this habitat type is not present within the Project Review Areas.

Osprey – is listed as a Threatened Species in New Jersey. Osprey were observed flying over the tidal marshes along Roosevelt Boulevard. There are numerous osprey nesting platforms in the herbaceous wetlands on either side of Roosevelt Boulevard. One osprey was observed on a nesting platform and there appeared to be two nests that were previously occupied during the breeding season. No osprey were observed directly foraging on Roosevelt Boulevard or the Project Review Area.

Peregrine Falcon – is listed as an Endangered Species in New Jersey. A peregrine falcon was observed perched on the coal delivery shuttle at the BL England Generating Station parcel. Peregrine falcons are known to nest on buildings and bridges. No peregrine falcon nests were observed on any of the buildings or structures at the BL England Project Review Area. Peregrine falcons favor open areas for foraging and often hunt over marshes, beaches, or open water. The BL England Project Review Area may provide adequate habitat for foraging; however, no peregrine falcons were observed foraging during the Project Review Area investigation.

4. Literature Cited

Beans, B.E., and Niles, L. (2003). Endangered and Threatened Wildlife of New Jersey. Rutgers University Press. P. 1-300.

Conserve Wildlife Foundation of New Jersey. (2019). New Jersey endangered and threatened species field guide: Eastern box turtle. Accessed July 31, 2019 at www.conservewildlife nj.org/species/fieldguide/.

Cowardin, L.M., Carter, V., Golet, F.C. and LaRoe, E.T. (1979). *Classification of Wetland and Deepwater Habitats of the United States*. Washington, D.C.: U.S. Department of the Interior, Fish and Wildlife Service.

Environmental Laboratory. (1987). *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1*. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.

Jersey Central Power & Light Company, (JCP&L) (1972). *Oyster Creek Nuclear Generating Station – Environmental Report*. Jersey Central Power & Light Company, 300 Madison Ave. Morristown, NJ 07960.

United States Department of Agriculture (USDA): Natural Resources Conservation Service. (2015). *Web Soil Survey*. Retrieved from United States Department of Agriculture, Natural Resources Conservation Service: http://websoilsurvey.nrcs.usda.gov/. Accessed 8 June 2021.

U.S. Army Corps of Engineers (USACE). (2005). *Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark Identification.* Don T. Riley, Major General, US Army, Director of Civil Works.

U.S. Army Corps of Engineers. (2010). *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0)*. ed. J.S. Wakely, R.W. Lichvar, and C.V. Noble, ERDC/EL TR-09-19. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Water's Edge Environmental, LLC. (2019). Development Constraints Analysis for Block 479, Lots 74, 76, 94.01, 97, 98 & 99 in Upper Township, Cape May County, NJ. Report prepared for RC Cape May Holdings, LLC. Ocean City, New Jersey.

Attachment A. USDA NRCS Web Soil Survey Custom Soil Resource Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Cape May County, New Jersey

November 10, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map


74° 38' 29" W
74° 37' 40" W
39° 17' 29" N
39° 16' 39" N
531000
531100
531200
531300
531400
531500
531600
531700
531800
531900
532000
4349100
4349000
4348900
4348800
4348700
4348600
4348500
4348400
4348300
4348200
4348100
4348000
4347900
4347800
4347700
WATER
UR
GamB
HorDr
PdwAv
BEXAS
EveB
HboA
DoeBO
9
Beesleys Ln
Soil Map may not be valid at this scale.
Map Scale: 1:7,580 if printed on A portrait (8.5" x 11") sheet.
Meters
0
100
200
400
600
Feet
0
350
700
1400
2100
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cape May County, New Jersey
Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	36.1	33.4%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	4.0	3.7%
EveB	Evesboro sand, 0 to 5 percent slopes	0.0	0.0%
GamB	Galloway loamy sand, 0 to 5 percent slopes	25.9	23.9%
HboA	Hammonton sandy loam, 0 to 2 percent slopes	12.0	11.1%
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	0.3	0.3%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	15.9	14.7%
UR	Urban land	12.4	11.4%
WATER	Water	1.7	1.5%
Totals for Area of Interest		**108.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Cape May County, New Jersey

BEXAS—Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: v4qb
Elevation: 0 to 140 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Berryland, occasionally flooded, and similar soils: 50 percent
Mullica, occasionally flooded, and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berryland, Occasionally Flooded

Setting

Landform: Depressions, flats, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Parent material: Sandy fluviomarine deposits

Typical profile

Ag - 0 to 11 inches: sand
Bh - 11 to 19 inches: sand
Bg - 19 to 32 inches: sand
B'h - 32 to 40 inches: sand
Cg1 - 40 to 44 inches: sand
Cg2 - 44 to 80 inches: stratified sand to sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Occasional
Frequency of ponding: Occasional
Available water storage in profile: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Description of Mullica, Occasionally Flooded

Setting

Landform: Depressions, flood plains, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Sandy fluviomarine deposits and/or loamy fluviomarine deposits

Typical profile

Oe - 0 to 2 inches: mucky peat
Ag - 2 to 9 inches: sandy loam
Bg1 - 9 to 14 inches: sandy loam
Bg2 - 14 to 28 inches: sandy loam
Cg1 - 28 to 31 inches: loamy sand
Cg2 - 31 to 40 inches: sand
Cg3 - 40 to 80 inches: gravelly loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 5.95 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Occasional
Frequency of ponding: Occasional
Available water storage in profile: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Atsion

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Manahawkin, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

DoeBO—Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area

Map Unit Setting

National map unit symbol: 2thwh
Elevation: 0 to 210 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 64 degrees F
Frost-free period: 190 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Downer and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Downer

Setting

Landform: Low hills, flats, knolls
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope, rise
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Loamy fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: sandy loam
BE - 10 to 16 inches: loamy sand
Bt - 16 to 28 inches: sandy loam
C1 - 28 to 48 inches: loamy sand
C2 - 48 to 80 inches: sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Galestown

Percent of map unit: 10 percent
Landform: Broad interstream divides, flats
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Ingleside

Percent of map unit: 5 percent
Landform: Low hills, flats
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope, rise
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Hammonton

Percent of map unit: 5 percent
Landform: Flats, broad interstream divides
Landform position (two-dimensional): Footslope, shoulder
Landform position (three-dimensional): Dip
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

EveB—Evesboro sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: t0tf
Elevation: 0 to 150 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of local importance

Map Unit Composition

Evesboro and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Evesboro

Setting

Landform: Low hills
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy eolian deposits and/or sandy fluviomarine deposits

Typical profile

A - 0 to 4 inches: sand
AB - 4 to 17 inches: sand
Bw - 17 to 31 inches: sand
C - 31 to 80 inches: stratified loamy sand to sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Atsion

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Lakehurst

Percent of map unit: 5 percent
Landform: Depressions, flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Mullica, rarely flooded

Percent of map unit: 5 percent
Landform: Flood plains, drainageways, depressions
Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Downer

Percent of map unit: 5 percent
Landform: Low hills, knolls
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

GamB—Galloway loamy sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: t0tl
Elevation: 0 to 130 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Galloway and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Galloway

Setting

Landform: Dunes, flats
Landform position (three-dimensional): Riser, dip
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Unconsolidated sandy marine deposits

Typical profile

A - 0 to 2 inches: loamy sand
E - 2 to 10 inches: loamy sand
Bw1 - 10 to 24 inches: loamy sand
Bw2 - 24 to 36 inches: loamy sand
Cg1 - 36 to 52 inches: sand
Cg2 - 52 to 60 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Hydric soil rating: No

Minor Components

Downer

Percent of map unit: 5 percent
Landform: Low hills, knolls
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, convex
Across-slope shape: Linear
Hydric soil rating: No

Atsion

Percent of map unit: 5 percent
Landform: Flats, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Mullica, rarely flooded

Percent of map unit: 5 percent
Landform: Depressions, flood plains, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

HboA—Hammonton sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: t0tq
Elevation: 0 to 120 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hammonton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hammonton

Setting

Landform: Flats, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Coarse-loamy fluviomarine deposits

Typical profile

Ap - 0 to 8 inches: sandy loam
E - 8 to 18 inches: sandy loam
Bt - 18 to 36 inches: sandy loam
C - 36 to 60 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Mullica, rarely flooded

Percent of map unit: 5 percent
Landform: Flood plains, drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Atsion, rarely flooded

Percent of map unit: 5 percent
Landform: Flats, drainageways
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, dip, talf
Down-slope shape: Linear

Across-slope shape: Linear, concave
Hydric soil rating: Yes

Fallsington

Percent of map unit: 5 percent
Landform: Depressions, flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

HorDr—Hooksan sand, 2 to 15 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2xhp7
Elevation: 0 to 20 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 58 degrees F
Frost-free period: 190 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Hooksan, rarely flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hooksan, Rarely Flooded

Setting

Landform: Dunes on barrier islands
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Eolian sands

Typical profile

A - 0 to 6 inches: sand
C - 6 to 90 inches: sand

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 79 to 90 inches
Frequency of flooding: Rare
Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Pawcatuck, very frequently flooded

Percent of map unit: 5 percent
Landform: Tidal marshes on barrier islands
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Beaches, frequently flooded

Percent of map unit: 5 percent
Landform: Dunes
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: Yes

PdwAv—Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded

Map Unit Setting

National map unit symbol: v4qf
Elevation: 20 to 30 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Pawcatuck, very frequently flooded, and similar soils: 60 percent
Transquaking, very frequently flooded, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pawcatuck, Very Frequently Flooded

Setting

Landform: Tidal marshes
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Herbaceous organic material over sandy marine deposits

Typical profile

Oe1 - 0 to 14 inches: mucky peat
Oe2 - 14 to 45 inches: mucky peat
Cg1 - 45 to 50 inches: loamy sand
Cg2 - 50 to 90 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.57 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Very slightly saline to strongly saline (2.0 to 32.0 mmhos/cm)
Available water storage in profile: Very high (about 13.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Description of Transquaking, Very Frequently Flooded

Setting

Landform: Tidal marshes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over loamy

Typical profile

Oi - 0 to 14 inches: peat
Oe - 14 to 48 inches: mucky peat
Oa - 48 to 57 inches: muck
Cg - 57 to 72 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 32.0 mmhos/cm)
Available water storage in profile: Very high (about 26.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Berryland, frequently flooded

Percent of map unit: 5 percent
Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Appoquinimink, very frequently flooded

Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Mullica, rarely flooded

Percent of map unit: 5 percent
Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

UR—Urban land

Map Unit Setting

National map unit symbol: t0vn
Elevation: 0 to 170 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Udorthents

Percent of map unit: 5 percent
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

WATER—Water

Map Unit Setting

National map unit symbol: t0vs
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

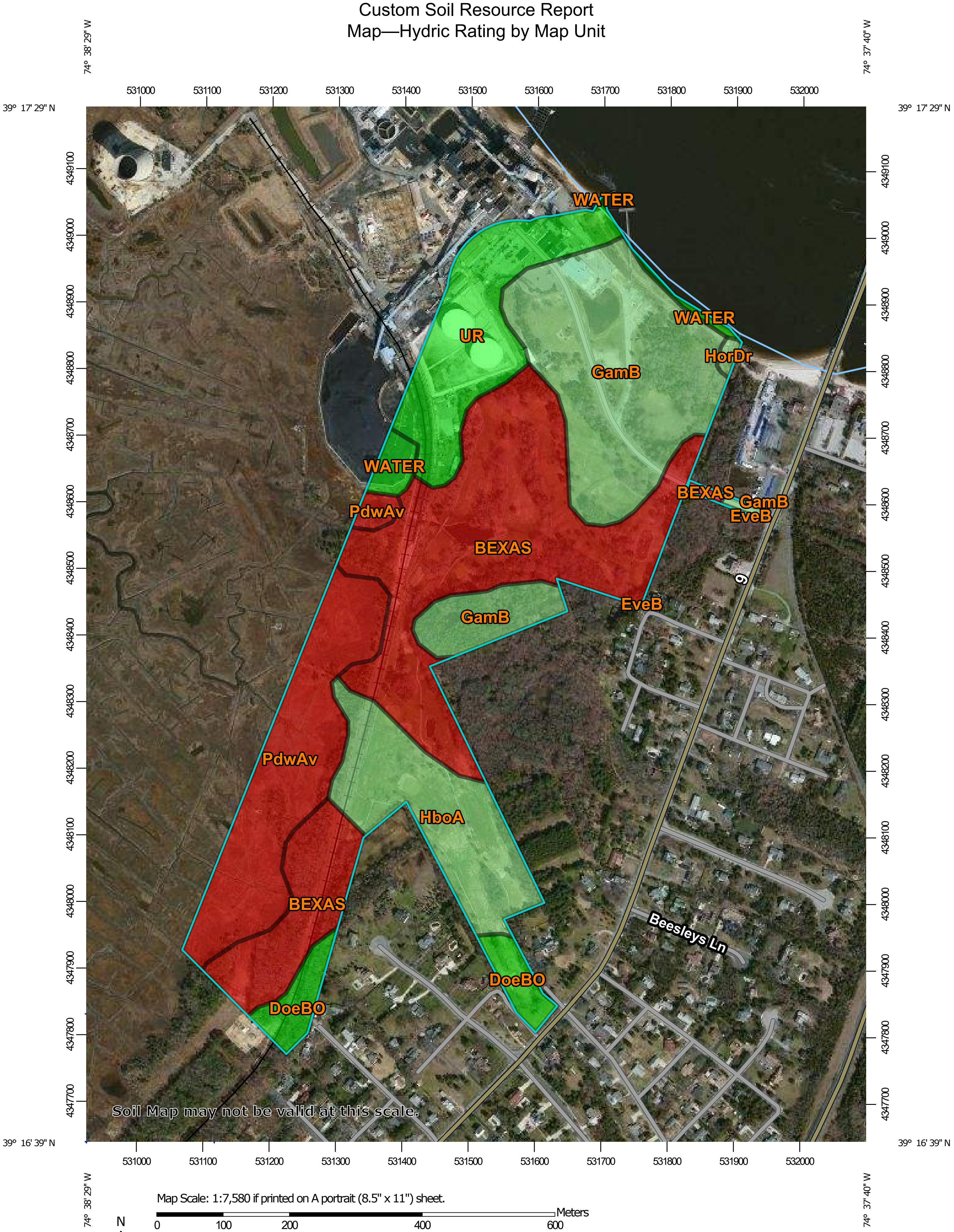
Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Map—Hydric Rating by Map Unit



Map Scale: 1:7,580 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 100, 200, 400, 600

Feet: 0, 350, 700, 1400, 2100

N

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cape May County, New Jersey
Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	100	36.1	33.4%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	0	4.0	3.7%
EveB	Evesboro sand, 0 to 5 percent slopes	10	0.0	0.0%
GamB	Galloway loamy sand, 0 to 5 percent slopes	10	25.9	23.9%
HboA	Hammonton sandy loam, 0 to 2 percent slopes	15	12.0	11.1%
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	10	0.3	0.3%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	100	15.9	14.7%
UR	Urban land	0	12.4	11.4%
WATER	Water	0	1.7	1.5%
Totals for Area of Interest			**108.3**	**100.0%**

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

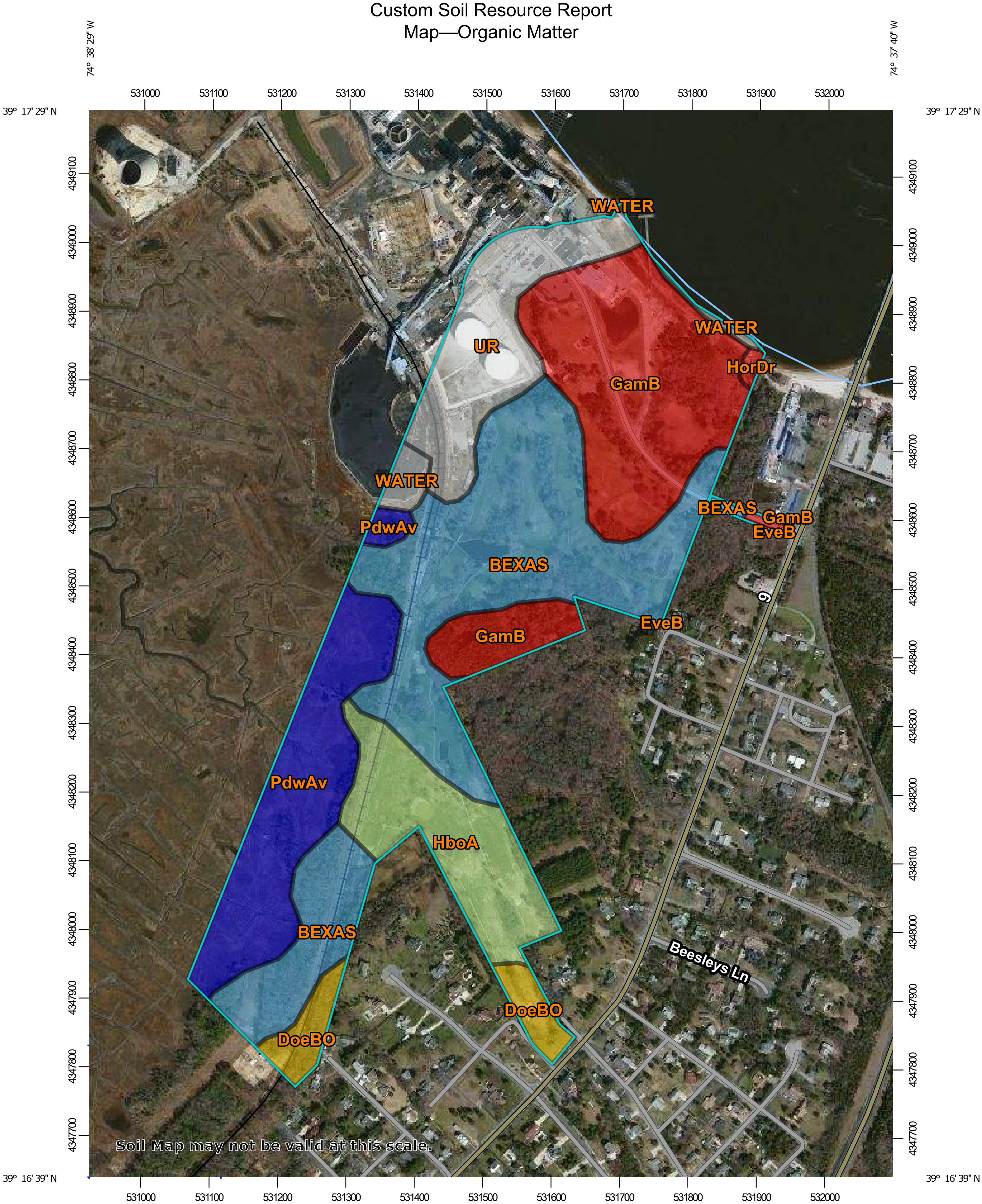
Organic Matter

Organic matter is the plant and animal residue in the soil at various stages of decomposition. The estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms. An irregular distribution of organic carbon with depth may indicate different episodes of soil deposition or soil formation. Soils that are very high in organic matter have poor engineering properties and subside upon drying.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map—Organic Matter



Map Scale: 1:7,580 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 100, 200, 400, 600

Feet: 0, 350, 700, 1400, 2100

N

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- <= 0.50
- > 0.50 and <= 1.08
- > 1.08 and <= 1.42
- > 1.42 and <= 2.82
- > 2.82 and <= 55.00
- Not rated or not available

Soil Rating Lines

- <= 0.50
- > 0.50 and <= 1.08
- > 1.08 and <= 1.42
- > 1.42 and <= 2.82
- > 2.82 and <= 55.00
- Not rated or not available

Soil Rating Points

- <= 0.50
- > 0.50 and <= 1.08
- > 1.08 and <= 1.42
- > 1.42 and <= 2.82
- > 2.82 and <= 55.00
- Not rated or not available

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cape May County, New Jersey
Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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

Table—Organic Matter

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	2.82	36.1	33.4%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	1.08	4.0	3.7%
EveB	Evesboro sand, 0 to 5 percent slopes	0.25	0.0	0.0%
GamB	Galloway loamy sand, 0 to 5 percent slopes	0.43	25.9	23.9%
HboA	Hammonton sandy loam, 0 to 2 percent slopes	1.42	12.0	11.1%
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	0.50	0.3	0.3%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	55.00	15.9	14.7%
UR	Urban land		12.4	11.4%
WATER	Water		1.7	1.5%
Totals for Area of Interest			**108.3**	**100.0%**

