TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC

NORTHEAST SUPPLY ENHANCEMENT PROJECT

ENVIRONMENTAL REPORT

APPENDIX E. SUPPLEMENTAL WETLAND DELINEATION REPORT

NOVEMBER 2026

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Supplemental Wetland Delineation Report

Northeast Supply Enhancement Project

Middlesex and Somerset Counties, New Jersey

October 2019

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List of Abbreviations and Acronyms

CFR	Code of Federal Regulations
CWA	Clean Water Act
E & E	Ecology and Environment, Inc.
E2EM	emergent/intertidal/estuarine
EPA	U.S. Environmental Protection Agency
EV	exceptional value
FAC	facultative
FACW	facultative wetland
FACU	facultative upland
GPS	global positioning system
HDD	horizontal directional drill
hp	horsepower
ID	identification
LRR	Land Resource Region
M & R	meter and regulating
MP	milepost
NHD	National Hydrography Dataset
N.J.A.C.	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NWI	National Wetlands Inventory
OBL	obligate
OHWM	ordinary high-water mark
ONRW	outstanding national resource waters
PEM	palustrine emergent
PFO	palustrine forested
Project	Northeast Supply Enhancement Project
PSS	palustrine scrub-shrub
QA/QC	quality assurance/quality control
ROW	right-of-way

List of Abbreviations and Acronyms (cont.)

SWQS	surface water quality standards
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UVP	upland verification point
WOTUS	Waters of the United States

1 Introduction

Transcontinental Gas Pipe Line Company, LLC (Transco), a subsidiary of Williams Partners, L.P., is developing the Northeast Supply Enhancement Project (Project) to support National Grid's longer term supply and reliability needs in their New York service area. Transco proposes to expand its existing interstate natural gas pipeline system to provide up to 400 million dekatherms/day of additional firm transportation capacity to National Grid by adding to its existing facilities in Pennsylvania and New Jersey and by constructing an offshore segment in New Jersey and New York state waters that would connect to the Rockaway Transfer Point. The Rockaway Transfer Point is the interconnection point between Transco's existing Lower New York Bay Lateral and the exiting offshore Rockaway Delivery Lateral located approximately 3 miles seaward of Rockaway, New York. The Project will add about 37 miles of pipeline and new compression to Transco's existing pipeline system (see Table 1-1 for a summary of the pipeline expansion). Increased compression would be achieved through construction of a new compressor station in Somerset County, New Jersey, and modifications to Compressor Station 200 in Chester County, Pennsylvania.

Table 1-1 Summary of Pipeline Facilities

Facility	Size	Onshore/ Offshore	State	County	Length (miles)
Quarryville Loop	42-inch-diameter pipeline	Onshore	Pennsylvania	Lancaster	10.17
Madison Loop	26-inch-diameter pipeline	Onshore	New Jersey	Middlesex	3.43
Raritan Bay Loop	26-inch-diameter pipeline	Onshore	New Jersey	Middlesex	0.16
Raritan Bay Loop	26-inch-diameter pipeline	Offshore	New Jersey	Middlesex	1.86
Raritan Bay Loop	26-inch-diameter pipeline	Offshore	New Jersey	Monmouth	4.09
Raritan Bay Loop	26-inch-diameter pipeline	Offshore	New York	Queens/Richmond	17.38

This report describes the results of waters/wetland delineations conducted at the onshore Project facilities (i.e., the Madison Loop, the onshore portion of the Raritan Bay Loop, and Compressor Station 206) in Middlesex and Somerset counties, New Jersey (see Attachment 1, Figure 1).

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2 Study Area and Study Conditions

2.1 Description of Study Area

2.1.1 Madison Loop

The proposed Madison Loop improvements are approximately 3.43 miles of 26-inch-diameter pipeline from Compressor Station 207 at milepost (MP) 8.57 to MP 12.00 southwest of the Morgan meter and regulating (M&R) station on the Transco Lower Bay Loop C in Old Bridge Township and the Borough of Sayreville, Middlesex County, New Jersey. As currently proposed, the majority of the Madison Loop would be co-located with the existing Transco mainline right-of-way (ROW). Transco proposes to widen the ROW in areas where necessary. Approximately 1.2 miles of the Madison Loop are proposed to be installed via the horizontal directional drill (HDD) method.