Rating Options—Organic Matter

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 30

Units of Measure: Centimeters

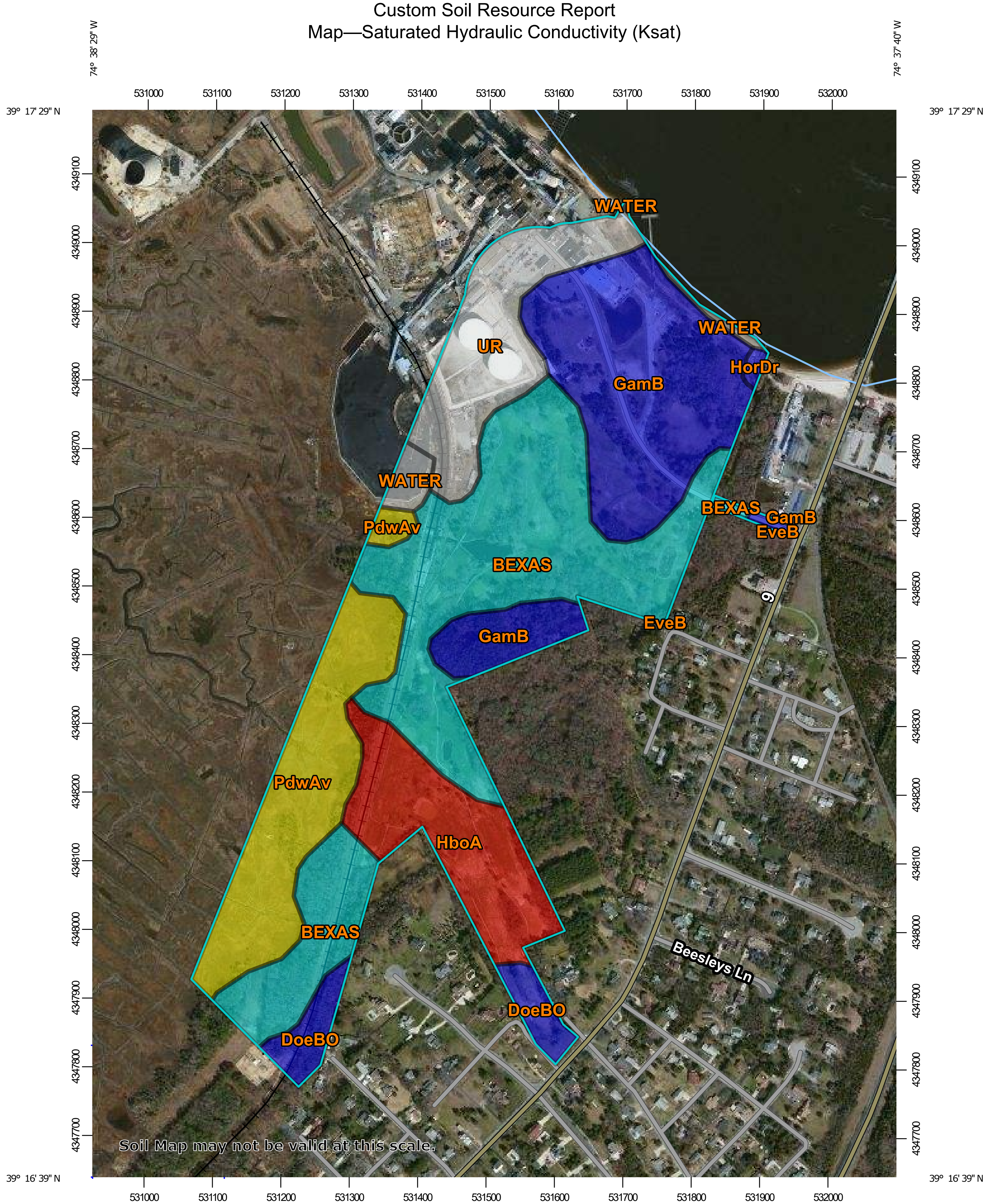
Saturated Hydraulic Conductivity (Ksat)

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Custom Soil Resource Report
Map—Saturated Hydraulic Conductivity (Ksat)



Map Scale: 1:7,580 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0, 100, 200, 400, 600

Feet: 0, 350, 700, 1400, 2100

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

<= 28.2300

> 28.2300 and <= 72.6900

> 72.6900 and <= 90.7993

> 90.7993 and <= 91.7400

Not rated or not available

Soil Rating Lines

<= 28.2300

> 28.2300 and <= 72.6900

> 72.6900 and <= 90.7993

> 90.7993 and <= 91.7400

Not rated or not available

Soil Rating Points

<= 28.2300

> 28.2300 and <= 72.6900

> 72.6900 and <= 90.7993

> 90.7993 and <= 91.7400

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

Soil Survey Area: Cape May County, New Jersey
Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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

Table—Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	90.7993	36.1	33.4%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	91.7400	4.0	3.7%
EveB	Evesboro sand, 0 to 5 percent slopes	91.7400	0.0	0.0%
GamB	Galloway loamy sand, 0 to 5 percent slopes	91.7400	25.9	23.9%
HboA	Hammonton sandy loam, 0 to 2 percent slopes	28.2300	12.0	11.1%
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	91.7400	0.3	0.3%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	72.6900	15.9	14.7%
UR	Urban land		12.4	11.4%
WATER	Water		1.7	1.5%
Totals for Area of Interest			**108.3**	**100.0%**

Rating Options—Saturated Hydraulic Conductivity (Ksat)

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 30

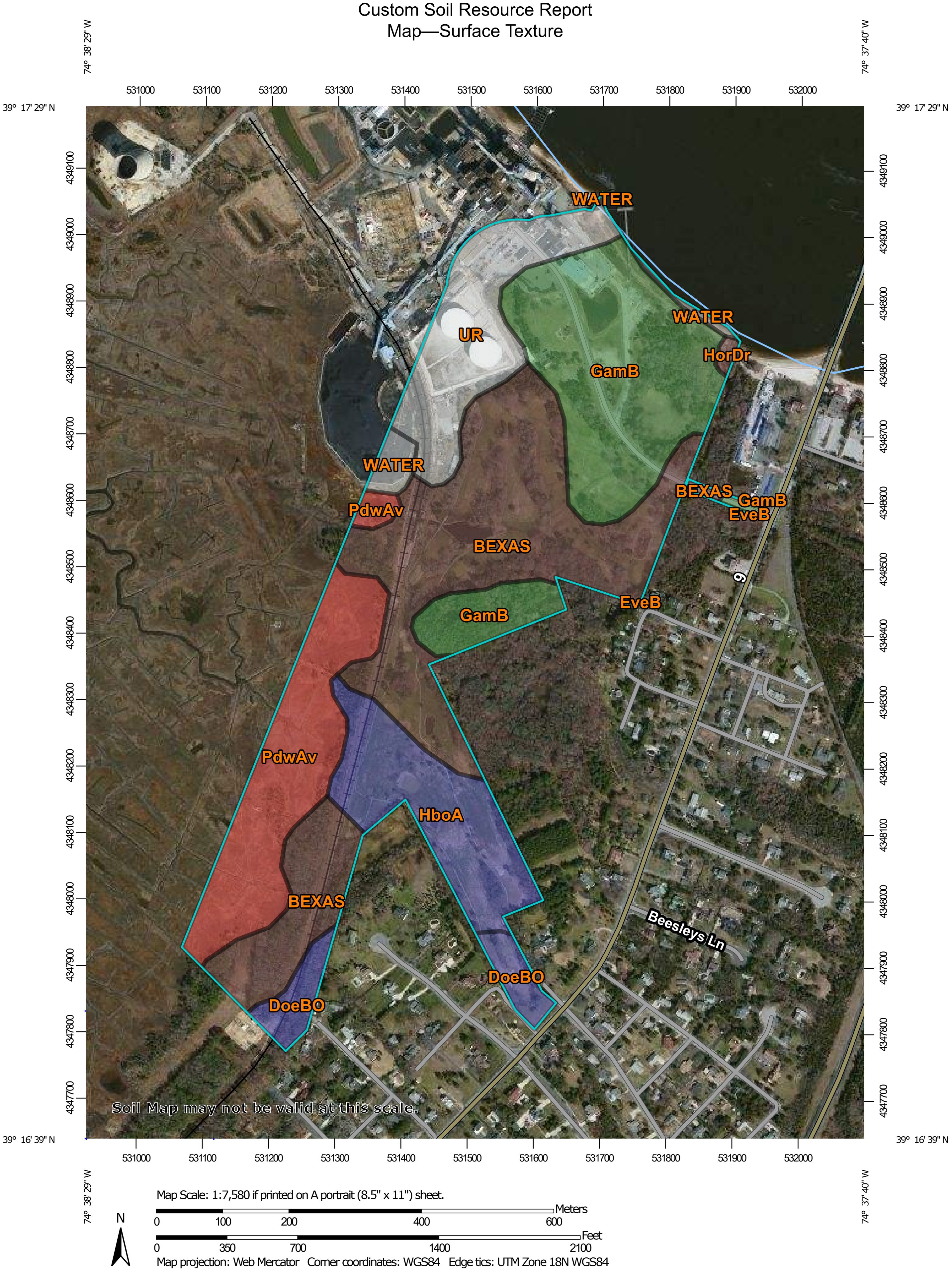
Units of Measure: Centimeters

Surface Texture

This displays the representative texture class and modifier of the surface horizon.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Map—Surface Texture



MAP LEGEND

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

Soils

Soil Rating Polygons
- Loamy sand
- Mucky peat
- Sand
- Sandy loam
- Not rated or not available

Soil Rating Lines
- Loamy sand
- Mucky peat
- Sand
- Sandy loam
- Not rated or not available

Soil Rating Points
- Loamy sand
- Mucky peat
- Sand
- Sandy loam
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cape May County, New Jersey
Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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

Table—Surface Texture

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	Sand	36.1	33.4%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	Sandy loam	4.0	3.7%
EveB	Evesboro sand, 0 to 5 percent slopes	Sand	0.0	0.0%
GamB	Galloway loamy sand, 0 to 5 percent slopes	Loamy sand	25.9	23.9%
HboA	Hammonton sandy loam, 0 to 2 percent slopes	Sandy loam	12.0	11.1%
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	Sand	0.3	0.3%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	Mucky peat	15.9	14.7%
UR	Urban land		12.4	11.4%
WATER	Water		1.7	1.5%
Totals for Area of Interest			**108.3**	**100.0%**

Rating Options—Surface Texture

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

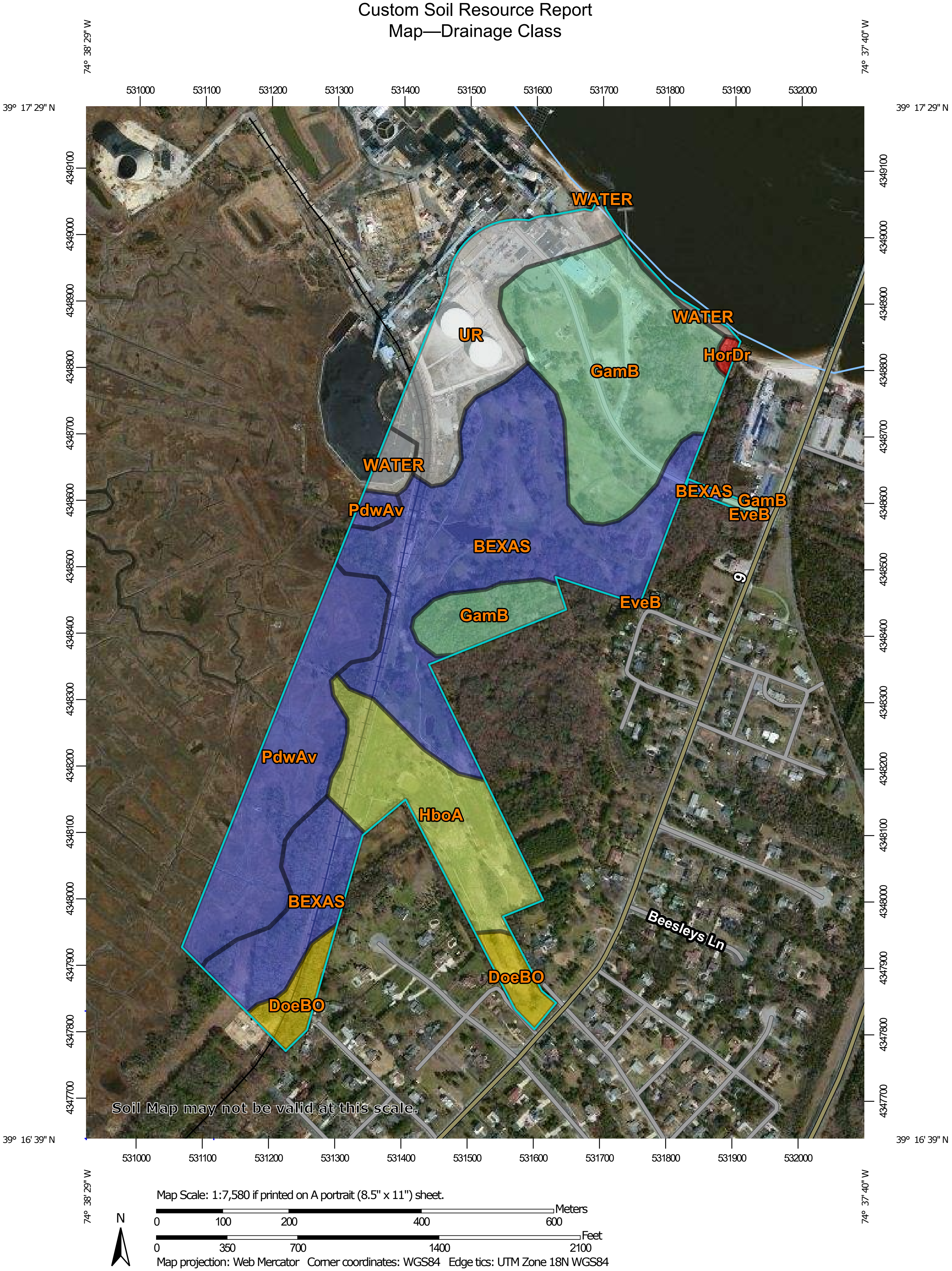
Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Drainage Class

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Map—Drainage Class



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Lines

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Points

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cape May County, New Jersey
Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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

Table—Drainage Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	Very poorly drained	36.1	33.4%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	Well drained	4.0	3.7%
EveB	Evesboro sand, 0 to 5 percent slopes	Excessively drained	0.0	0.0%
GamB	Galloway loamy sand, 0 to 5 percent slopes	Somewhat poorly drained	25.9	23.9%
HboA	Hammonton sandy loam, 0 to 2 percent slopes	Moderately well drained	12.0	11.1%
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	Excessively drained	0.3	0.3%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	Very poorly drained	15.9	14.7%
UR	Urban land		12.4	11.4%
WATER	Water		1.7	1.5%
Totals for Area of Interest			**108.3**	**100.0%**

Rating Options—Drainage Class

Aggregation Method: Dominant Condition

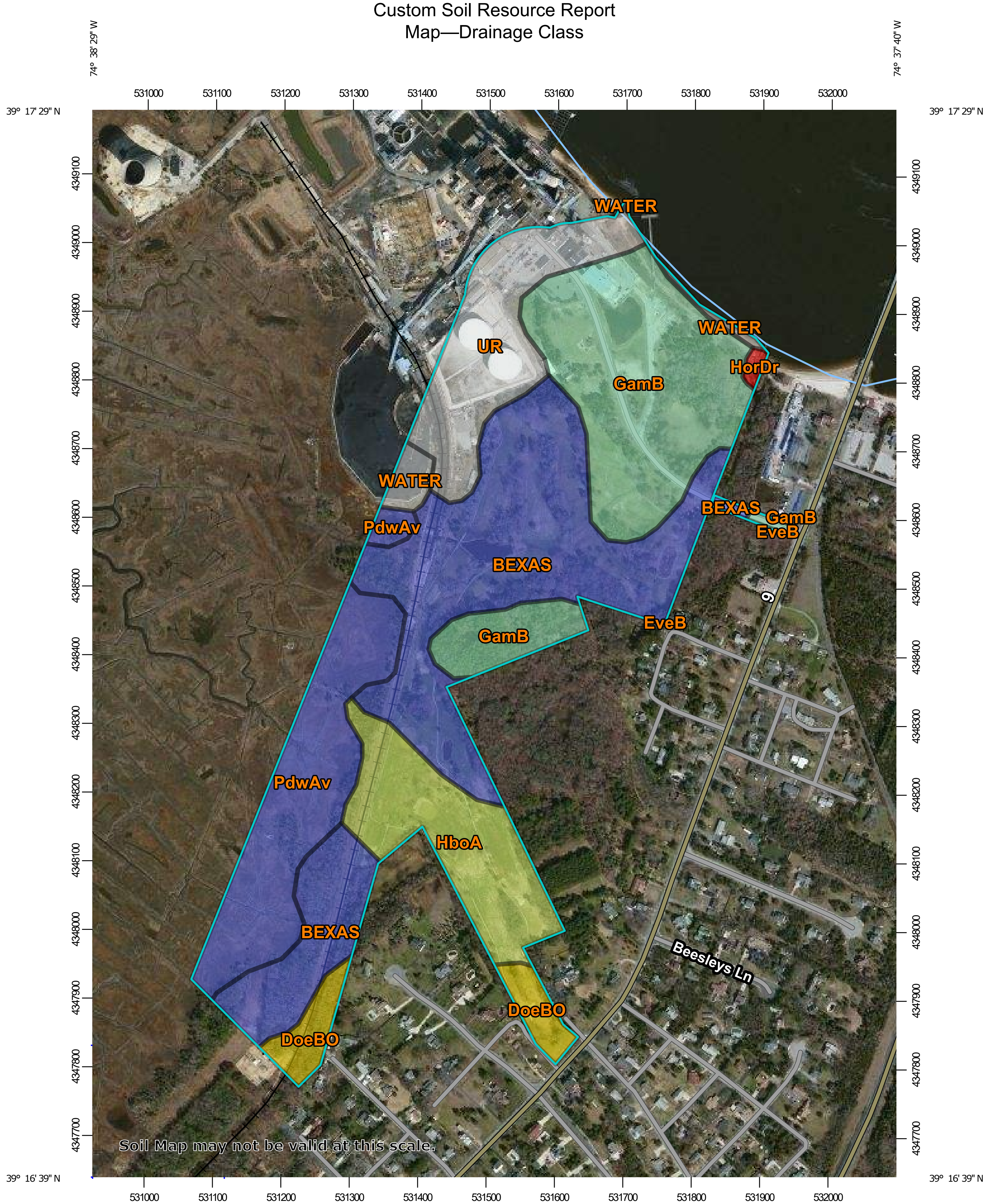
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Drainage Class

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Map—Drainage Class



Map Scale: 1:7,580 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 100, 200, 400, 600

Feet: 0, 350, 700, 1400, 2100

N

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Lines

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Points

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

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Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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Table—Drainage Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	Very poorly drained	36.1	33.4%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	Well drained	4.0	3.7%
EveB	Evesboro sand, 0 to 5 percent slopes	Excessively drained	0.0	0.0%
GamB	Galloway loamy sand, 0 to 5 percent slopes	Somewhat poorly drained	25.9	23.9%
HboA	Hammonton sandy loam, 0 to 2 percent slopes	Moderately well drained	12.0	11.1%
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	Excessively drained	0.3	0.3%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	Very poorly drained	15.9	14.7%
UR	Urban land		12.4	11.4%
WATER	Water		1.7	1.5%
Totals for Area of Interest			**108.3**	**100.0%**