The Project is still in the development phase. However, for the purposes of the wetland and watercourse delineation, the study area for the Madison Loop was typically extended a minimum of 150 feet on either side of the centerline and farther where additional construction workspaces, pipeline facilities, or access roads may be proposed (Attachment 2). The study area was restricted in some locations due to the lack of property access permissions.

2.1.2 Raritan Bay Loop

The proposed Raritan Bay Loop includes construction of a new 26-inch-diameter pipeline loop from the onshore Madison Loop at the Sayreville shoreline in Middlesex County, New Jersey, to the Rockaway Transfer Point. The Raritan Bay Loop will extend approximately 23.49 miles across Raritan Bay and Lower New York Bay to the Rockaway Transfer Point in New York State waters in the Atlantic Ocean approximately 3 miles seaward of Rockaway, New York. Approximately 0.16 miles of the Raritan Bay Loop is proposed for onshore in New Jersey, 5.95 miles cross New Jersey waters, and the remaining 17.38 miles as proposed cross New York waters.

The study area for the Raritan Bay Loop extended a minimum of 110 feet on either side of the centerline and farther where additional construction workspaces, pipeline facilities, or access roads may be proposed (Attachment 2).

2.1.3 Compressor Station 206

The Project includes construction of a new 32,000 horsepower (hp) compressor station in Franklin Township, Somerset County, New Jersey. The Compressor

Station 206 facility layout, including the alternative access road option, is approximately 29.87 acres. Compressor Station 206 will include two Solar Mars®100 (or equivalent) natural gas-fired compressors as well as associated facilities and other ancillary equipment.

2.2 Survey Access and Field Survey Coverage

Transco has obtained survey-access permission for study areas that encompass all currently proposed workspaces related to the Raritan Bay Loop, Madison Loop, and Compressor Station 206. Transco has completed wetland delineations in 100% of the current study areas. Transco understands that additional surveys may be required if Project components are sited outside of the current study area.

2.3 Climatic Conditions during Field Surveys

Transco conducted water resource field surveys at various times between June 9, 2016 and May 22, 2017 and at additional times in late April and early May 2019. The vast majority of fieldwork was conducted prior to November 2016, well within the growing season for the region. The growing season was defined by the approximated WETS table method found in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0)* (Regional Supplement) (U.S. Army Corps of Engineers [USACE] 2010). The growing season at the weather station closest to the Project (New Brunswick 3 SE, FIPS 34023) is from April 2 through November 3. Climatic and antecedent precipitation conditions were considered and incorporated into the application of the wetland and watercourse delineation methodology presented in Section 3.

During the survey period, at the weather station closest to the Project, average temperatures were generally above the 30-year mean, and precipitation was generally lower than the 30-year mean (National Oceanic Atmospheric Administration [NOAA] 2017). Temperature and precipitation data is summarized in Table 2-1.

Table 2-1 Summary of Climatic Conditions at New Brunswick 3 SE, (FIPS 34023)

Month	Average Temperature (°F)	30-Year Mean Temperature (°F)	Temperature Departure from Mean	Total Precipitation (inches)	30-Year Mean Precipitation	Precipitation Departure from Mean
June	71.1	69.9	1.2	2.35	4.44	-2.09
July	77.9	75.2	2.7	7.15	4.89	2.26
August	77.3	73.6	3.7	0.84	4.42	-3.58
September	70.3	66.5	3.8	1.7	4.23	-2.53
October	56.6	54.6	2	3.06	3.82	-0.76
November	47.0	45.3	1.7	2.8	3.71	-0.91
December	36.9	35.9	1	4.17	4.19	-0.02
January	26.4	30.2	-3.8	4.6	3.87	0.73
February	39.7	32.8	6.9	1.51	2.87	-1.36
March	38.7	40.8	-2.1	3.53	4.18	-0.65
April	56.2	51.4	4.8	6.29	4.23	2.06
May	60.4	60.9	-0.5	7.32	4.19	3.13

Source: NOAA 2017.