Rating Options—Drainage Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

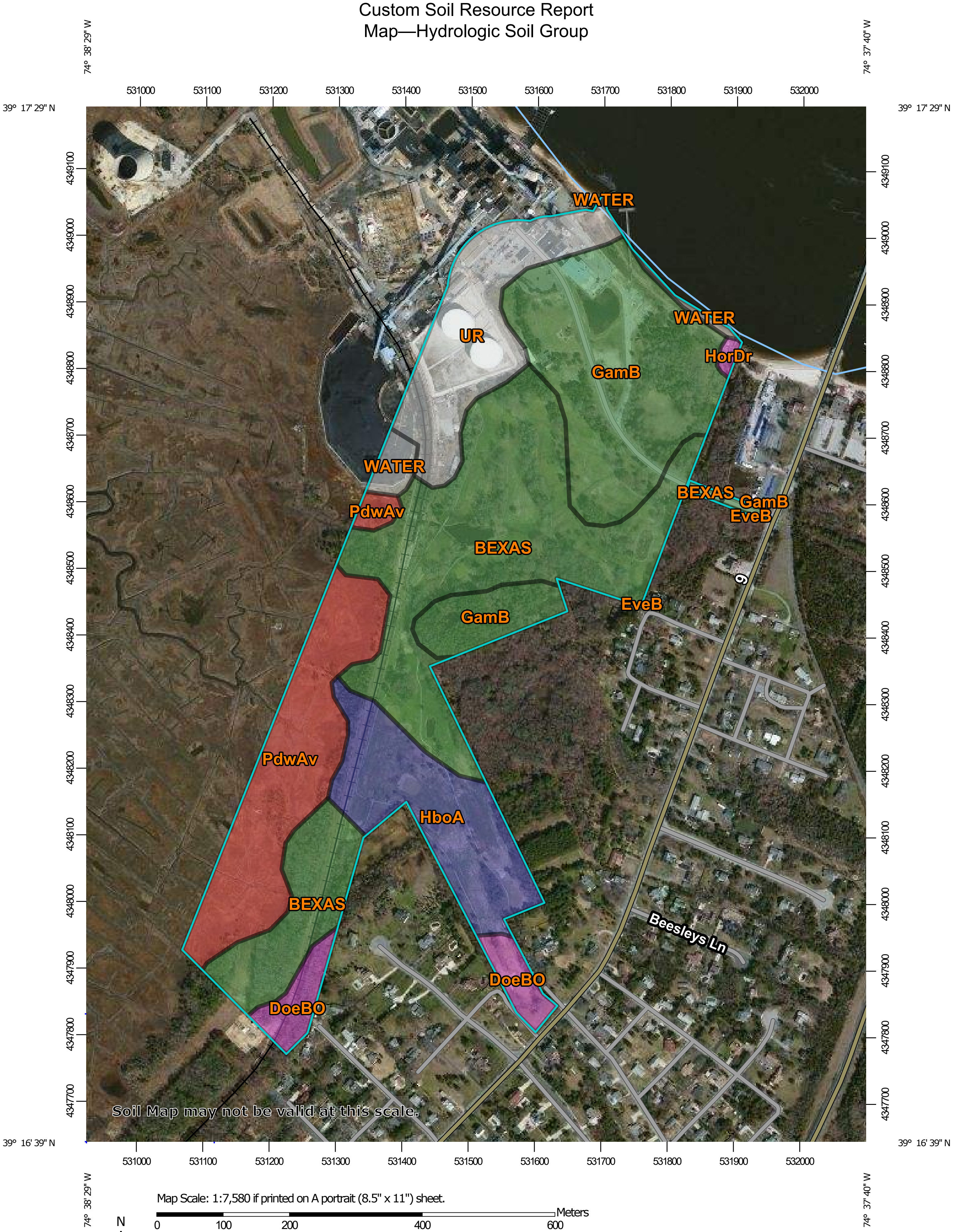
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Map—Hydrologic Soil Group



Map Scale: 1:7,580 if printed on A portrait (8.5" x 11") sheet.

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	A/D	36.1	33.4%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	A	4.0	3.7%
EveB	Evesboro sand, 0 to 5 percent slopes	A	0.0	0.0%
GamB	Galloway loamy sand, 0 to 5 percent slopes	A/D	25.9	23.9%
HboA	Hammonton sandy loam, 0 to 2 percent slopes	B	12.0	11.1%
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	A	0.3	0.3%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	D	15.9	14.7%
UR	Urban land		12.4	11.4%
WATER	Water		1.7	1.5%
Totals for Area of Interest			**108.3**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Water Features

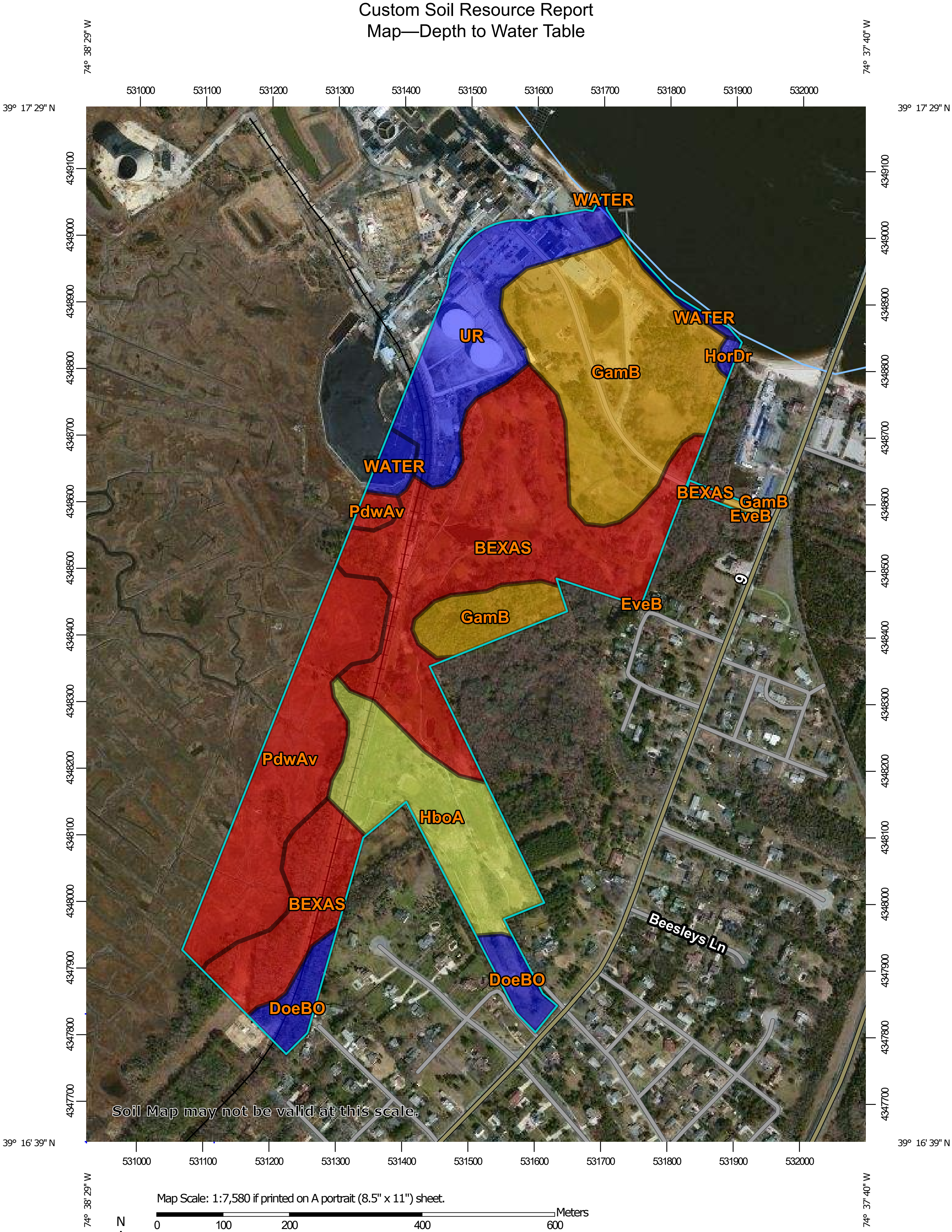
Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map—Depth to Water Table



Map Scale: 1:7,580 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 100, 200, 400, 600

Feet: 0, 350, 700, 1400, 2100

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

MAP LEGEND

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

Soils

Soil Rating Polygons
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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Coordinate System: Web Mercator (EPSG:3857)

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Table—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	0	36.1	33.4%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	>200	4.0	3.7%
EveB	Evesboro sand, 0 to 5 percent slopes	>200	0.0	0.0%
GamB	Galloway loamy sand, 0 to 5 percent slopes	38	25.9	23.9%
HboA	Hammonton sandy loam, 0 to 2 percent slopes	76	12.0	11.1%
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	228	0.3	0.3%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	0	15.9	14.7%
UR	Urban land	>200	12.4	11.4%
WATER	Water	>200	1.7	1.5%
Totals for Area of Interest			**108.3**	**100.0%**

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

Flooding Frequency Class

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

"None" means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.

"Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.

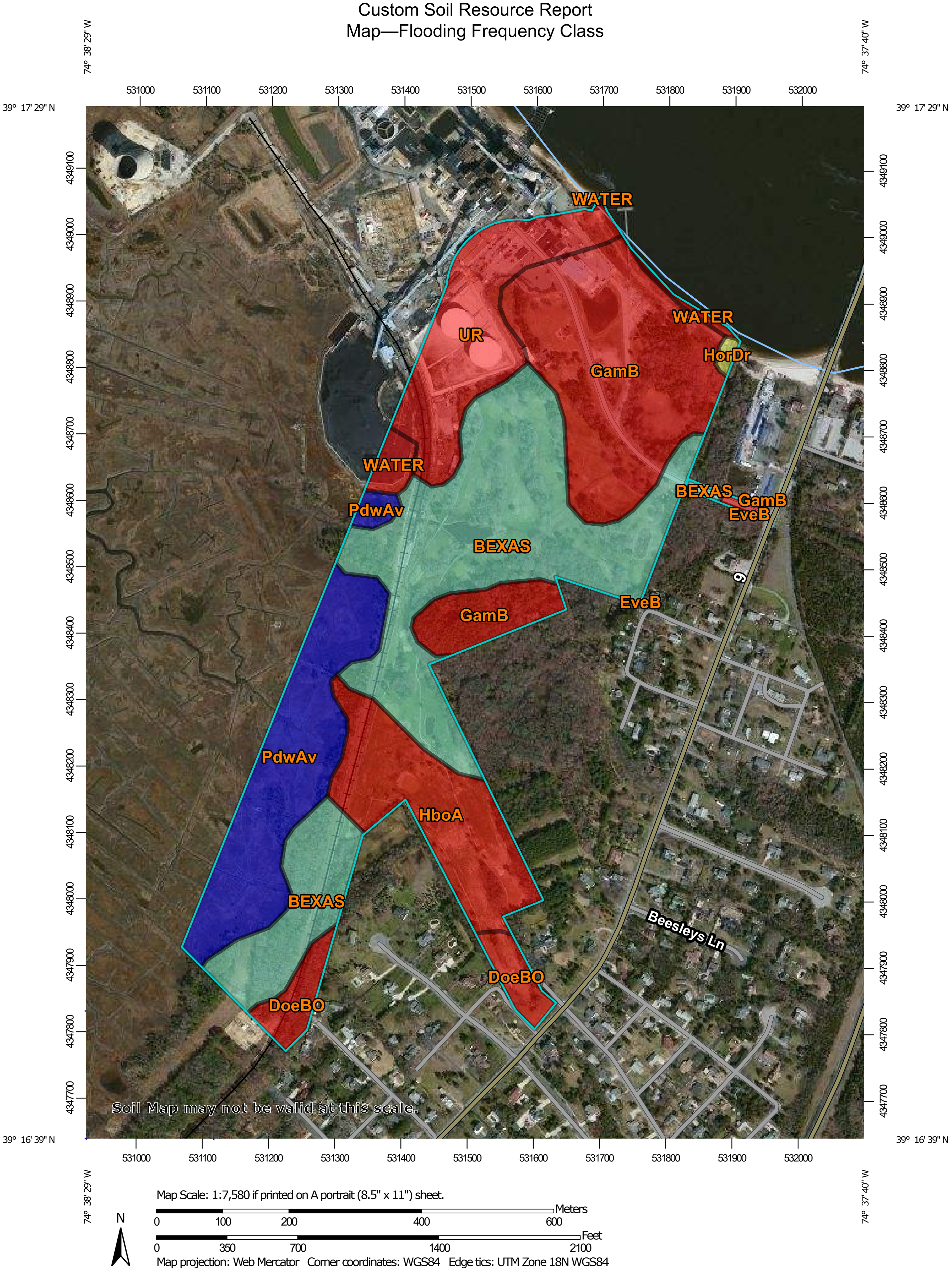
"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.

"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.

"Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.

"Very frequent" means that flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

Custom Soil Resource Report
Map—Flooding Frequency Class



MAP LEGEND

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

Soils

Soil Rating Polygons
- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent
- Not rated or not available

Soil Rating Lines
- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent
- Not rated or not available

Soil Rating Points
- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Table—Flooding Frequency Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	Occasional	36.1	33.4%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	None	4.0	3.7%
EveB	Evesboro sand, 0 to 5 percent slopes	None	0.0	0.0%
GamB	Galloway loamy sand, 0 to 5 percent slopes	None	25.9	23.9%
HboA	Hammonton sandy loam, 0 to 2 percent slopes	None	12.0	11.1%
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	Rare	0.3	0.3%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	Very frequent	15.9	14.7%
UR	Urban land	None	12.4	11.4%
WATER	Water	None	1.7	1.5%
Totals for Area of Interest			**108.3**	**100.0%**

Rating Options—Flooding Frequency Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December

Ponding Frequency Class

Ponding is standing water in a closed depression. The water is removed only by deep percolation, transpiration, or evaporation or by a combination of these processes. Ponding frequency classes are based on the number of times that ponding occurs over a given period. Frequency is expressed as none, rare, occasional, and frequent.

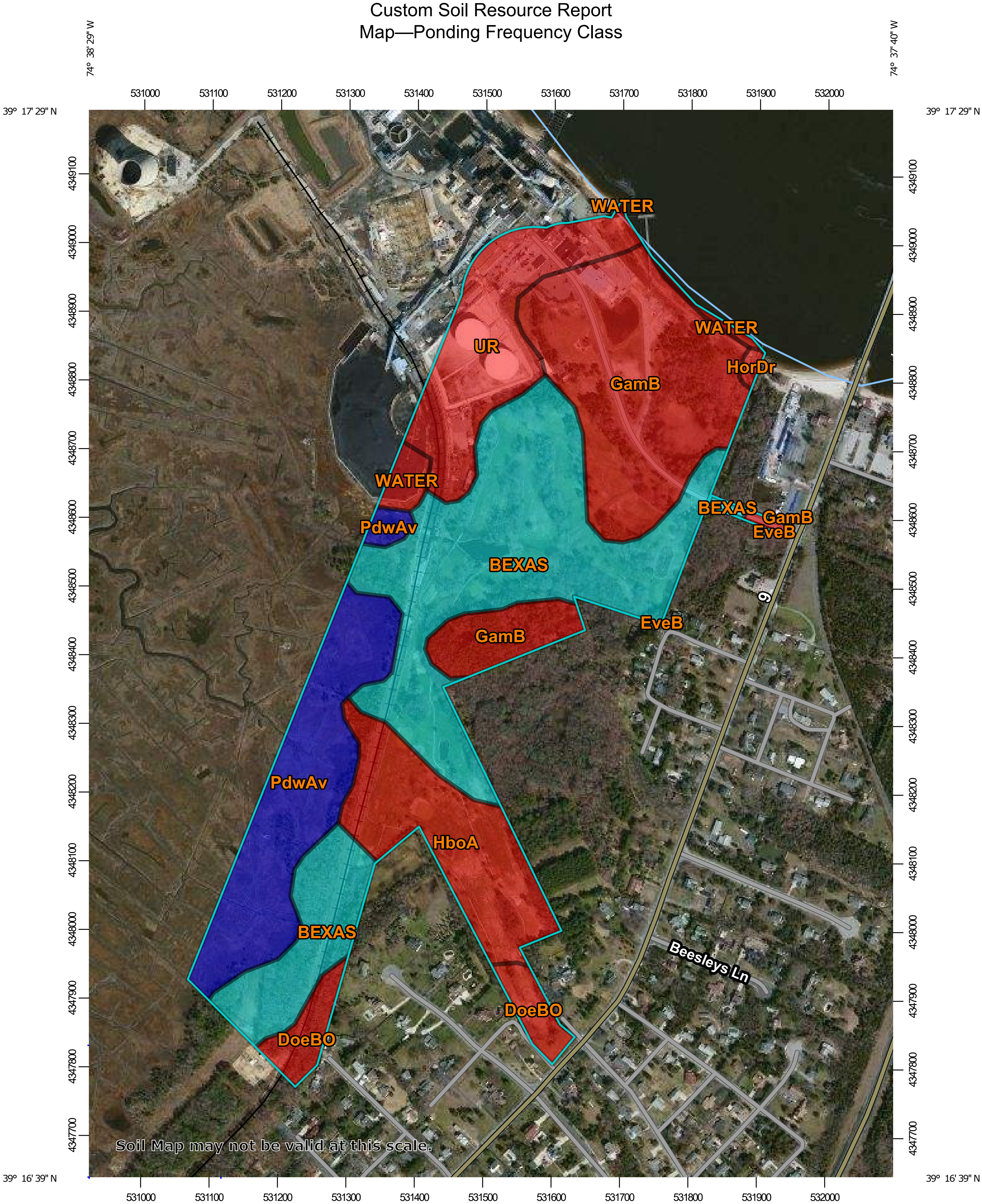
"None" means that ponding is not probable. The chance of ponding is nearly 0 percent in any year.

"Rare" means that ponding is unlikely but possible under unusual weather conditions. The chance of ponding is nearly 0 percent to 5 percent in any year.

"Occasional" means that ponding occurs, on the average, once or less in 2 years. The chance of ponding is 5 to 50 percent in any year.

"Frequent" means that ponding occurs, on the average, more than once in 2 years. The chance of ponding is more than 50 percent in any year.