3 Wetland and Watercourse Delineation Methodology

This section references and describes the regulatory manuals, definitions, and methodologies used to field-delineate wetlands and watercourse features within the study areas. Field surveys were conducted from June 2016 to August 2016, from November 2016 to January 2017, in April and May of 2017 and 2019. Data were collected at sample plot locations where potential wetland indicators were observed to determine whether hydrophytic vegetation, hydric soils, and/or wetland hydrology indicators were present. If the indicators within the sample plot met the conditions of the jurisdictionally appropriate wetland manual, a wetland boundary was delineated and upland and wetland data plot locations were established.

3.1 Preliminary Information Review

U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps (USFWS 2016), the U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) (USGS 2017), NJDEP wetland mapping (NJDEP 1986) and aerial photographs were reviewed prior to field work to determine potential locations of wetlands and watercourses within the study areas.

3.2 Wetland Delineation Methodology

Field biologists conducted waters/wetland surveys within a majority of the study areas during the summer field season, from mid to late August 2016. Additional waters/wetland surveys were conducted at various dates from November 2016 to June 2017 and in April/May 2019 in study areas where proposed limits of disturbance may have changed and/or where landowner property access permission was delayed.

During the field investigation, vegetation, soils, and hydrology within the study area were examined for evidence of wetland characteristics in accordance with the methodologies outlined in the *Corps of Engineers Wetlands Delineation Manual* (1987 Manual) (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0)* (AGCP Regional Supplement) (U.S. Army Corps of Engineers [USACE] 2010), and the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989 Federal Manual) (Federal Interagency Committee

on Wetland Delineation 1989), depending on if and where the sample plot was located along the Madison Loop and/or at the proposed Compressor Station 206.

For the proposed NESE Project, waters/wetlands delineated on the Madison Loop are subject to either single jurisdiction under the New Jersey Department of Environmental Protection (NJDEP) or under dual jurisdiction between both the NJDEP and the US Army Corps of Engineer's New York District (USACE) depending on their landscape position relative to a regulatory line drawn (buffered) 1000-feet up gradient (i.e., landward) of the Mean High Water Line (MHWL). Waters/wetlands located down gradient (i.e., seaward) of the MHWL + 1000ft regulatory line are considered under dual jurisdiction between the NJDEP and the USACE's New York District. Waters/wetland features located up gradient (i.e., landward) of the MHWL + 1000ft regulatory line are under the sole jurisdiction of the NJDEP (NJDEP 2002). The regulatory conditions of the waterbodies and wetlands are summarized within the Freshwater and Coastal Waters/Wetlands figure (Attachment 3).

Waters/wetlands down gradient of the MHWL +1,000 feet dual jurisdiction line were assessed using the 1987 Delineation Manual and the AGCP Regional Supplement. All other waters/wetlands on the Madison Loop (located up-gradient of the MHWL + 1000ft dual jurisdiction line) are under the NJDEP Freshwater Wetlands jurisdiction only, and were assessed using the 1989 Federal Manual. Finally, all water/wetlands delineated at the proposed CS 206 location are under the sole jurisdiction of the NJDEP and were delineated using the 1989 Federal Manual.

3.2.1 Wetland Evaluation Using the 1987 Manual and Regional Supplement

According to the 1987 Manual (Environmental Laboratory 1987), wetlands are characterized by the following three distinct environmental characteristics:

(1) *Vegetation*. The prevalent vegetation consists of macrophytes that are typically adapted to life in hydric soil conditions. These hydrophytic species, because of morphological, physiological, and/or reproductive adaptations, can and do persist in anaerobic soil conditions.

(2) *Soils*. Soils are present and have been classified as hydric, or they possess redoximorphic characteristics that are associated with anaerobic soil conditions.