Custom Soil Resource Report
Map—Ponding Frequency Class



Map Scale: 1:7,580 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0, 100, 200, 400, 600

Feet: 0, 350, 700, 1400, 2100

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

MAP LEGEND

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

Soils

Soil Rating Polygons
- None
- Rare
- Occasional
- Frequent
- Not rated or not available

Soil Rating Lines
- None
- Rare
- Occasional
- Frequent
- Not rated or not available

Soil Rating Points
- None
- Rare
- Occasional
- Frequent
- Not rated or not available

Water Features
Streams and Canals

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

Background
Aerial Photography

MAP INFORMATION

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

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Table—Ponding Frequency Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	Occasional	36.1	33.4%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	None	4.0	3.7%
EveB	Evesboro sand, 0 to 5 percent slopes	None	0.0	0.0%
GamB	Galloway loamy sand, 0 to 5 percent slopes	None	25.9	23.9%
HboA	Hammonton sandy loam, 0 to 2 percent slopes	None	12.0	11.1%
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	None	0.3	0.3%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	Frequent	15.9	14.7%
UR	Urban land	None	12.4	11.4%
WATER	Water	None	1.7	1.5%
Totals for Area of Interest			**108.3**	**100.0%**

Rating Options—Ponding Frequency Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Cape May County, New Jersey

November 10, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

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

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

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

Water Features
Streams and Canals

Transportation
Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background
Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cape May County, New Jersey
Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	0.7	1.6%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	11.8	27.5%
UR	Urban land	16.3	38.0%
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded	13.6	31.8%
WATER	Water	0.5	1.1%
Totals for Area of Interest		**42.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Cape May County, New Jersey

AptAv—Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded

Map Unit Setting

National map unit symbol: v4q8
Elevation: 10 to 120 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Appoquinimink, very frequently flooded, and similar soils: 40 percent
Transquaking, very frequently flooded, and similar soils: 30 percent
Mispillion, very frequently flooded, and similar soils: 25 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Appoquinimink, Very Frequently Flooded

Setting

Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy fluviomarine deposits over herbaceous organic material

Typical profile

Ag - 0 to 12 inches: mucky silt loam
Cg - 12 to 30 inches: silt loam
Oe - 30 to 80 inches: mucky peat

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Strongly saline (16.0 to 32.0 mmhos/cm)
Available water storage in profile: Very high (about 17.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Description of Transquaking, Very Frequently Flooded

Setting

Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over loamy

Typical profile

Oe - 0 to 14 inches: mucky peat
Oa - 14 to 60 inches: muck
Cg - 60 to 90 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 32.0 mmhos/cm)
Available water storage in profile: Very high (about 26.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Description of Mispillion, Very Frequently Flooded

Setting

Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Herbaceous organic material over loamy marine deposits and/or loamy fluviomarine deposits

Typical profile

Oe - 0 to 10 inches: mucky peat
Oa - 10 to 26 inches: muck
Cg - 26 to 90 inches: silt loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Available water storage in profile: Very high (about 15.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Hammonton
Percent of map unit: 5 percent
Landform: Flats, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: No

PdwAv—Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded

Map Unit Setting
National map unit symbol: v4qf
Elevation: 20 to 30 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Pawcatuck, very frequently flooded, and similar soils: 60 percent
Transquaking, very frequently flooded, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pawcatuck, Very Frequently Flooded

Setting
Landform: Tidal marshes
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: Herbaceous organic material over sandy marine deposits

Typical profile

Oe1 - 0 to 14 inches: mucky peat
Oe2 - 14 to 45 inches: mucky peat
Cg1 - 45 to 50 inches: loamy sand
Cg2 - 50 to 90 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.57 to 19.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Very slightly saline to strongly saline (2.0 to 32.0 mmhos/cm)
Available water storage in profile: Very high (about 13.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Description of Transquaking, Very Frequently Flooded

Setting

Landform: Tidal marshes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over loamy

Typical profile

Oi - 0 to 14 inches: peat
Oe - 14 to 48 inches: mucky peat
Oa - 48 to 57 inches: muck
Cg - 57 to 72 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Very frequent
Frequency of ponding: Frequent
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 32.0 mmhos/cm)
Available water storage in profile: Very high (about 26.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Berryland, frequently flooded

Percent of map unit: 5 percent
Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Appoquinimink, very frequently flooded

Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Mullica, rarely flooded

Percent of map unit: 5 percent
Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

UR—Urban land

Map Unit Setting

National map unit symbol: t0vn
Elevation: 0 to 170 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Udorthents

Percent of map unit: 5 percent
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

USPSAS—Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2xhpb
Elevation: 0 to 30 feet
Mean annual precipitation: 41 to 50 inches
Mean annual air temperature: 46 to 58 degrees F
Frost-free period: 190 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land, sulfidic substratum, occas. flooded: 60 percent
Psamments, sulfidic substratum, occas. flooded, and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land, Sulfidic Substratum, Occas. Flooded

Properties and qualities

Slope: 0 to 2 percent
Runoff class: Very high
Frequency of flooding: Occasional

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Description of Psamments, Sulfidic Substratum, Occas. Flooded

Setting

Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy human-transported material

Typical profile

^A - 0 to 12 inches: coarse sand
^C - 12 to 36 inches: gravelly coarse sand
^Cse - 36 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Transquaking, very frequently flooded

Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Appoquinimink, very frequently flooded

Percent of map unit: 5 percent
Landform: Tidal marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

WATER—Water

Map Unit Setting

National map unit symbol: t0vs
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Map—Hydric Rating by Map Unit

Map Scale: 1:13,000 if printed on A landscape (11" x 8.5") sheet.

N

0 150 300 600 900 Meters

0 500 1000 2000 3000 Feet

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cape May County, New Jersey
Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	95	0.7	1.6%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	100	11.8	27.5%
UR	Urban land	0	16.3	38.0%
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded	10	13.6	31.8%
WATER	Water	0	0.5	1.1%
Totals for Area of Interest			**42.9**	**100.0%**

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

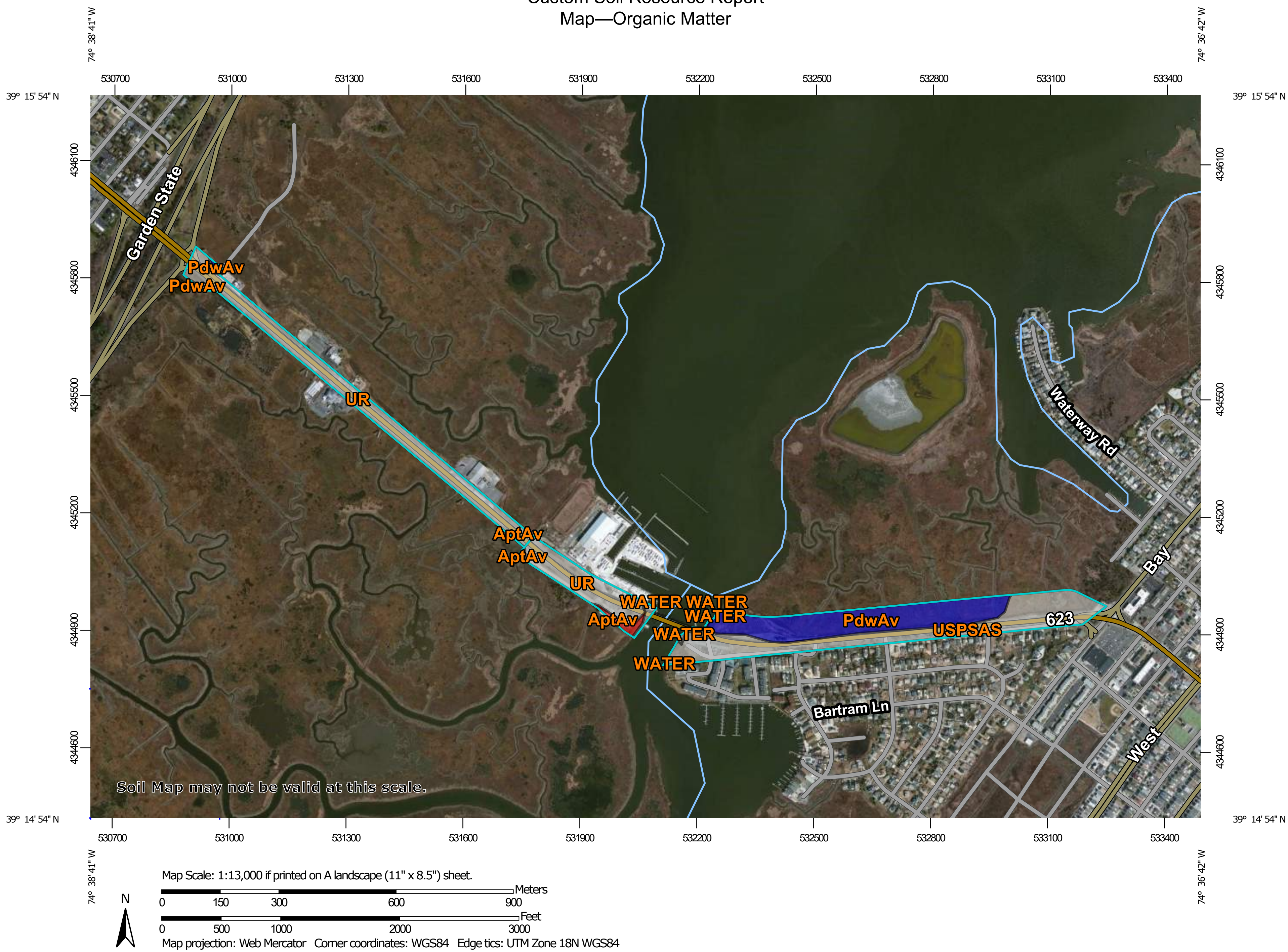
Organic Matter

Organic matter is the plant and animal residue in the soil at various stages of decomposition. The estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms. An irregular distribution of organic carbon with depth may indicate different episodes of soil deposition or soil formation. Soils that are very high in organic matter have poor engineering properties and subside upon drying.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map—Organic Matter



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

<= 10.50

> 10.50 and <= 55.00

Not rated or not available

Soil Rating Lines

<= 10.50

> 10.50 and <= 55.00

Not rated or not available

Soil Rating Points

<= 10.50

> 10.50 and <= 55.00

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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Table—Organic Matter

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	10.50	0.7	1.6%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	55.00	11.8	27.5%
UR	Urban land		16.3	38.0%
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded		13.6	31.8%
WATER	Water		0.5	1.1%
Totals for Area of Interest			**42.9**	**100.0%**

Rating Options—Organic Matter

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 30

Units of Measure: Centimeters

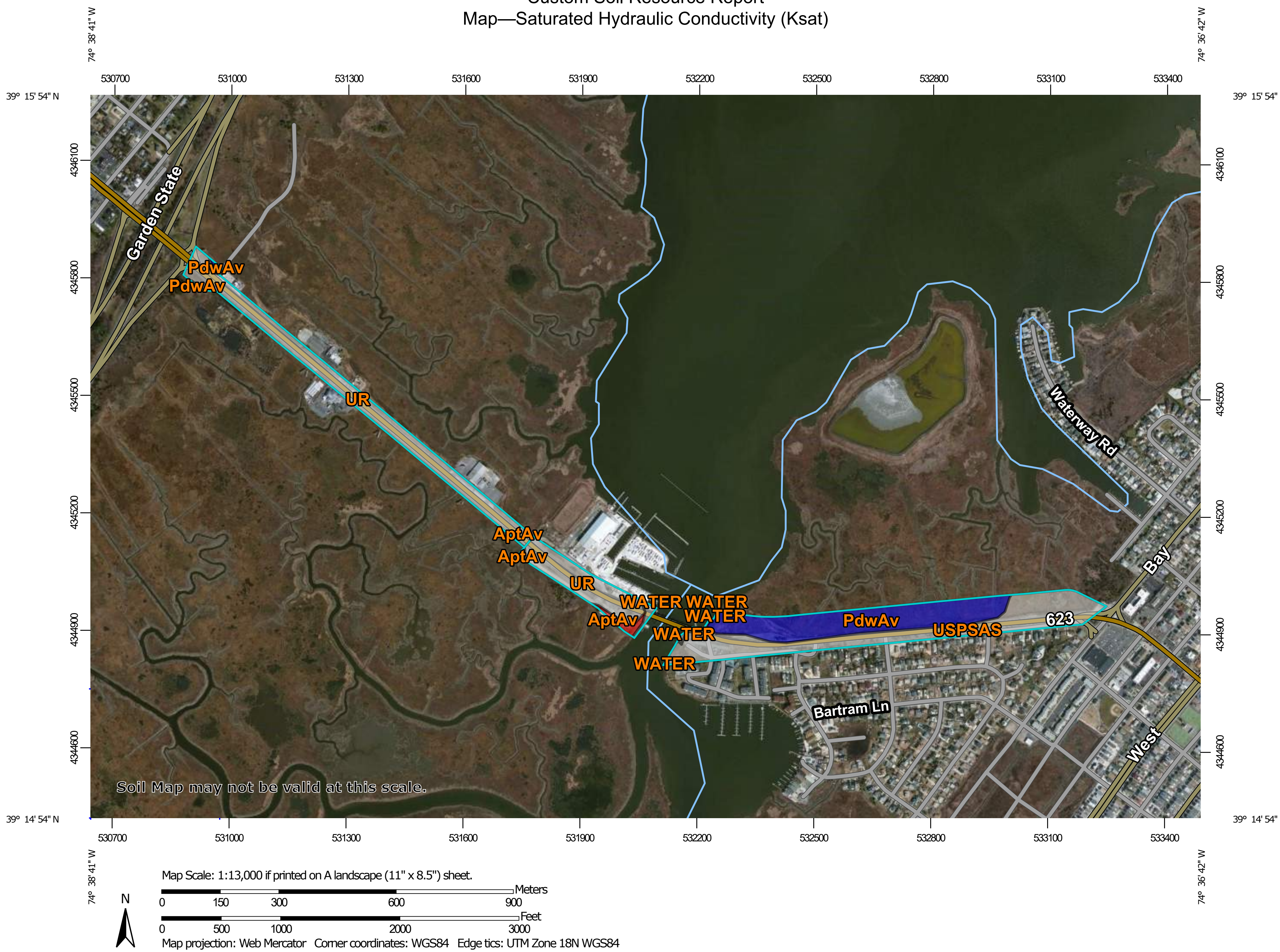
Saturated Hydraulic Conductivity (Ksat)

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Custom Soil Resource Report
Map—Saturated Hydraulic Conductivity (Ksat)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

<= 7.7600

> 7.7600 and <= 72.6900

Not rated or not available

Soil Rating Lines

<= 7.7600

> 7.7600 and <= 72.6900

Not rated or not available

Soil Rating Points

<= 7.7600

> 7.7600 and <= 72.6900

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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Survey Area Data: Version 15, Sep 16, 2019

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Table—Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	7.7600	0.7	1.6%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	72.6900	11.8	27.5%
UR	Urban land		16.3	38.0%
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded		13.6	31.8%
WATER	Water		0.5	1.1%
Totals for Area of Interest			**42.9**	**100.0%**

Rating Options—Saturated Hydraulic Conductivity (Ksat)

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Depth Range (Weighted Average)

Top Depth: 0

Bottom Depth: 30

Units of Measure: Centimeters

Surface Texture

This displays the representative texture class and modifier of the surface horizon.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Map—Surface Texture

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

Mucky peat

Not rated or not available

Soil Rating Lines

Mucky peat

Not rated or not available

Soil Rating Points

Mucky peat

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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Table—Surface Texture

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	Mucky peat	0.7	1.6%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	Mucky peat	11.8	27.5%
UR	Urban land		16.3	38.0%
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded		13.6	31.8%
WATER	Water		0.5	1.1%
Totals for Area of Interest			**42.9**	**100.0%**

Rating Options—Surface Texture

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

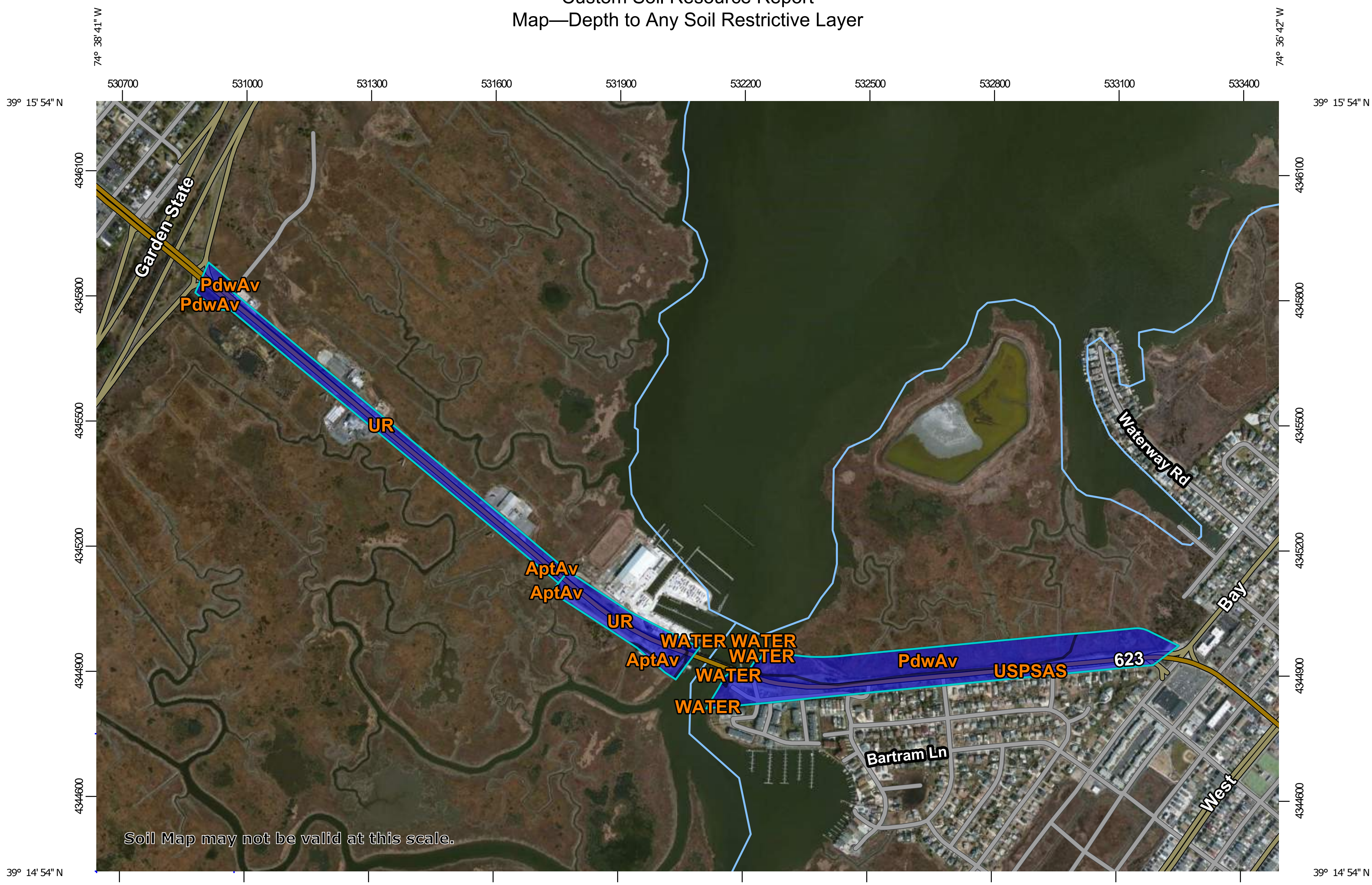
Depth to Any Soil Restrictive Layer

A "restrictive layer" is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers.

This theme presents the depth to any type of restrictive layer that is described for each map unit. If more than one type of restrictive layer is described for an individual soil type, the depth to the shallowest one is presented. If no restrictive layer is described in a map unit, it is represented by the "> 200" depth class.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—Depth to Any Soil Restrictive Layer



Map Scale: 1:13,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 150, 300, 600, 900

Feet: 0, 500, 1000, 2000, 3000

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

MAP LEGEND

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

Soils

Soil Rating Polygons
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features
Streams and Canals

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

Background
Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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Table—Depth to Any Soil Restrictive Layer

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	>200	0.7	1.6%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	>200	11.8	27.5%
UR	Urban land	>200	16.3	38.0%
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded	>200	13.6	31.8%
WATER	Water	>200	0.5	1.1%
Totals for Area of Interest			**42.9**	**100.0%**

Rating Options—Depth to Any Soil Restrictive Layer

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

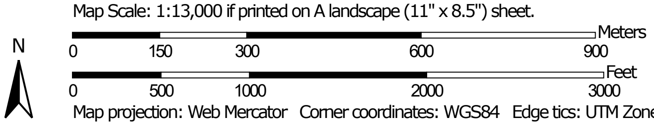
Interpret Nulls as Zero: No

Drainage Class

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Map—Drainage Class

Map Scale: 1:13,000 if printed on A landscape (11" x 8.5") sheet.