(3) *Hydrology*. The area must be inundated either permanently or periodically at mean water depths less than 6.6 feet or the soil is saturated at the surface for some time during the growing season of the prevalent vegetation.

The specific methods used to characterize and evaluate vegetation, soils, and hydrology using the 1987 Manual and the Regional Supplement are described below.

Vegetation

The location of each wetland and upland paired sampling point was selected based on vegetation community homogeneity and because the location was considered representative of the community. Species abundance in both the upland and wetland communities was visually estimated by percent cover within each vegetation stratum. Field biologists identified plant species using botanical references for the region. Dominant trees, shrubs/saplings, non-woody herbaceous plants, and woody vines were recorded within 30-foot-, 15-foot-, 5-foot-, and 30-foot-radius sample plots respectively that were centered on the sampling point. In cases where the plot radius extended beyond the wetland boundary, the plot terminated at the wetland boundary line for each respective stratum. The dominant species of each stratum of the community was identified according to the 50/20 rule, described as follows:

> ". . . dominants are the most abundant species that individually or collectively account for more than 50% of the total coverage of vegetation in the stratum, plus any other species that, by itself, accounts for 20% of the total. For the purposes of this regional supplement, absolute percent cover is the recommended abundance measure for plants in all vegetation strata" (USACE 2010).

The hydrophytic indicator status of each species was identified using the 2016 Wetland Plant List (Lichvar et al. 2016). An area is considered to have hydrophytic vegetation if any of the following indicators are present in the sample plot:

- the results of the rapid assessment include only species rated as obligate (OBL) or facultative wetland (FACW) (Indicator 1);
- the result of the dominance test is greater than 50% (Indicator 2);
- the prevalence index is less than or equal to 3.0 (Indicator 3); or
- the plant community passes either the dominance test or the prevalence index after reconsideration of the indicator status of certain plant species that exhibit morphological adaptations for life in wetlands (Indicator 4) (USACE 2010).

The wetland classification system developed by Cowardin et al. (1979) was used to classify delineated wetland vegetation community cover types.

Soils

The soil profile at each sampling plot was characterized to determine if hydric soil indicators were present. A hydric soil is defined as a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (U.S. Department of Agriculture [USDA], Soil Conservation Service 1994).

Soil borings were collected with a hand-held auger or sharp-shooter shovel to depths of approximately 20 inches, unless otherwise restricted, to observe the soil profile and evaluate redoximorphic features, if present. Information collected for

each soil profile included horizon depth, texture, color, and the presence or absence of redoximorphic features. Colors of the soil matrix and redoximorphic features were identified using Munsell® colors (Gretag/Macbeth 2000). All hydric soil determinations were based on criteria established in the 1987 Manual (Environmental Laboratory 1987) and the Regional Supplement (USACE 2010). Soils were considered hydric if at least one primary indicator or at least one indicator for problematic hydric soils was met. Table 3-1 lists the wetland soil indicators for the Atlantic and Gulf Coastal Plain Region (USACE 2010).

Table 3-1 Wetland Soil Indicators for the Atlantic and Gulf Coastal Plain Region

Primary Hydric Soil Indicators		Indicators for Problematic Hydric Soils
Histosol (A1)	Dark Surface (S7) (LRR P, S, T, U)	1 centimeter Muck (A9) (LRR O)
Histic Epipedon (A2)	Polyvalue Below Surface (S8) (LRR S, T, U)	2 centimeter Muck (A10) (LRR S)
Black Histic (A3)	Thin Dark Surface (S9) (LRR S, T, U)	Reduced Vertic (F18) (Outside MLRA 150A, 150B for Vertisols and Vertic intergrades)
Hydrogen Sulfide (A4)	Loamy Mucky Mineral (F1) (LRR O)	Piedmont Floodplain Soils (F19) (for soils with Piedmont deposition in LRR P, S, T)
Stratified Layers (A5)	Loamy Gleyed Matrix (F2)	Anomalous Bright Loamy Soils (F20) (MLRA 153B of LRR T)
Organic Bodies (A6) (LRR P, T, U)	Depleted Matrix (F3)	Red Parent Material (TF2)
5 centimeter Mucky Mineral (A7) (LRR P, T, U)	Redox Dark Surface (F6)	Very Shallow Dark Surface (TF12)
Muck Presence (A8) (LRR U)	Depleted Dark Surface (F7)	
1 centimeter Muck (A9) (LRR P, T)	Redox Depressions (F8)	
Depleted Below Dark Surface (A11)	Marl (F10) (LRR U)	
Thick Dark Surface (A12)	Depleted Ochric (F11) (MLRA 151 of LRR T)	
Coast Prairie Redox (A16) (MLRA 150A of LRR T)	Iron-magnesium Masses (F12) (LRR O, P, T)	
Sandy Mucky Mineral (S1) (LRR O, S)	Umbric Surface (F13) (LRR P, T, U)	
Sandy Gleyed Matrix (S4)	Delta Ochric (F17) (MLRA 151 of LRR T)	