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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Lines

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Soil Rating Points

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained
- Subaqueous
- Not rated or not available

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

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

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Table—Drainage Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	Very poorly drained	0.7	1.6%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	Very poorly drained	11.8	27.5%
UR	Urban land		16.3	38.0%
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded		13.6	31.8%
WATER	Water		0.5	1.1%
Totals for Area of Interest			**42.9**	**100.0%**

Rating Options—Drainage Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

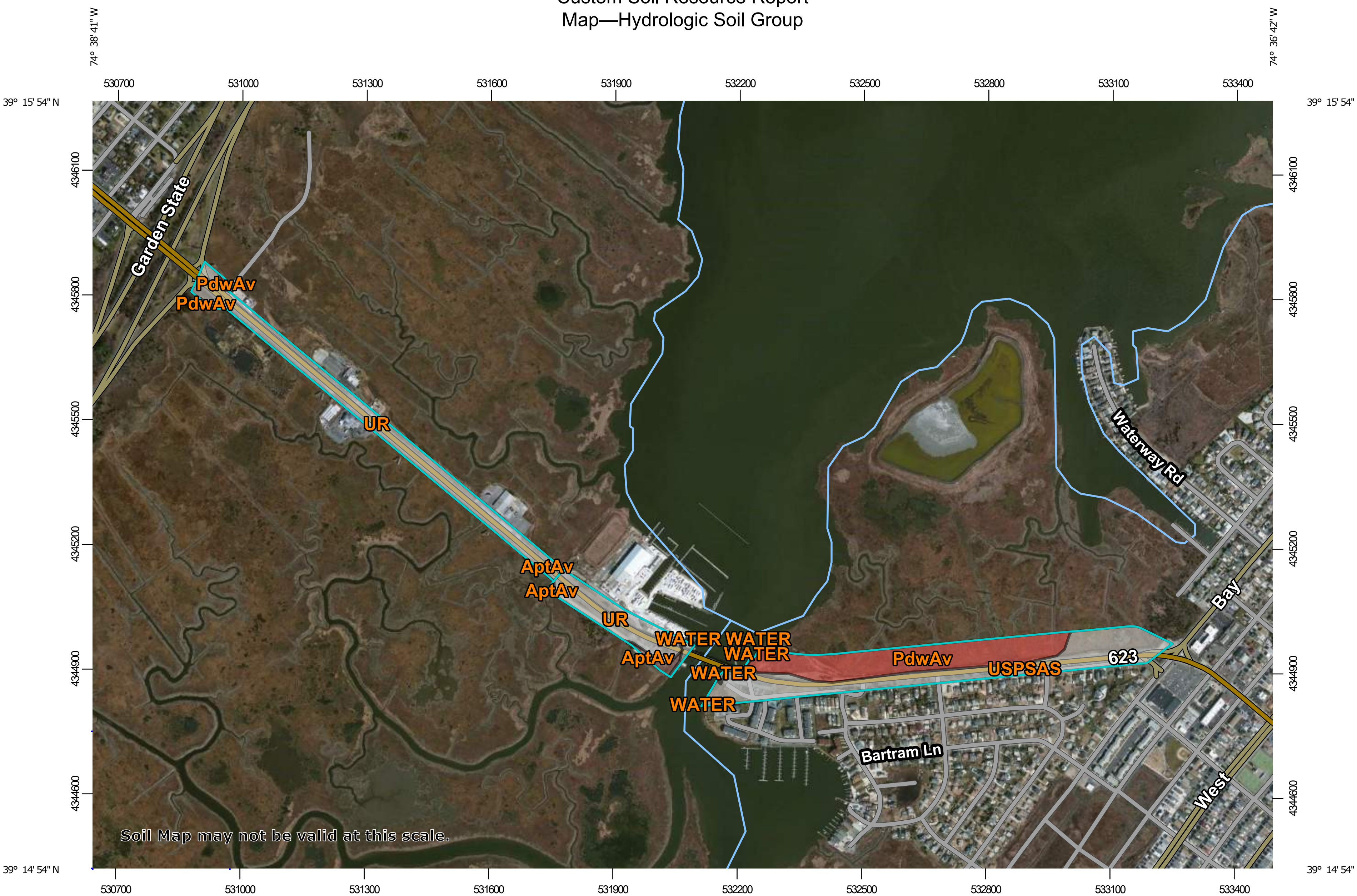
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Map—Hydrologic Soil Group



Map Scale: 1:13,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 150, 300, 600, 900

Feet: 0, 500, 1000, 2000, 3000

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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Survey Area Data: Version 15, Sep 16, 2019

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Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	B/D	0.7	1.6%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	D	11.8	27.5%
UR	Urban land		16.3	38.0%
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded		13.6	31.8%
WATER	Water		0.5	1.1%
Totals for Area of Interest			**42.9**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Water Features

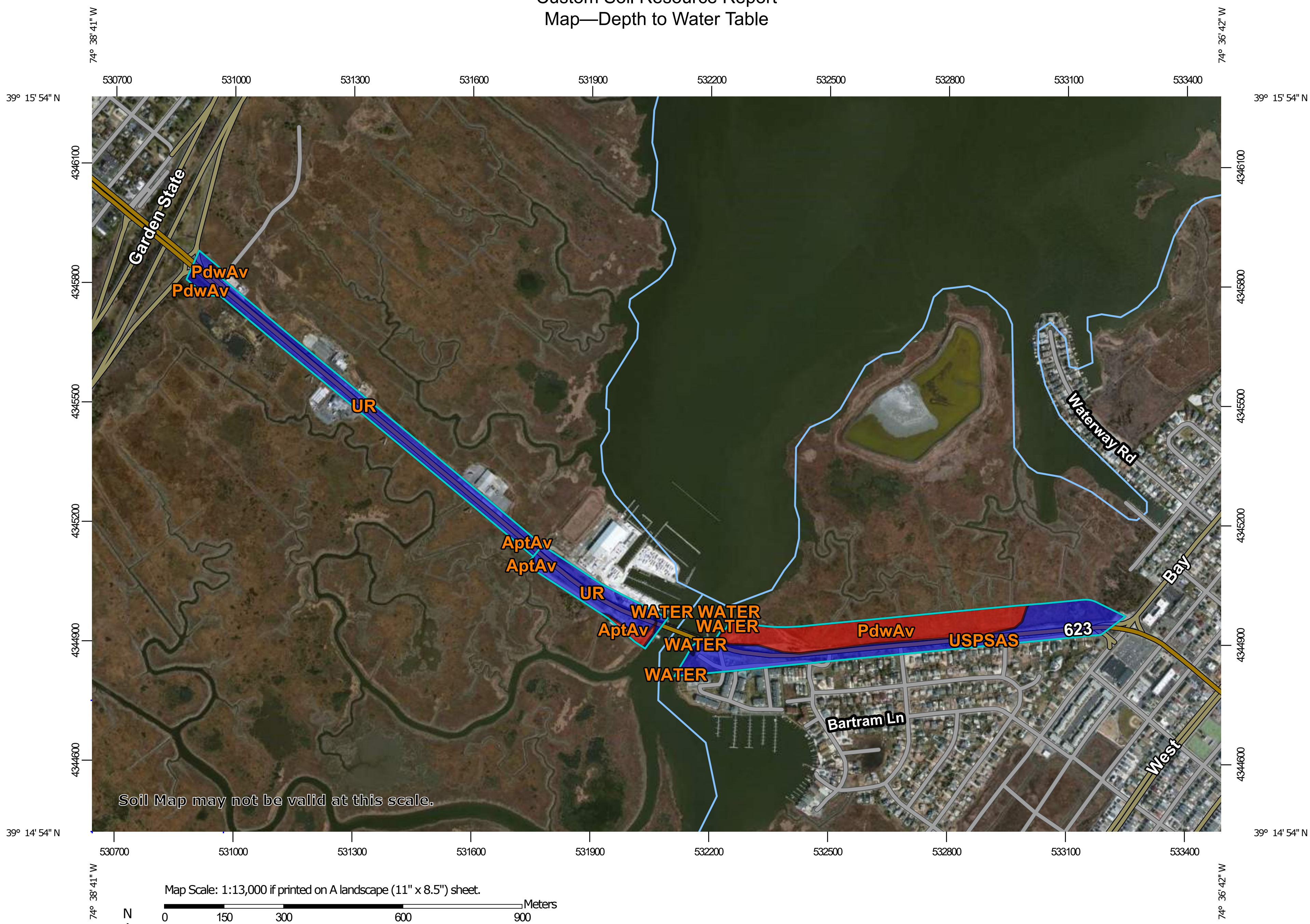
Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map—Depth to Water Table



Map Scale: 1:13,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

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

MAP LEGEND

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

Soils

Soil Rating Polygons
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Lines
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Soil Rating Points
- 0 - 25
- 25 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- > 200
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cape May County, New Jersey
Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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

Table—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	0	0.7	1.6%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	0	11.8	27.5%
UR	Urban land	>200	16.3	38.0%
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded	>200	13.6	31.8%
WATER	Water	>200	0.5	1.1%
Totals for Area of Interest			**42.9**	**100.0%**

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

Flooding Frequency Class

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

"None" means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.

"Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.

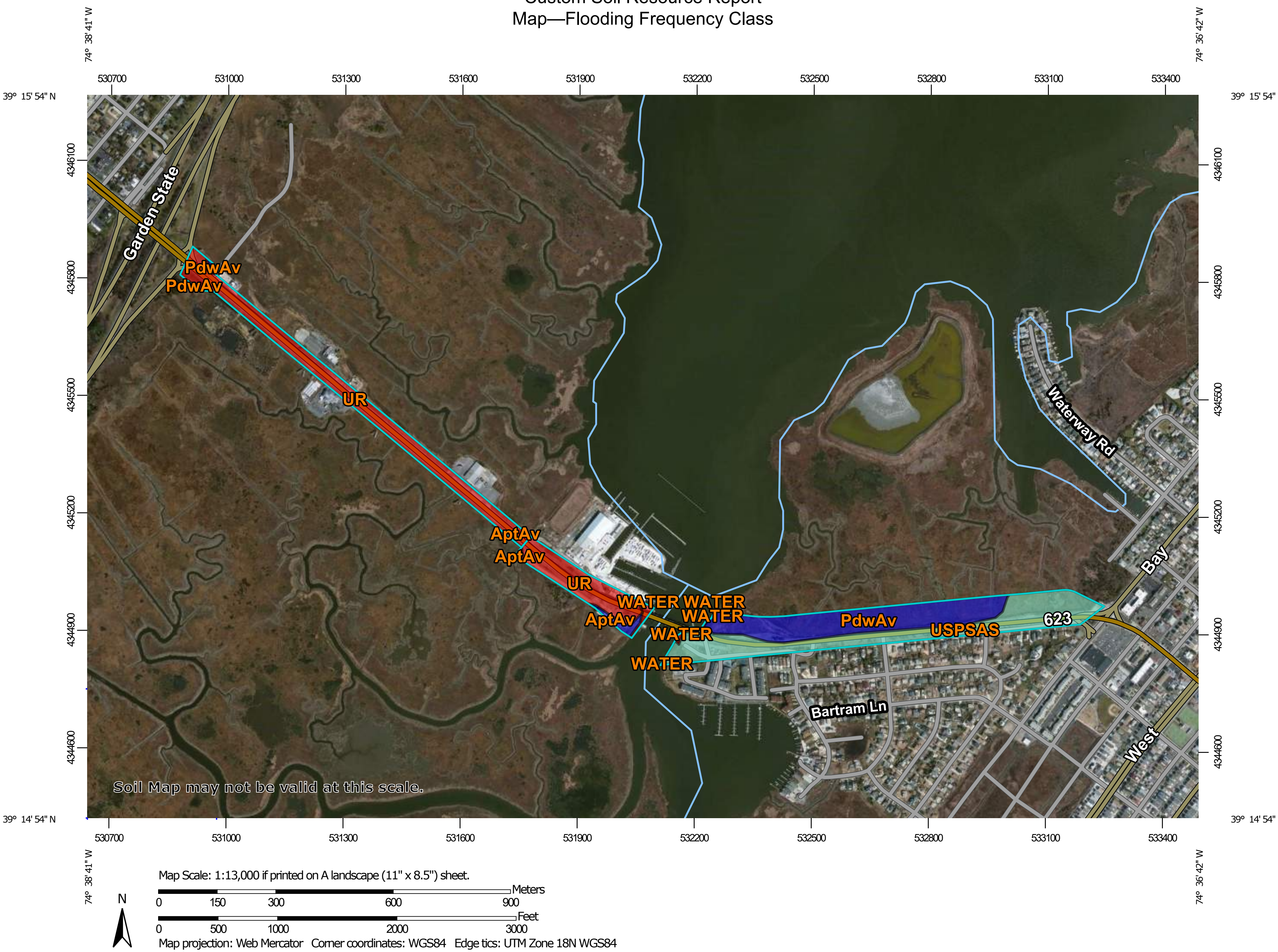
"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.

"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.

"Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.

"Very frequent" means that flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

Map—Flooding Frequency Class



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

None

Very Rare

Rare

Occasional

Frequent

Very Frequent

Not rated or not available

Soil Rating Lines

None

Very Rare

Rare

Occasional

Frequent

Very Frequent

Not rated or not available

Soil Rating Points

None

Very Rare

Rare

Occasional

Frequent

Very Frequent

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cape May County, New Jersey
Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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

Table—Flooding Frequency Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	Very frequent	0.7	1.6%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	Very frequent	11.8	27.5%
UR	Urban land	None	16.3	38.0%
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded	Occasional	13.6	31.8%
WATER	Water	None	0.5	1.1%
Totals for Area of Interest			**42.9**	**100.0%**

Rating Options—Flooding Frequency Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December

Ponding Frequency Class

Ponding is standing water in a closed depression. The water is removed only by deep percolation, transpiration, or evaporation or by a combination of these processes. Ponding frequency classes are based on the number of times that ponding occurs over a given period. Frequency is expressed as none, rare, occasional, and frequent.

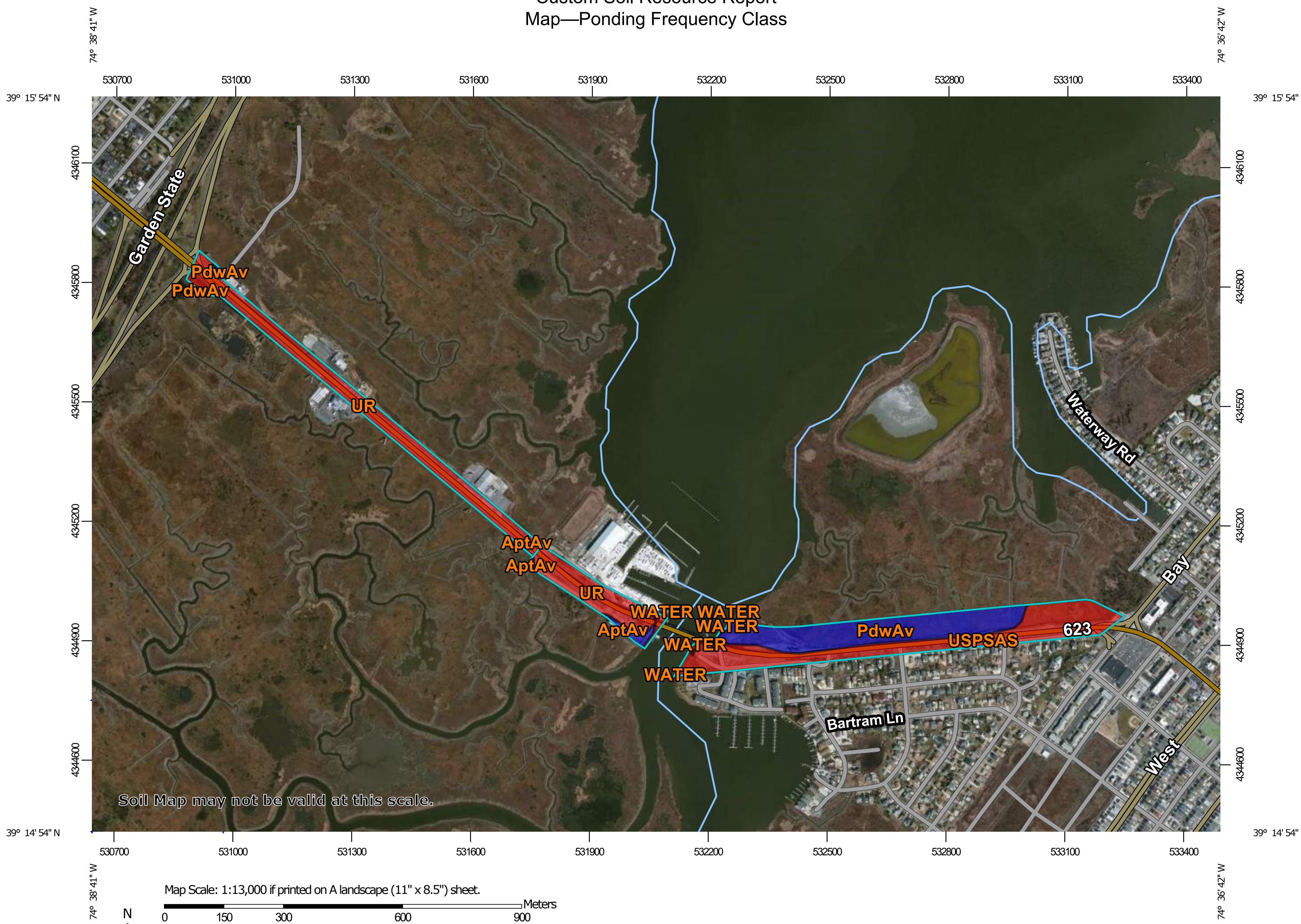
"None" means that ponding is not probable. The chance of ponding is nearly 0 percent in any year.

"Rare" means that ponding is unlikely but possible under unusual weather conditions. The chance of ponding is nearly 0 percent to 5 percent in any year.

"Occasional" means that ponding occurs, on the average, once or less in 2 years. The chance of ponding is 5 to 50 percent in any year.

"Frequent" means that ponding occurs, on the average, more than once in 2 years. The chance of ponding is more than 50 percent in any year.

Map—Ponding Frequency Class



Map Scale: 1:13,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 150, 300, 600, 900

Feet: 0, 500, 1000, 2000, 3000

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

MAP LEGEND

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

Soils

Soil Rating Polygons
None
Rare
Occasional
Frequent
Not rated or not available

Soil Rating Lines
None
Rare
Occasional
Frequent
Not rated or not available

Soil Rating Points
None
Rare
Occasional
Frequent
Not rated or not available

Water Features
Streams and Canals

Transportation
Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background
Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cape May County, New Jersey
Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Mar 25, 2011—Mar 26, 2011

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

Table—Ponding Frequency Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	Frequent	0.7	1.6%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	Frequent	11.8	27.5%
UR	Urban land	None	16.3	38.0%
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded	None	13.6	31.8%
WATER	Water	None	0.5	1.1%
Totals for Area of Interest			**42.9**	**100.0%**

Rating Options—Ponding Frequency Class

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

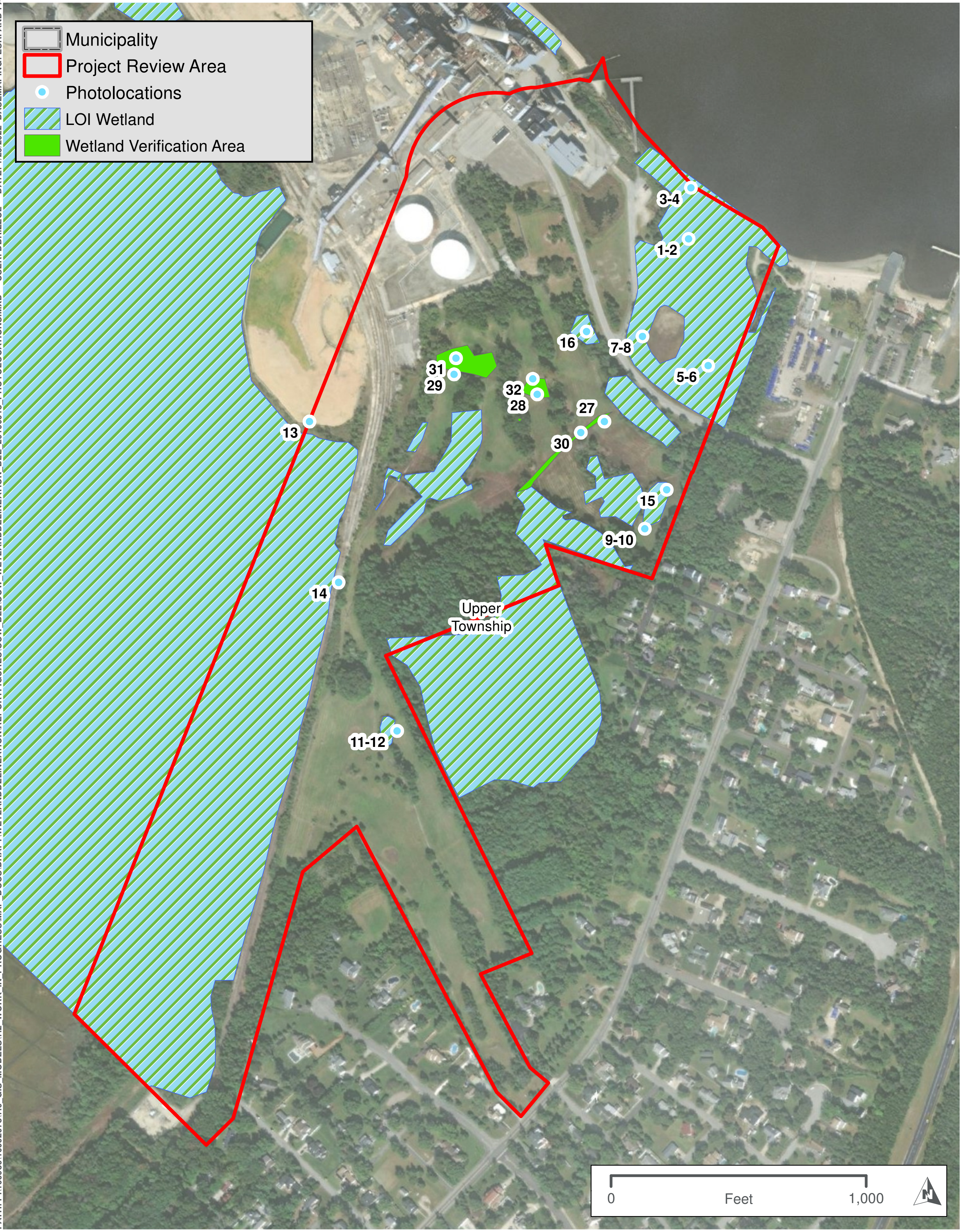
United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Attachment B. Site Photographs