Table 3-1 Wetland Soil Indicators for the Atlantic and Gulf Coastal Plain Region

Primary Hydric Soil Indicators		Indicators for Problematic Hydric Soils
Sandy Redox (S5)	Reduced Vertic (F18) (MLRA 150A, 150B of LRR T)	
Stripped Matrix (S6)	Piedmont Floodplain Soils (F19) (MLRA 149A of LRR S)	
	Anomalous Bright Loamy Soils (F20) (MLRA 149A of LRR S, MLRA 153C and 153D of LRR T)	

Source: USACE 2010.

Key:
LRR = USDA Land Resource Region
MLRA = USDA Major Land Resource Region

Hydrology

The potential for wetland hydrology was evaluated by determining whether hydrologic indictors were present. A site was determined to contain wetland hydrology if at least one primary indicator was observed or at least two secondary indicators were observed. Field biologists noted the presence and depth of surface water, the water table, and saturation, if encountered, within the soil profile. Table 3-2 lists the primary and secondary wetland hydrology indicators for the Atlantic and Gulf Coastal Plain Region (USACE 2010).

Table 3-2 Wetland Hydrology Indicators for the Atlantic and Gulf Coastal Plain Region

Primary Indicators (Minimum of one is required)		Secondary Indicators (Minimum of two is required)
Surface Water (A1)	Water-Stained Leaves (B9)	Surface Soil Cracks (B6)
High Water Table (A2)	Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Marl Deposits (B15) (LRR U)	Drainage Patterns (B10)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Presence of Reduced Iron (C4)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)	Thick Muck Surface (C7)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)		Shallow Aquitard (D3)
		FAC-Neutral Test (D5)
		Sphagnum moss (D8) (LRR T, U)

Source: USACE 2010.

3.2.2 Wetland Evaluation Using the 1989 Federal Manual

The specific methods used to characterize and evaluate vegetation, soils, and hydrology using the 1989 Federal Manual are based on those in the 1987 Manual but do have some differences. Most significantly, in the 1987 Manual an area must exhibit evidence of at least one positive wetland indicator from all of the following parameters to be defined as a wetland: vegetation, soils, and hydrology, whereas, in the 1989 Federal Manual, an area must contain one positive wetland indicator from two of the three parameters (vegetation, soils, hydrology) to be defined as a wetland. Additionally, in some instances an area with only a positive indicator of hydric soils may be considered a wetland without positive indicators of wetland hydrophytic vegetation or hydrology based upon the best professional judgement of the field delineator.

Additional details regarding the evaluation of vegetation, soils, and hydrology using the 1989 Federal Manual are described below.

Vegetation

Species dominance and species indicator status were determined as described in Section 3.2.1 of the 1989 Federal Manual. As established by the 1989 Federal Manual, hydrophytic vegetation was considered present if:

- OBL species comprised all dominants in the plant community; or
- OBL species did not dominate each stratum, but more than 50 percent of the dominants of all strata are OBL, FACW, or FAC species; or
- A plant community had a visually estimated percent coverage of OBL and FACW species that exceeded the coverage of FACU and UPL species; or
- A frequency analysis of all species within the community yielded a prevalence index value of less than 3.0 (where OBL = 1.0, FACW = 2.0, FAC = 3.0, FACU = 4.0, and UPL = 5.0); or
- The hydric soil and wetland hydrology criteria are met.