PATH: P:\109939\10092078\7.0_GIS_MODELS\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\WETLANDDELINEATION\REPORTFIGURES\OCW_BLE\OCW_WETLANDDELINEATION_BLE_20190918_PHOTOLOCATIONS.MXD - USER: DBRIZZOL - DATE: 1/25/2022 BASEMAPING: ESRI AND PARTNERS

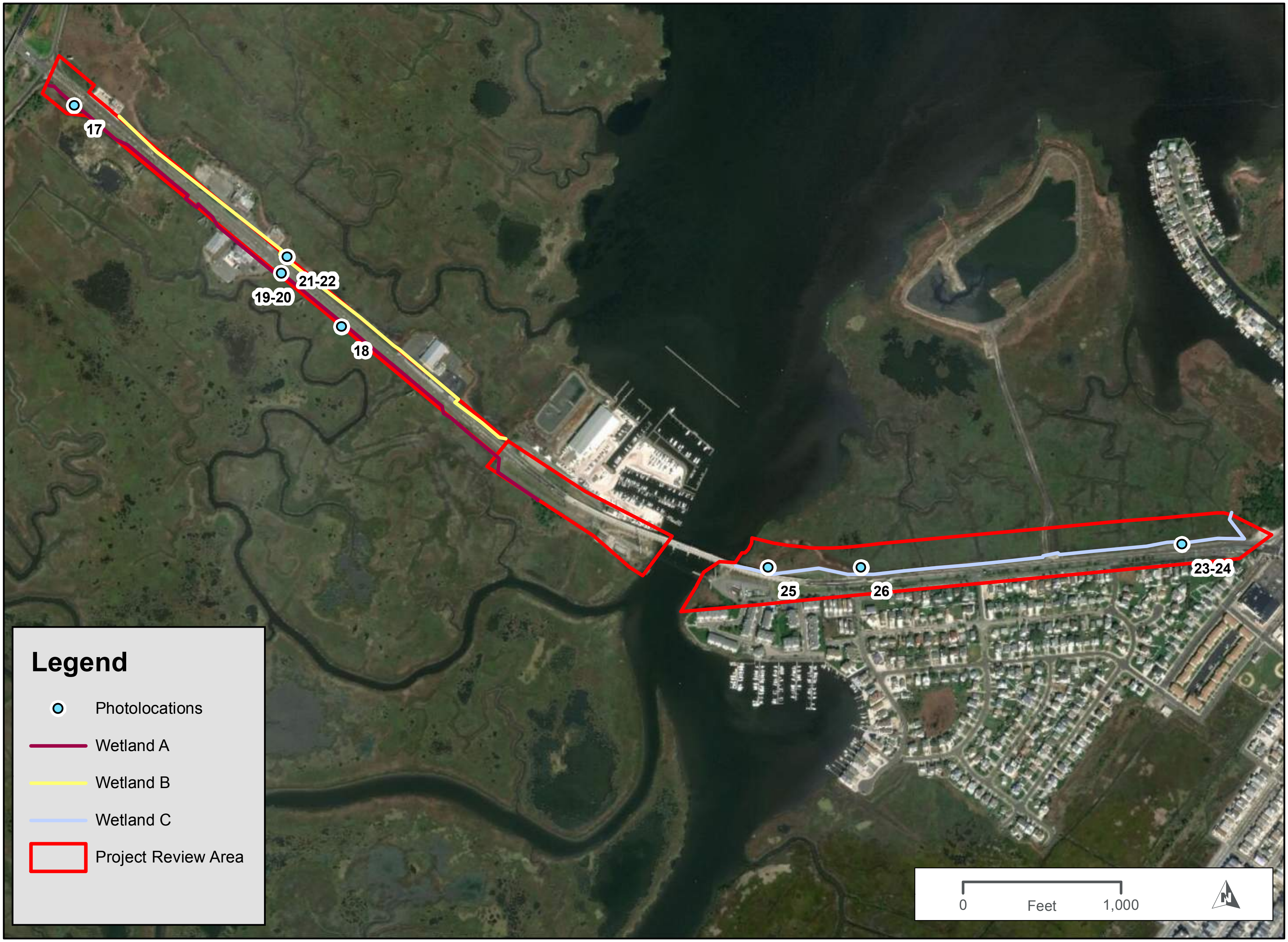

17
21-22
19-20
18
25
26
23-24
Legend
Photolocations
Wetland A
Wetland B
Wetland C
Project Review Area
0
Feet
1,000
N

Photo 1: Photo of upland soil profile collected outside Wetland A.

Photo 2: Photo of upland vegetation outside of Wetland A.


Photo 3: Photo of Wetland A soil profile.


Photo 4: Photo of Wetland A *Phragmites australis* stands.

Photo 5: Photo of Wetland A observation 3 soil pit location.

Photo 6: Tree morphological adaptations within Wetland A.

Orsted Ocean Wind Project	**Wetland Delineation - BL England Photography**	DATE:	11/11/19	**PHOTO**
		CREATED BY:	JC	**5 and 6**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 7: Photo of Wetland B location.

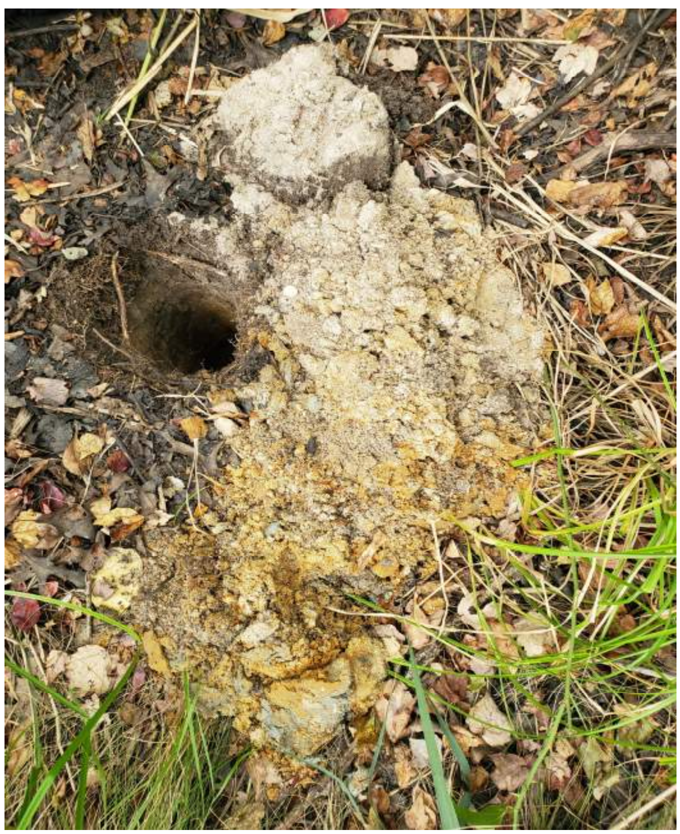


Photo 8: Photo of Wetland B soil profile.

Orsted Ocean Wind Project	**Wetland Delineation - BL England Photography**	DATE:	11/11/19	**PHOTO**
		CREATED BY:	JC	**7 and 8**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 9: Photo of upland soil profile collected outside Wetland C.

Photo 10: Photo of Wetland C soil profile.

Orsted Ocean Wind Project	**Wetland Delineation - BL England Photography**	DATE:	11/11/19	**PHOTO**
		CREATED BY:	JC	
		REVIEWED BY:	DB	**9 and 10**
		JOB NO:	10092078	

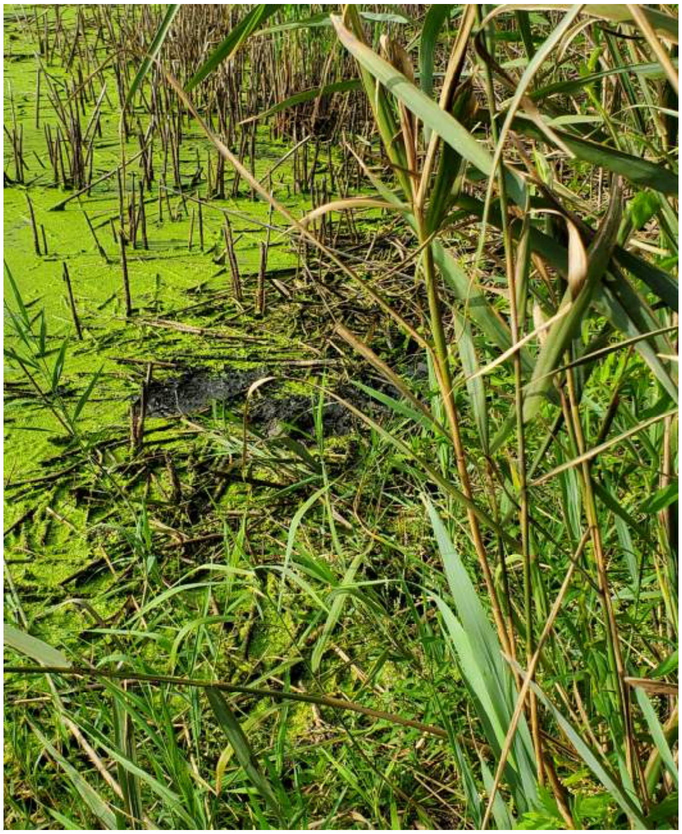


Photo 11: Photo of Wetland D soil pit location.

Photo 12: Photo of Wetland D.

Orsted Ocean Wind Project	**Wetland Delineation - BL England Photography**	DATE:	11/11/19	**PHOTO**
		CREATED BY:	JC	**11 and 12**
		REVIEWED BY:	ZL	
		JOB NO:	10092078	

Photo 13: Photo of wetland facing west within habitat assessment area.

Photo 14: Photo of wetland facing southwest on western area of wetland delineation.

Orsted Ocean Wind Project	**Wetland Delineation - BL England Photography**	DATE:	11/11/19	**PHOTO**
		CREATED BY:	JC	**13 and 14**
		REVIEWED BY:	ZL	
		JOB NO:	10092078	

Photo 15: Photo of Wetland C.

Photo 16: Wetland confirmation location on west side of LOI verification area.

Orsted Ocean Wind Project	**Wetland Delineation - BL England Photography**	DATE:	11/11/19	**PHOTO**
		CREATED BY:	JC	**15 and 16**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 17: Photo of *Spartina alterniflora* along Roosevelt Boulevard

Photo 18: Photo along roadside of Roosevelt Boulevard

Orsted Ocean Wind Project	**Wetland Delineation - Roosevelt Boulevard Photography**	DATE:	11/11/19	**PHOTO**
		CREATED BY:	JC	**17 and 18**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 19: Photo of WL-A-UP upland soil profile

Photo 20: Photo of WL-A-WET wetland soil profile.

Orsted Ocean Wind Project	**Wetland Delineation - Roosevelt Boulevard Photography**	DATE:	11/11/19	**PHOTO**
		CREATED BY:	JC	**19 and 20**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 21: Photo of WL-B-UP upland soil profile

Photo 22: Photo of WL-B-WET wetland soil profile.

Orsted Ocean Wind Project	**Wetland Delineation - Roosevelt Boulevard Photography**	DATE:	11/11/19	**PHOTO**
		CREATED BY:	JC	**21 and 22**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 23: Photo of WL-C-UP upland soil profile

Photo 24: Photo of WL-C-WET wetland soil profile.

Orsted Ocean Wind Project	**Wetland Delineation - Roosevelt Boulevard Photography**	DATE:	11/11/19	**PHOTO**
		CREATED BY:	JC	**23 and 24**
		REVIEWED BY:	DB	
		JOB NO:	10092078	

Photo 25: Photo of *Spartina alterniflora* and *Phragmites australis* under Roosevelt Boulevard bridge.

Photo 26: Photo of *Spartina alterniflora* along Roosevelt Boulevard.

Attachment C. Letter of Interpretation (LOI) Letter and Plan

State of New Jersey

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Land Use Regulation
Mail Code 501-02A
P.O. Box 420
Trenton, New Jersey 08625-0420
www.nj.gov/dep/landuse

CATHERINE R. McCABE
Commissioner

MAR 19 2019

Pete Murray c/o
RC Cape May Holding LLC
900 N. Shore Road
Beesley's Point, NJ 08223

RE: Freshwater Wetlands Letter of Interpretation: Line Verification
File No.: 0511-03-0011.4
Activity Number: FWW180001
Applicant: RC CAPE MAY HOLDINGS, LLC
Block(s) and Lot(s): [479, 74] [479, 76] [479, 76.01] [479, 94.01]
Upper Twp., Cape May County

Dear Mr. Murray:

This letter is in response to your request for a Letter of Interpretation to have Division of Land Use Regulation (Division) staff verify the boundary of the freshwater wetlands and/or State open waters on the referenced property.

In accordance with agreements between the State of New Jersey Department of Environmental Protection, the U.S. Army Corps of Engineers Philadelphia and New York Districts, and the U.S. Environmental Protection Agency, the NJDEP, the Division is the lead agency for establishing the extent of State and Federally regulated wetlands and waters. The USEPA and/or USACE retain the right to reevaluate and modify the jurisdictional determination at any time should the information prove to be incomplete or inaccurate.

Based upon the information submitted, and upon site inspections conducted by Division staff on November 14 and December 27, 2018, the Division has determined that the wetlands and waters boundary line(s) are accurately shown on the plan maps entitled: "PLAN OF FRESHWATER/WATERS DELINEATION, B.L. ENGLAND GENERATING STATION, TAX BLOCK 479 TAX LOTS 74, 76, 76.01 & 94.01, TOWNSHIP OF UPPER, CAPE MAY COUNTY, NEW JERSEY ", consisting of seventeen (17) sheets, (all sheets) dated October 14, 2008, (all sheets) last revised August 17, 2018, and prepared by Hyland Design Group, Inc. and further identified as:

Sheet 1 of 17 – "EXISTING CONDITIONS KEY SHEET,"
Sheets 2 through 14 of 17 – "FRESHWATER WETLANDS/WATERS DELINEATION,"
Sheets 15 through 17 of 17 – "WETLANDS/WATERS DELINEATION BEARING & DISTANCES."

The freshwater wetlands and waters boundary line(s), as determined in this letter, must be shown on any future site development plans. The line(s) should be labeled with the above file number and the following note:

"Freshwater Wetlands/Waters Boundary Line as verified by NJDEP"

Wetlands Resource Value Classification ("RVC")
In addition, the Division has determined that the resource value and the standard transition area or buffer required adjacent to the delineated wetlands are as follows:

Sheet 3 of 17:
- **Ordinary**: Line segments 230 through 232 and 249 through 252 [No wetland buffer].
- **Exceptional**: All remaining **freshwater wetland** *delineation points* and *line segments* shown on the approved plan sheet referenced within this verification [150 ft. wetland buffer].

Sheet 7 of 17:
- **Intermediate**: Line segments 453 through 460 [50 ft. wetland buffer].
- **Exceptional**: All remaining **freshwater wetland** *delineation points* and *line segments* shown on the approved plan sheet referenced within this verification [150 ft. wetland buffer].

Sheet 8 of 17:
- **Intermediate**: Line segments 460 through 472, 453, 473 through 486, 487 through 506, 529 through 537 [50 ft. wetland buffer].
- **Exceptional**: All remaining **freshwater wetland** *delineation points* and *line segments* shown on the approved plan sheet referenced within this verification [150 ft. wetland buffer].

Sheet 9 of 17:
- **Exceptional**: All **freshwater wetland** *delineation points* and *line segments* shown on the approved plan sheet referenced within this verification [150 ft. wetland buffer].

Sheet 10 of 17:
- **Ordinary:** Line segments 233 through 253, flag points W-453 through W-460 and W-461 through W-470 [No wetland buffer]
- **Exceptional:** Line segments 119 through 160, 168, 169 and 270 through 283 [150 ft. wetland buffer].
- **Intermediate**: All remaining **freshwater wetland** *delineation points* and *line segments* shown on the approved plan sheet referenced within this verification [50 ft. wetland buffer].

Sheet 11 of 17:
- **Exceptional**: All **freshwater wetland** *delineation points* and *line segments* shown on the approved plan sheet referenced within this verification [150 ft. wetland buffer].

Sheet 12 of 17:
- **Ordinary:** Flag points W-1011 through W-1016 [No wetland buffer]

- **Intermediate**: All remaining **freshwater wetland** *delineation points* and *line segments* shown on the approved plan sheet referenced within this verification [50 ft. wetland buffer].

Sheet 13 of 17:
- **Ordinary:** Flag points W-1001 through W-1011 [No wetland buffer].

- **Intermediate**: All remaining **freshwater wetland** *delineation points* and *line segments* shown on the approved plan sheet referenced within this verification [50 ft. wetland buffer].

Sheet 14 of 17:
- **Intermediate:** Line segments 432 through 435 [No wetland buffer].

- **Exceptional**: Line segments 422 through 429 [150 ft. wetland buffer].

- **Mapped Coastal Wetlands**: Line segments 430 to 431 and 436 through 443 [a buffer of up to 300 feet may be imposed].

Please be advised, there are additional mapped coastal wetlands on Block: 479, Lots: 74, 76 and 76.01 as shown on Coastal Wetlands Map #161-2004 and as such is regulated pursuant to the Coastal Wetlands Act of 1970 (N.J.S.A. 13:9A-1 et seq.). Please be advised that if the proposed project is regulated under the Rules for Coastal Zone Management (N.J.A.C. 7:7E), then a buffer of up to 300 feet may be imposed adjacent to coastal wetlands.

RVC may affect requirements for wetland and/or transition area permitting. This classification may affect the requirements for an Individual Wetlands Permit (see N.J.A.C. 7:7A-9 and 10), the types of Statewide General Permits available for the property (see N.J.A.C. 7:7A-5 and 7) and any modification available through a transition area waiver (see N.J.A.C. 7:7A-8). Please refer to the Freshwater Wetlands Protection Act (N.J.S.A. 13:9B-1 et seq.) and implementing rules for additional information.

Wetlands resource value classification is based on the best information available to the Department. The classification is subject to reevaluation at any time if additional or updated information is made available, including, but not limited to, information supplied by the applicant.

Under N.J.S.A. 13:9B-7a(2), if the Division has classified a wetland as exceptional resource value, based on a finding that the wetland is documented habitat for threatened and endangered species that remains suitable for use for breeding, resting or feeding by such species, an applicant may request a change in this classification. Such requests for a classification change must demonstrate that the habitat is no longer suitable for the documented species because there has been a change in the suitability of this habitat. Requests for resource value classification changes and associated documentation should be submitted to the Division at the address at the top of this letter.

General Information

Pursuant to the Freshwater Wetlands Protection Act Rules, you are entitled to rely upon this jurisdictional determination for a period of five years from the date of this letter unless it is determined that the letter is based on inaccurate or incomplete information. Should additional information be disclosed or discovered, the Division reserves the right to void the original letter of interpretation and issue a revised letter of interpretation.

Regulated activities proposed within a wetland, wetland transition area or water area, as defined by N.J.A.C. 7:7A-2.2 and 2.3 of the Freshwater Wetlands Protection Act rules, require a permit from this office unless specifically exempted at N.J.A.C. 7:7A-2.4. The approved plan and supporting jurisdictional limit information are now part of the Division's public records.

This letter in no way legalizes any fill which may have been placed, or other regulated activities which may have occurred on-site. This determination of jurisdiction extent or presence does not make a finding that wetlands or water areas are "isolated" or part of a surface water tributary system unless specifically called out in this letter as such. Furthermore, obtaining this determination does not affect your responsibility to obtain any local, State, or Federal permits which may be required.

Please be advised that any surface water features on the site or adjacent to the site may possess flood hazard areas and/or riparian zones and development within these areas may be subject to the Flood Hazard Area Control Act rules at N.J.A.C. 7:13. The Division can verify the extent of flood hazard areas and/or riparian zones through a flood hazard area verification under the application procedures set forth at N.J.A.C. 7:13-5.1.

Recording

Within 90 calendar days of the date of this letter, the applicant shall submit the following information to the clerk of each county in which the site is located, and shall send proof to the Division that this information is recorded on the deed of each lot referenced in the letter of interpretation:

1. The Department file number for the letter of interpretation;
2. The approval and expiration date of the letter of interpretation;
3. A metes and bounds description of the wetland boundary approved under the letter of interpretation;
4. The width and location of any transition area approved under the letter of interpretation; and
5. The following statement: "The State of New Jersey has determined that all or a portion of this lot lies in a freshwater wetland and/or transition area. Certain activities in wetlands and transition areas are regulated by the New Jersey Department of Environmental Protection and some activities may be prohibited on this site or may first require a freshwater wetland permit. Contact the Division of Land Use Regulation at (609) 292-0060 or http://www.nj.gov/landuse for more information prior to any construction onsite."

Failure to have this information recorded in the deed of each lot and/or to submit proof of recording to the Division constitutes a violation of the Freshwater Wetlands Protection Act rules and may result in suspension or termination of the letter of interpretation and/or subject the applicant to enforcement action pursuant to N.J.A.C. 7:7A-22.

Appeal Process

In accordance with N.J.A.C. 7:7A-21, any person who is aggrieved by this decision may request a hearing within 30 days of the date the decision is published in the DEP Bulletin by writing to: New Jersey Department of Environmental Protection, Office of Legal Affairs, Attention: Adjudicatory Hearing

Requests, Mail Code 401-04L, P.O. Box 402, 401 East State Street, 7th Floor, Trenton, NJ 08625-0402. This request must include a completed copy of the Administrative Hearing Request Checklist found at www.state.nj.us/dep/landuse/forms. Hearing requests received after 30 days of publication notice may be denied. The DEP Bulletin is available on the Department's website at www.state.nj.us/dep/bulletin. In addition to your hearing request, you may file a request with the Office of Dispute Resolution to engage in alternative dispute resolution. Please see the website www.nj.gov/dep/odrn for more information on this process.

Please contact April Grabowski of our staff by e-mail at April.Grabowski@dep.nj.gov or by phone at (609) 777-0454 should you have any questions regarding this letter. Be sure to indicate the Department's file number in all communication.

Sincerely,

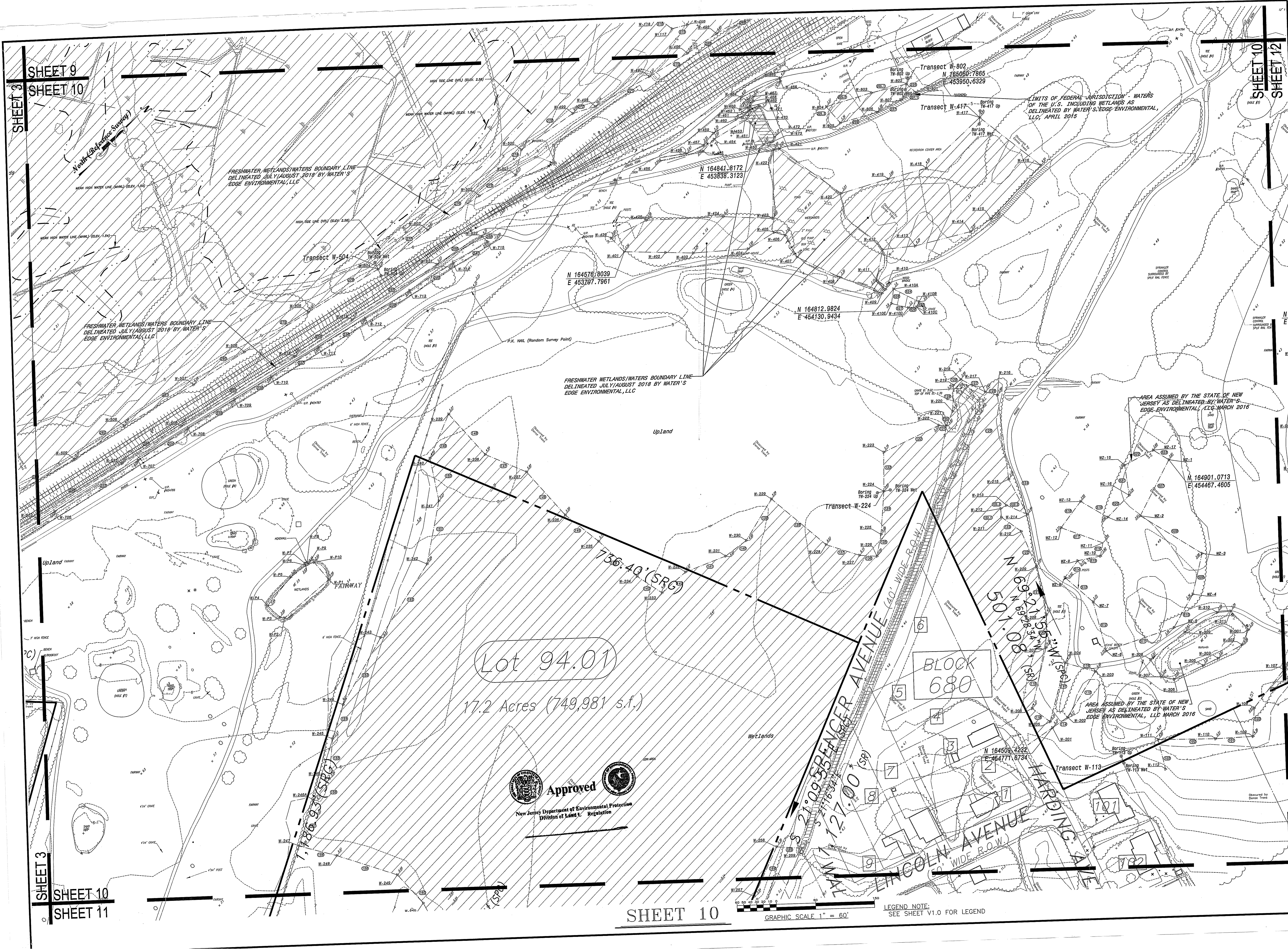
Bob Kozachek, Environmental Specialist 3
Division of Land Use Regulation

c: Municipal Clerk
Municipal Construction Official
Agent (original)

DEPARTMENT OF ENVIRONMENTAL PROTECTION

LAND

UST REGULATION PROGRAM



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CONSULTANTS:

I declare that, to the best of my professional knowledge and belief, this map or plan is the result of a field survey made on the date shown below, by me or under my direct supervision, in accordance with the rules and regulations promulgated by the "State Board of Professional Engineers and Land Surveyors".

Thomas R. Deneka

Thomas R. Deneka
NJ PROFESSIONAL LAND SURVEYOR No. 35828

John E. Halbruner
NJ PROFESSIONAL ENGINEER No. 42918
NJ REGISTERED ARCHITECT No. 15952

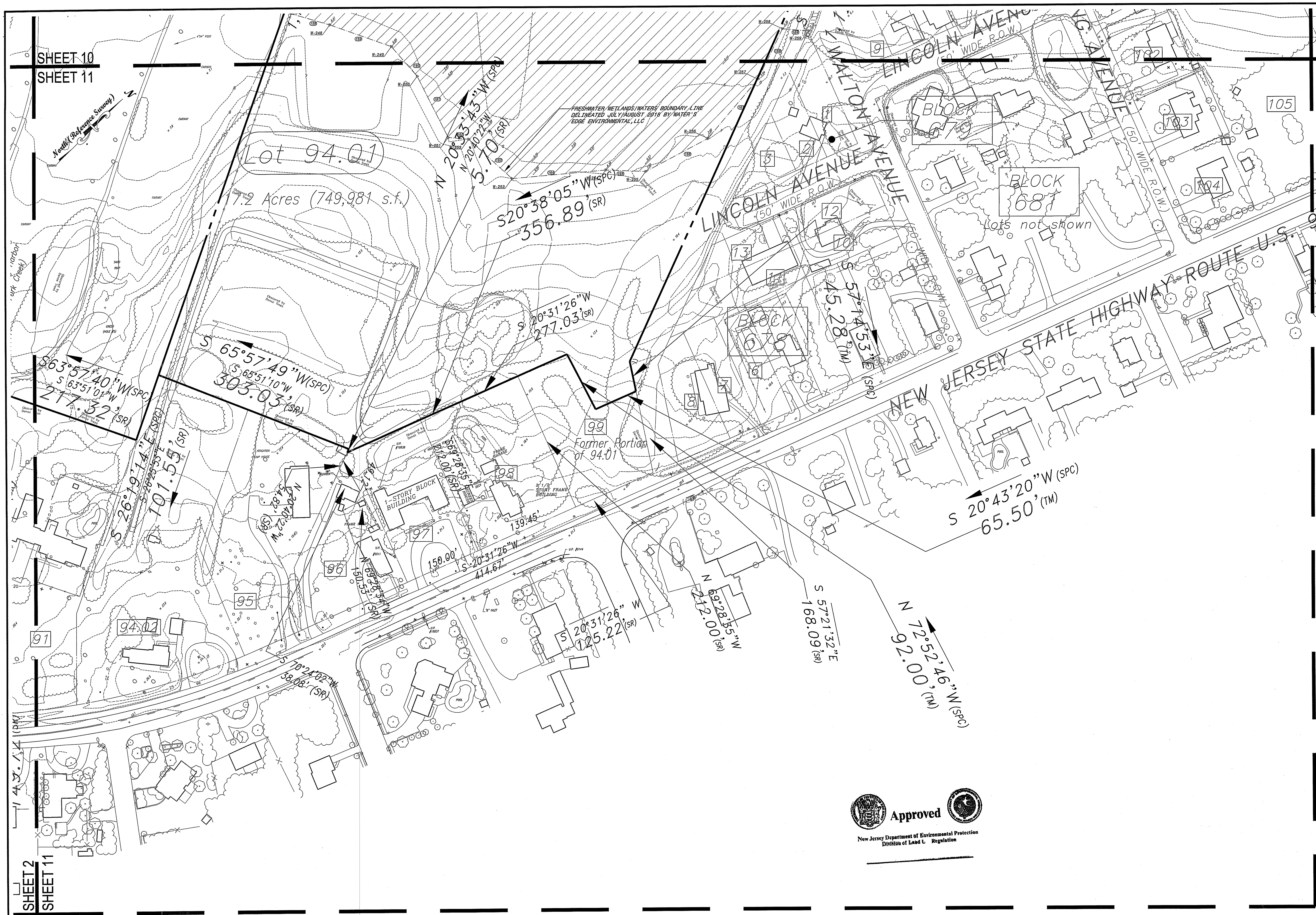
PLAN OF FRESHWATER/WATERS DELINEATION
B.L. ENGLAND GENERATING STATION
TAX BLOCK 479 TAX LOTS 74, 76, 76.01 & 94.01
TOWNSHIP OF UPPER, CAPE MAY COUNTY, NEW JERSEY

PROJECT No:	4500.02
DRAWN BY:	RDS
CHECKED BY:	TRD

No.	DATE	ISSUANCE / REVISION
1.	10.14.08	INITIAL RELEASE
3.	08.17.18	DELINEATION UPDATED

SHEET TITLE:
FRESHWATER WETLANDS/WATERS DELINEATION

V2.8



SHEET 11

GRAPHIC SCALE 1" = 60'

LEGEND NOTE:
SEE SHEET V1.0 FOR LEGEND

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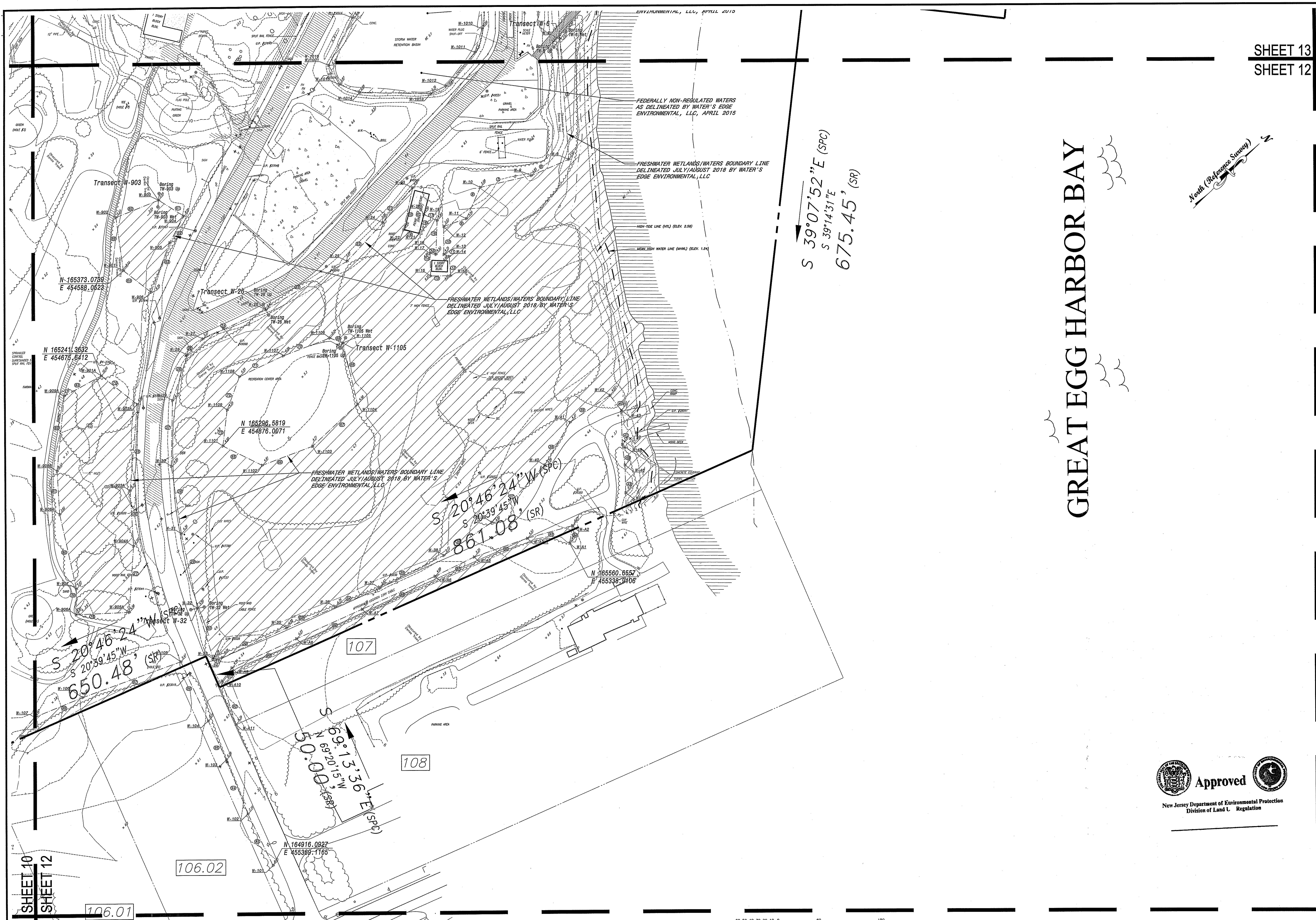
SHEET TITLE:
FRESHWATER WETLANDS/WATERS DELINEATION

V2.9

SHEET 11 OF 17



SHEET 12

GRAPHIC SCALE 1" = 60'

LEGEND NOTE:
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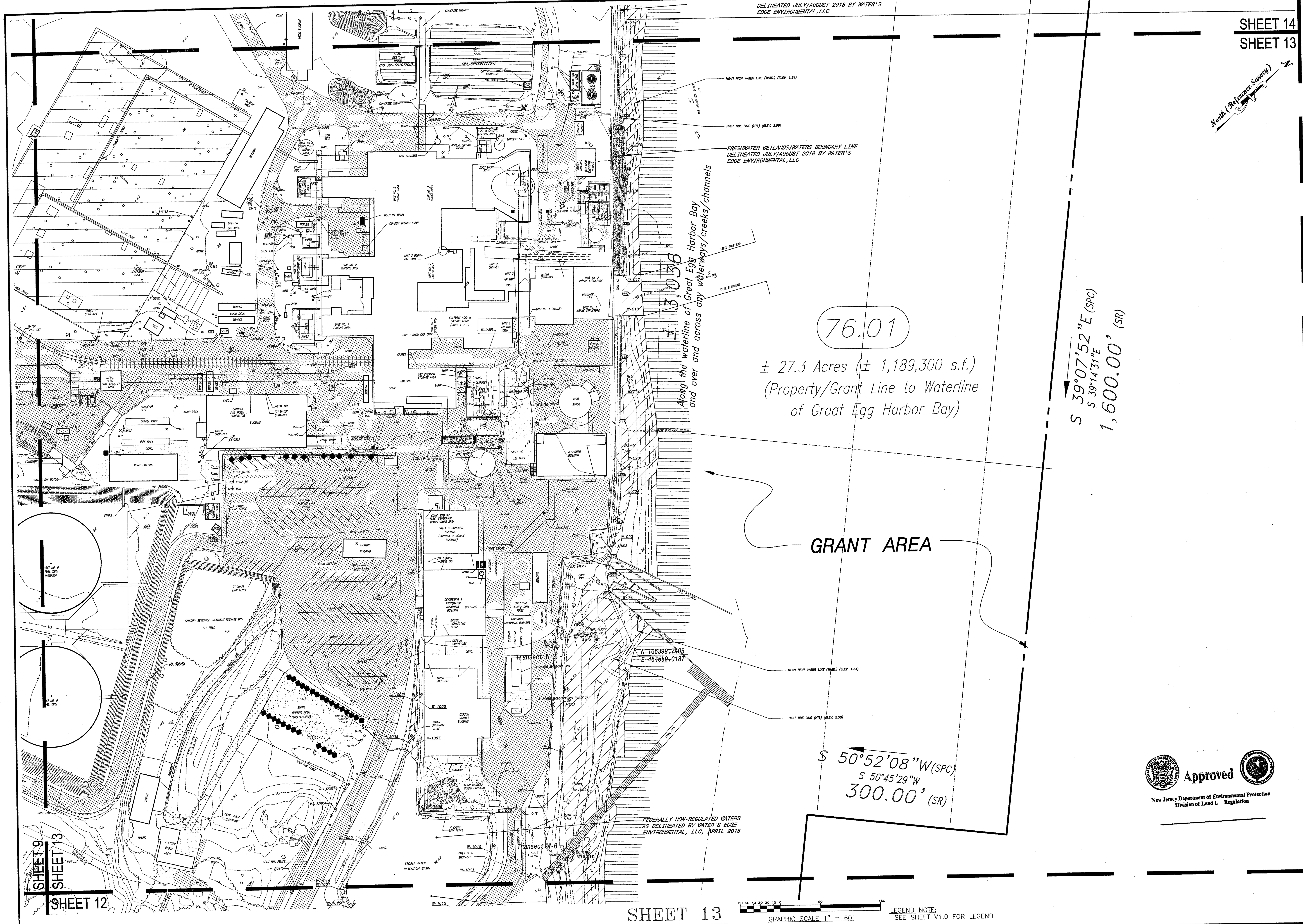
SHEET TITLE:
FRESHWATER WETLANDS/WATERS DELINEATION

V2.10

SHEET 12 OF 17



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FRESHWATER WETLANDS/WATERS DELINEATION

V2.11

SHEET 13 OF 17

Attachment D. Wetland Delineation Plans

Ocean Wind
An Ørsted & PSEG project

Attachment E. Wetland Delineation Datasheets

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: BL England | City/County: Cape May County | Sampling Date: 9/16/2019

Applicant/Owner: Orsted | State: NJ | Sampling Point: WL-A-UP

Investigators: James Eberhardt Zachary Lehmann | Section, Township, Range S T Upper R

Landform (hillslope, terrace, etc.): ____ | Local Relief (concave, convex, none): None | Slope(%) 0

Subregion (LRRor MLRA): Outer Coastal Plain (L | Lat: 39.25795444 | Long: -74.63676497 | Datum: Decimal Degrees

Soil Map Unit Name: Urban Land | NWI Classification: E2EM1P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

	Yes	No
Hydrophytic Vegetation Present?		X
Hydric Soil Present?		X
Wetland Hydrology Present?		X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
This area is not a wetland because of no hydrophytic vegetation, hydric soil, or wetland hydrology present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)		X	

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION – Use scientific names of plants.