Soils

The soil boring collection and assessment protocol in the 1989 Manual is very similar to the 1987 Manual protocol. Field teams used hand augers and evaluated the horizon depth, color, and the presence or absence of redoximorphic features. The grain size and contrast were additionally evaluated under the 1989 Manual. As established by the 1989 Manual, hydric soils were considered present if one or more of the following hydric soils indicators were present:

- Organic soils;
- Histic epipedons;
- Sulfidic material or odor;

- Aquic or peraquic moisture regime (examples include soils of tidal marshes and soils of closed, landlocked depressions that are fed by permanent streams);
- Reducing soil conditions detected through the use of a colorimetric field test kit;
- Gleyed, low chroma, and low chroma/mottled soils;
- Iron and manganese concretions; or
- Coarse-textured or sandy soils with either a high organic content in the surface horizon, organic streaking in the subsurface horizons, or wet spodosols.

Hydrology

Under the 1989 Federal Manual, wetland hydrology was considered present if one or more of the following hydrologic indicators were present:

- Visual observation of inundation;
- Visual observation of soil saturation;
- Oxidized channels (rhizospheres) associated with living roots and rhizomes;
- Water marks;
- Drift lines;
- Water-borne sediment deposits;
- Water-stained leaves;
- Surface scoured areas;
- Wetland drainage patterns;
- Morphological plant adaptations; or
- The hydric soil criteria are met.

3.2.3 Wetland Nomenclature and Technological Methodology

Each wetland documented during the field surveys was assigned a unique identification (ID) and a numerical suffix. All wetland cover types (palustrine emergent [PEM], palustrine scrub-shrub [PSS], palustrine forested [PFO], or emergent/intertidal/estuarine [E2EM]) received an A, B, C, or D suffix, as follows:

- A = PEM
- B = PSS
- C = PFO
- D = E2EM

Individual wetland polygons were additionally assigned a numerical suffix (e.g., 1, 2, 3) to provide unique identifiers for the polygons if they were part of a large complex that contained contiguous or noncontiguous portions within the survey

corridor (e.g., if the same hydrologically connected complex meandered in and out of the survey corridor, etc.). A large wetland complex with multiple and physically separated polygons of different Cowardin classes would be mapped as follows: W-T02-001A-1, W-T02-001A-2, W-T02-001A-3, W-T02-001B-1, W-T02-001B-2, W-T02-001C-1, W-T02-001C-2.

Flag positions and data plot locations were collected by field biologists using a global positioning system (GPS) hand-held Trimble GeoXH loaded with ESRI ArcPad 10.0 software. Exterior wetland boundaries were marked with pink with black polka dot survey flagging. Interior wetland boundaries designating different Cowardin classes were marked with yellow with black polka dot survey flagging. Flags were not hung in active construction areas. Each wetland was given a unique alphanumeric Wetland ID designation to assist in field survey location and documentation. ("W-T01-001" is an example of the unique wetland identifier that was used).

As described above, waters/wetlands located downgradient of the MHWL +1000ft dual jurisdiction line, are under dual NJDEP/USACE jurisdiction, while all waters/wetlands up-gradient and landward of that MHWL+ 1,000 foot dual jurisdiction line are under NJDEP freshwater wetlands jurisdiction only. Accordingly, for features downgradient of the MHWL +1000ft dual jurisdiction line, a Wetland Determination Data Form (1987 Data Form) from the AGCP Regional Supplement and a Wetland Jurisdictional Field Data Sheet were completed for each delineated wetland and associated upland data point. In areas up-gradient or landward of the MHWL +1000ft dual jurisdiction line, a Routine Data Form (1989 Data Form) consistent with the 1989 Federal Manual was completed for each delineated wetland and associated upland data point. If multiple Cowardin classes were present in the wetland, at least one Data Form was completed for each representative wetland type within the complex. In instances were similar wetland conditions existed within physically separated polygons within the larger wetland complex, a single Data Form may have been used to characterize the conditions of all the similar wetland polygons. However, additional Data Forms were completed as necessary to show significant changes within the wetland Cowardin class (e.g., if a PEM was present in both a mowed pasture and in an undisturbed vegetated area). Upland verification points (UVPs) were taken in areas where indicators might suggest a wetland was present but that upon further investigation did not meet some or all of the three wetland parameters: vegetation, soils, and hydrology, as required by the applicable wetland manual. Either photos with brief notes were collected or a 1987 or 1989 Data Form was completed for these points to document the upland conditions present.

3.2.4 New Jersey Classification of Freshwater Wetlands by Resource Value and Transition Areas

The State of New Jersey further classifies its wetlands into freshwater vs coastal based upon their position relative to the Upper Wetland Boundary – Upper Wetland Limit (UWB-UWL) line that was derived from 1970's aerial photography. Freshwater wetlands located up-gradient of the UWB-UWL line, as well as those located at CS 206, were divided into the three

resource-value categories as described in the New Jersey Freshwater Wetlands Protection Act (New Jersey Administrative Code [N.J.A.C.] 2016a). The NJDEP considers the resource-value classification of a wetland in evaluating alternatives to the proposed regulated activity, in determining the size of the transition area, and in determining the amount and/or type of mitigation required. The three resource value categories are: (1) exceptional resource value, (2) intermediate resource value, and (3) ordinary resource value. As set forth in the New Jersey Freshwater Wetlands Protection Act, exceptional resource value wetlands are subject to a 150-foot transition area extending from the edge of the wetland outward; ordinary resource value wetlands are not subject to transition areas; and intermediate resource value wetlands are subject to 50-foot transition areas. Coastal wetlands located down-gradient of the UWB-UWL line are not regulated under the Freshwater Wetlands Protection Act and do not receive a resource value designation, nor a transition area based upon a resource value designation.

The resource value categories are described as follows:

Exceptional resource value wetlands are those which either:

- Discharge into FW-1 waters or FW-2 (trout production) waters (as defined in the NJDEP's Surface Water Quality Standards) and their tributaries (FW-1 waters are those within federal or state parks and lands that are to be maintained for the future in their natural state. FW-2 waters are trout production waters and their tributaries. These waters support trout spawning.); or
- Provide, or documentation shows can provide, habitat for state and federally identified threatened and endangered species. (The state and federal list of threatened and endangered plant species are available from the NJDEP's Office of Natural Lands Management at 609-984-1339. Lists of state- and federally identified threatened or endangered animal species are available from the NJDEP's Endangered and Nongame program at 609-292-9400.).

Ordinary resource value wetlands do not exhibit the characteristics of exceptional resource value wetlands and are:

- isolated wetlands that are not surface tributary systems of a lake, river, or stream and are more than 50 percent surrounded by development and less than 5,000 square feet in size;
- drainage ditches;
- swales; or
- detention facilities.

Intermediate resource value wetlands are all freshwater wetlands not defined as exceptional or ordinary.

3.2.5 EPA Priority Wetlands

The U.S. Environmental Protection Agency (EPA) has developed a listing of priority wetlands for certain geographic regions in the state of New Jersey (EPA 1994). In general, this list recognizes those areas identified by various federal, state, and private contributors that are considered to be the most important and vulnerable wetlands in the state. Permitted activities within wetlands included on the EPA list are subject to certain limitations.

Portions of the proposed Project are located within the Raritan Bay Estuary System, and the wetlands within this area are classified as EPA Priority Wetlands by the EPA. The NJDEP would make the final determination regarding this classification for the wetlands within the project limits.