Sampling Point: WL-A-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Poa pratensis	80	Y	FACU
Echinochloa crus-galli	10	N	FACW
	90	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Toxicodendron radicans	10	N	FAC
	10	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	10	x 3 =	30
FACU species	80	x 4 =	320
UPL species	0	x 5 =	0
Column Totals:	100 (A)		370 (B)

Prevalence Index = B/A= 3.70

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point: WL-A-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 20	10YR 2/ 1	100					LOAMY SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: BL England | City/County: Cape May County | Sampling Date: 9/16/2019

Applicant/Owner: Orsted | State: NJ | Sampling Point: WL-A-WET

Investigators: James Eberhardt Zachary Lehmann | Section, Township, Range S T Upper R

Landform (hillslope, terrace, etc.): Toe of Slope | Local Relief (concave, convex, none): None | Slope(%) 0

Subregion (LRRor MLRA): Outer Coastal Plain (L | Lat: 39.25790602 | Long: -74.63681374 | Datum: Decimal Degrees

Soil Map Unit Name: Pawcatuk-Transquaking Complex | NWI Classification: E2EM1Pd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?**	**Yes X No ____**
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____		

Remarks:
Area is a wetland based on presence of hydrophytic vegetation, hydric soil, and wetland hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☑ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☑ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
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Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
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- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):		
Water Table Present?	Yes X	No ____	Depth (inches):	15	
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches):	0	**Wetland Hydrology Present? Yes X No ____**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology present

VEGETATION– Use scientific names of plants.

Sampling Point: WL-A-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Spartina patens	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point: WL-A-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 to 10	/							Fiberous peat
10 to 20	10YR 4/ 1	100					SANDY LOAM	Muck

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [x] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Organic Bodies (A6) (LRR P, T, U)
- [ ] 5 cm Mucky Mineral (A7) (LRR P, T, U)
- [ ] Muck Presence (A8) (LRR U)
- [ ] 1 cm Muck (A9) (LRR P, T)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Coast Prairie Redox (A16) (MLRA 150A)
- [ ] Sandy Mucky Mineral (S1) (LRR O, S)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR P, S, T, U)
- [ ] Polyvalue Below Surface (S8) (LRR S, T, U)
- [ ] Thin Dark Surface (S9) (LRR S, T, U)
- [ ] Loamy Mucky Mineral (F1) (LRR O)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Marl (F10) (LRR U)
- [ ] Depleted Ochric (F11) (MLRA 151)
- [ ] Iron-Manganese Masses (F12) (LRR O, P, T)
- [ ] Umbric Surface (F13) (LRR P, T, U)
- [ ] Delta Ochric (F17) (MLRA 151)
- [ ] Reduced Vertic (F18) (MLRA 150A, 150B)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149A)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- [ ] 1 cm Muck (A9) (LRR O)
- [ ] 2 cm Muck (A10) (LRR S)
- [ ] Reduced Vertic (F18) (outside MLRA 150A,B)
- [ ] Piedmont Floodplain Soils (F19) (LRR P, S, T)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12) (LRR T, U)
- [ ] Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [ ] **Restrictive Layer (if observed):**

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** X **No** ____

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: BL England | City/County: Cape May County | Sampling Date: 9/16/2019

Applicant/Owner: Orsted | State: NJ | Sampling Point: WL-B-UP

Investigators: James Eberhardt Zachary Lehmann | Section, Township, Range S T Upper R

Landform (hillslope, terrace, etc.): | Local Relief (concave, convex, none): None | Slope(%) 0

Subregion (LRRor MLRA): Outer Coastal Plain (L | Lat: 39.25813828 | Long: -74.63665559 | Datum: Decimal Degrees

Soil Map Unit Name: Urban Land | 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 ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** **X**
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:
Area not a wetland based on no presence of hydrophytic vegetation, hydric soils, or wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	
Water Table Present?	Yes ____	No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches):	

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology present

VEGETATION – Use scientific names of plants.

Sampling Point: WL-B-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Iva frutescens	20	N	FACW
	20	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Poa pratensis	80	Y	FACU
Echinochloa crus-galli	10	N	FACW
Phragmites australis	10	N	FACW
	100	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Toxicodendron radicans	10	N	FAC
	10	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	10	x 3 =	30
FACU species	80	x 4 =	320
UPL species	0	x 5 =	0
Column Totals:	130 (A)		430 (B)

Prevalence Index = B/A= 3.31

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test > 50%

____ 3 - Prevalence Index ≤ 3.0

____ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

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

SOIL

Sampling Point: WL-B-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 2	10YR 2/ 1	100					SAND	Roots present
2 to 6	10YR 6/ 2	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☑ **Restrictive Layer (if observed):**

Type: Concrete

Depth (inches): 6

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: BL England | City/County: Ocean County | Sampling Date: 9/16/2019

Applicant/Owner: Orsted | State: NJ | Sampling Point: WL-B-WET

Investigators: James Eberhardt, Zachary Lehmann | Section, Township, Range: S ___ T Upper ___ R ___

Landform (hillslope, terrace, etc.): ___ | Local Relief (concave, convex, none): Concave | Slope(%): 0

Subregion (LRRor MLRA): Outer Coastal Plain (L | Lat: 39.25825091 | Long: -74.63641882 | Datum: Decimal Degrees

Soil Map Unit Name: Appoquinimink-Transquaking-Mispillion Complex | NWI Classification: E2EM1Pd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:
The area is a wetland based on presence of hydrophytic vegetation, hydric soils, and wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [x] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [x] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

	Yes	No	Depth (inches):
Surface Water Present?		X	
Water Table Present?	X		4
Saturation Present? (includes capillary fringe)	X		0

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology present

VEGETATION– Use scientific names of plants.

Sampling Point: WL-B-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Phragmites australis	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test > 50%

X 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X **No** ___

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

SOIL

Sampling Point: WL-B-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type [1]	Loc [2]	Texture	Remarks
0 to 8	/							Fiberous peat
8 to 20	10YR 4 / 1	100					LOAMY SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- [x] Histosol (A1)
- [ ] Histic Epipedon (A2)
- [ ] Black Histic (A3)
- [ ] Hydrogen Sulfide (A4)
- [ ] Stratified Layers (A5)
- [ ] Organic Bodies (A6) (LRR P, T, U)
- [ ] 5 cm Mucky Mineral (A7) (LRR P, T, U)
- [ ] Muck Presence (A8) (LRR U)
- [ ] 1 cm Muck (A9) (LRR P, T)
- [ ] Depleted Below Dark Surface (A11)
- [ ] Thick Dark Surface (A12)
- [ ] Coast Prairie Redox (A16) (MLRA 150A)
- [ ] Sandy Mucky Mineral (S1) (LRR O, S)
- [ ] Sandy Gleyed Matrix (S4)
- [ ] Sandy Redox (S5)
- [ ] Stripped Matrix (S6)
- [ ] Dark Surface (S7) (LRR P, S, T, U)
- [ ] Polyvalue Below Surface (S8) (LRR S, T, U)
- [ ] Thin Dark Surface (S9) (LRR S, T, U)
- [ ] Loamy Mucky Mineral (F1) (LRR O)
- [ ] Loamy Gleyed Matrix (F2)
- [ ] Depleted Matrix (F3)
- [ ] Redox Dark Surface (F6)
- [ ] Depleted Dark Surface (F7)
- [ ] Redox Depressions (F8)
- [ ] Marl (F10) (LRR U)
- [ ] Depleted Ochric (F11) (MLRA 151)
- [ ] Iron-Manganese Masses (F12) (LRR O, P, T)
- [ ] Umbric Surface (F13) (LRR P, T, U)
- [ ] Delta Ochric (F17) (MLRA 151)
- [ ] Reduced Vertic (F18) (MLRA 150A, 150B)
- [ ] Piedmont Floodplain Soils (F19) (MLRA 149A)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- [ ] 1 cm Muck (A9) (LRR O)
- [ ] 2 cm Muck (A10) (LRR S)
- [ ] Reduced Vertic (F18) (outside MLRA 150A,B)
- [ ] Piedmont Floodplain Soils (F19) (LRR P, S, T)
- [ ] Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- [ ] Red Parent Material (TF2)
- [ ] Very Shallow Dark Surface (TF12) (LRR T, U)
- [ ] Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

- [ ] **Restrictive Layer (if observed):**

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** X **No** ____

Remarks:

Hydric soil present

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: BL England | City/County: Cape May County | Sampling Date: 9/16/2019

Applicant/Owner: Orsted | State: NJ | Sampling Point: WL-C-UP

Investigators: Zachary Lehmann James Eberhardt | Section, Township, Range S T Upper R

Landform (hillslope, terrace, etc.): ____ | Local Relief (concave, convex, none): ____ | Slope(%) 0

Subregion (LRRor MLRA): Outer Coastal Plain (L | Lat: 39.25323647 | Long: -74.61662583 | Datum: Decimal Degrees

Soil Map Unit Name: Urban Land - Psamments | NWI Classification: E2EM1Pd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If No, explain in Remarks)

Are Vegetation ____, Soil ____, Hydrology ____, significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, Hydrology ____, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X		
Wetland Hydrology Present?	Yes ____	No X		

Remarks:
This area is not a wetland based on no presence of hydrophytic vegetation, hydric soil, or wetland hydrology

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15) (LRR U)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imag.(C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	____
Water Table Present?	Yes ____	No X	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches):	____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION– Use scientific names of plants. Sampling Point: WL-C-UP

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum			
Herb Stratum (Plot size: 6 Ft)			
Poa pratensis	50	Y	FACU
Phragmites australis	20	N	FACW
Echinochloa crus-galli	10	N	FACW
	80	=Total Cover	
Vine Stratum (Plot size: 30 Ft)			
Parthenocissus quinquefolia	15	Y	FACU
Toxicodendron radicans	10	N	FAC
	25	=Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	10	x 3 =	30
FACU species	65	x 4 =	260
UPL species	0	x 5 =	0
Column Totals:	105 (A)		350 (B)

Prevalence Index = B/A= 3.33

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test > 50%

___ 3 - Prevalence Index ≤ 3.0

___ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ___ No X

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

SOIL

Sampling Point: WL-C-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 1	/	100	Black				LOAMY SAND	Organic Layer
1 to 4	10YR 5/ 2	80	10YR 4/6	20	C	M	LOAMY SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☑ **Restrictive Layer (if observed):**

Type: Concrete

Depth (inches): 4

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

No hydric soils

WETLAND DETERMINATION DATA FORM - Atlantic and Gulf Coastal Plain Region

Project/Site: BL England | City/County: Ocean County | Sampling Date: 9/16/2019

Applicant/Owner: Orsted | State: NJ | Sampling Point: WL-C-WET

Investigators: James Eberhardt Zachary Lehmann | Section, Township, Range S T Upper R

Landform (hillslope, terrace, etc.): Toe of Slope | Local Relief (concave, convex, none): None | Slope(%) 0

Subregion (LRRor MLRA): Outer Coastal Plain (L | Lat: 39.25329629 | Long: -74.61665836 | Datum: Decimal Degrees

Soil Map Unit Name: Pawcatuck-Transquaking Complex | NWI Classification: E2EM1P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)

Are Vegetation ___, Soil ___, Hydrology ___, significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, Hydrology ___, naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X No ___	**Is the Sampled Area within a Wetland?**	**Yes X No ___**
Hydric Soil Present?	Yes X No ___		
Wetland Hydrology Present?	Yes X No ___		

Remarks:
This area is a wetland based on presence of hydrophytic vegetation, hydric soil, and wetland hydrology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [x] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [x] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] Marl Deposits (B15) (LRR U)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres along Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imag.(C9)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] FAC-Neutral Test (D5)
- [ ] Sphagnum moss (D8) (LRR T,U)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches):	
Water Table Present?	Yes X No ___	Depth (inches):	16
Saturation Present? (includes capillary fringe)	Yes X No ___	Depth (inches):	4

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Surface water nearby

VEGETATION– Use scientific names of plants.

Sampling Point: WL-C-WET

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum			
Shrub Stratum (Plot size: 30 Ft)			
Iva frutescens	10	Y	FACW
	10	=Total Cover	
Herb Stratum (Plot size: 6 Ft)			
Spartina patens	100	Y	FACW
	100	=Total Cover	
Vine Stratum			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across all Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100.0%	(A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	110	x 2 =	220
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		220 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test > 50%
X 3 - Prevalence Index ≤ 3.0
__ Problematic Hydrophytic Vegetation (Explain)

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

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** __

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

SOIL

Sampling Point: WL-C-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type [1]	Loc [2]	Texture	Remarks
0 to 20	10YR 5/ 1	100					LOAMY SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Martix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)
- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils: [3]

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12) (LRR T, U)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

☐ **Restrictive Layer (if observed):**

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** X **No** ____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted Wind, Ocean City Bridge City/County: Cape May County Sampling Date: 03/21/2022

Applicant/Owner: Ocean Wind, LLC State: NJ Sampling Point: SE-1-WLC

Investigator(s): Steve Seymour, James Eberhardt Section, Township, Range: Ocean City

Landform (hillslope, terrace, etc.): level Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): S 149A Lat: 39.252415 Long: -74.627445 Datum: WGS84

Soil Map Unit Name: Appoquiniumink- Transquaking- Mrspillion NWI classification: E1UBL6

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 X No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

Portion of upland bulkhead. "Cable crossing area" signage in vicinity

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 14"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): surface

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SE-1-WL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft)			
1. Spartina alterniflora	20	Y	OBL
2. Spartina patens	70	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		
50% of total cover:	20% of total cover:		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	90	x 1 = 90
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	90 (A)	90 (B)

Prevalence Index = B/A = 1.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four 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 X No ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: SE-1-WL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0"-12"	4/1 10YR	100					fine sand	organic loam and clay
12"-20"	3/1 10YR	100					fine sand	loam and clay, trace sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
X Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: none observed
Depth (inches): ______

Hydric Soil Present? Yes X No ___

Remarks:

Soils 0-12" are organic loam and clay with plant roots; 12"-20" are loam and clay with trace sand, saturated

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted Wind-Ocean City Bridge City/County: Cape May County Sampling Date: 03/21/2022

Applicant/Owner: Ocean Wind, LLC State: NJ Sampling Point: SE-UPLC

Investigator(s): Steve Seymour, James Eherhardt Section, Township, Range: Ocean City

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR or MLRA): S149A Lat: 39.252505 Long: -74.627138 Datum: WGS84

Soil Map Unit Name: Orhan Land psamments NWI classification: none

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 ___	No X
Hydric Soil Present?	Yes ___	No X
Wetland Hydrology Present?	Yes ___	No X

Is the Sampled Area within a Wetland? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SE-UPL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Prunus serotina	10	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	10 = Total Cover		
50% of total cover: ____	20% of total cover: ____		

Sapling/Shrub Stratum (Plot size: 15 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Toxicodendron radicans	60	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	60 = Total Cover		
50% of total cover: ____	20% of total cover: ____		

Herb Stratum (Plot size: 5 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Artemisia annua	30	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30 = Total Cover		
50% of total cover: ____	20% of total cover: ____		

Woody Vine Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Parthenocissus quinquefolia	20	Y	FACU
2.			
3.			
4.			
5.			
	20 = Total Cover		
50% of total cover: ____	20% of total cover: ____		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	60	x 3 =	180
FACU species	60	x 4 =	240
UPL species		x 5 =	
Column Totals:	120 (A)		420 (B)

Prevalence Index = B/A = 3.5

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four 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 X

Remarks: (If observed, list morphological adaptations below).

Poison Ivy growing in shrub form 10-13 ft high.

SOIL

Sampling Point: SE-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0"-11"	3/3 10YR							dry, 20% round pebbles
11"-20"	4/3 10YR							dry silty loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): none observed

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ **No** X

Remarks:

Area probably backfilled; approx 3' drop in contour to wetland edge

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted Wind-Ocean City Bridge City/County: Cape May County Sampling Date: 03/21/2022

Applicant/Owner: Ocean Wind, LLC State: NJ Sampling Point: SW-WLA

Investigator(s): Steve Seymour, James Eberhardt Section, Township, Range: Township of Upper

Landform (hillslope, terrace, etc.): level Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): S 149A Lat: 39.253431 Long: -74.630918 Datum: WGS84

Soil Map Unit Name: Appoquiniumink- Transquaking- Mrspillion NWI classification: E2EM1Pd

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 X No ___	Is the Sampled Area within a Wetland?	Yes X No ___
Hydric Soil Present?	Yes X No ___		
Wetland Hydrology Present?	Yes X No ___		

Remarks:

fiddler crabs present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): to surface

Water Table Present? Yes X No ___ Depth (inches): to surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): to surface

Wetland Hydrology Present? Yes X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Sampling Point: SW-WL

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
50% of total cover: ___	20% of total cover: ___		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
50% of total cover: ___	20% of total cover: ___		
Herb Stratum (Plot size: 5 ft)			
1. Phragmites australis	30	Y	FACW
2. Spartina alterniflora	50	Y	OBL
3. Spartina patens	10	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		
50% of total cover: ___	20% of total cover: ___		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: ___	20% of total cover: ___		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	30	x 2 =	60
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	90 (A)		120 (B)

Prevalence Index = B/A = 1.33

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four 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 X No ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: SW-WL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0"-6"	2/1 10YR	100						organic, muck/peat
6"-20"	6/1 10YR	100						pure sand, grains coated

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
X Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
X Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: __________

Depth (inches): __________

Hydric Soil Present? Yes X No ___

Remarks:

subsoil is rounded, coarse quartz sand grains, coated with organic layer

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Orsted Wind- Ocean City Bridge City/County: Cape May County Sampling Date: 03/21/2022

Applicant/Owner: Orsted Wind, LLC State: NJ Sampling Point: SW-UPLA

Investigator(s): Steve Seymour, James Eberhardt Section, Township, Range: Township of Upper

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): S149A Lat: 39.253580 Long: -74.630857 Datum: WGS84

Soil Map Unit Name: Urban Land Psamments NWI classification: none

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 ___ No X	**Is the Sampled Area within a Wetland?**	**Yes** ___ **No** X
Hydric Soil Present?	Yes ___ No X		
Wetland Hydrology Present?	Yes ___ No X		

Remarks:

piles of old concrete fill in the area

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	___ Aquatic Fauna (B13)	
___ High Water Table (A2)	___ Marl Deposits (B15) **(LRR U)**	
___ Saturation (A3)	___ Hydrogen Sulfide Odor (C1)	
___ Water Marks (B1)	___ Oxidized Rhizospheres along Living Roots (C3)	
___ Sediment Deposits (B2)	___ Presence of Reduced Iron (C4)	
___ Drift Deposits (B3)	___ Recent Iron Reduction in Tilled Soils (C6)	
___ Algal Mat or Crust (B4)	___ Thin Muck Surface (C7)	
___ Iron Deposits (B5)	___ Other (Explain in Remarks)	
___ Inundation Visible on Aerial Imagery (B7)		
___ Water-Stained Leaves (B9)		

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Area may have been historically filled. Area elevated 3-4ft nearby tidal marsh.

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

Sampling Point: SW-UPL

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana	70	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	70 = Total Cover		
50% of total cover: ____	20% of total cover: ____		
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0 = Total Cover		
50% of total cover: ____	20% of total cover: ____		
Herb Stratum (Plot size: 5ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	0 = Total Cover		
50% of total cover: ____	20% of total cover: ____		
Woody Vine Stratum (Plot size: 30ft)			
1. Lonicera japonica	15	Y	FACU
2.			
3.			
4.			
5.			
	15 = Total Cover		
50% of total cover: ____	20% of total cover: ____		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species	85	x 4 =	340
UPL species		x 5 =	
Column Totals:	85 (A)		340 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four 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 X

Remarks: (If observed, list morphological adaptations below).

SOIL Sampling Point: SW-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0"-20"	3/3 10YR	100						silty loam with 5% gravel, dry

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): none observed
Type: ______
Depth (inches): ______

Hydric Soil Present? Yes ______ No X

Remarks:

Live trees all red cedar; 3-12" DBH, some dead huckleberry. No shrub layer.