3.3 Watercourse Identification Methodology

The watercourse field survey methodology used for determining the locations and characteristics of watercourses crossing or adjoining the study areas was similar to the methodology used in the wetland survey. Watercourse boundaries under USACE jurisdiction were established using guidelines presented in 33 Code of Federal Regulations (CFR) 328.4(c), which states that "the limits of federal jurisdiction for non-tidal waters of the United States in the absence of adjacent wetlands is the ordinary high water mark [OHWM]." "The OHWM is established by observations of water fluctuation, physical characteristics, such as a clear natural line impressed on the bank, shelving, changes in the soil character, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR 328.3(e)).

Watercourse boundaries under NJDEP jurisdiction (i.e., watercourses located upgradient or landward of the MHWL +1000ft dual jurisdiction line were established off of the break in slope at the top of bank per N.J.A.C. 7:7A-3.4. The following protocol was followed for delineating watercourses per the NJDEP Letter of Interpretation (LOI) requirements, "when delineating a State open water one to five feet in width measured from top of bank, with no wetland boundary, the delineation shall indicate the centerline of the State open water with several data points numbered and shown on the plans. When delineating a State open water that is greater than five feet in width, the delineation shall include two survey lines, with numbered points, depicting the top of bank on both sides of the State open water."

Although the New Jersey Code does not specifically define watercourses within the New Jersey Surface Water Quality Standards (SWQS) (N.J.A.C. 2016b), it is generally accepted that a watercourse is any channel or conveyance of surface water having defined bed and banks, whether natural or artificial. *Perennial watercourses* are those that flow throughout the year and are supplied by groundwater. *Intermittent watercourses* are watercourses that carry water during portions of the year, may be supplied by groundwater part of the year, and may carry water during storm water runoff events. At other times during the year, intermittent watercourses do not contain any water flow. *Ephemeral watercourses* are typically defined as those that do not flow throughout the year but typically carry water only

during storm water runoff events. These non-relatively permanent waterways can be considered by the USACE as jurisdictional under the Clean Water Act (CWA) because they may provide a "significant nexus" to other Waters of the United States (WOTUS).

The SWQS establish the designated uses and anti-degradation categories of surface waters in the State of New Jersey. All surface waters are classified based on the type of waterbody and the designated use of the waterbody. Waterbodies are generally classified as saline, freshwater, or pinelands, with freshwaters being further categorized as FW1 (no allowable wastewater discharge) or FW2 (all other waters). These are further categorized based on their trout status: trout production (FW2-TP), trout maintenance (FW2-TM), and non-trout (FW2-NT). The degree of protection from the state depends on the anti-degradation category given to a resource, based on its classification. All FW1 and pinelands waters are considered outstanding national resource waters (ONRW) and are afforded the highest protection. Category One waters are protected from any measurable change in water quality due to their exceptional water supply significance or exceptional fisheries resources. All other waters are considered Category Two waters which, while still afforded protections similar to Category one waters, may have an allowed the existing water quality to be lowered based on social or economic justification. NJDEP watercourse classification data were reviewed to determine whether watercourses in the study area fall under either of the higher level anti-degradation designations (ONRW or Category One waters) outlined in the SWQS.

Watercourses were mapped with a hand-held Trimble GeoXH loaded with ESRI ArcPad 10.0 software. Stream datasheets were completed for each watercourse feature. Watercourses less than 5 feet wide at the OHWM/TOB were mapped only as a centerline. Watercourses more than 5 feet wide at the OHWM/TOB were mapped at the OHWM and top of bank per the NJDEP LOI requirements. The OHWM was marked with white with blue polka dot survey flagging, and top of banks were marked with white with green polka dot survey flagging. Flags were not hung in active construction areas. Each watercourse was given a unique alphanumeric designation to assist in field survey location and documentation. ("WW-T01-001" is an example of the unique identifier used.) Tributaries to the main channel were given an additional letter designation, e.g., a tributary to WW-T01-001 would be WW-T01-001A.

3.4 Training and Organization

Each field team included at least one experienced wetland biologist from both Ecology and Environment, Inc. (E & E), and a local New Jersey firm, subcontracted by E & E. The field teams were directed by E & E's field team coordinator. The field team was additionally overseen by a senior biologist. Résumés of the lead biologists and senior biologist are provided in Attachment 4.

3.5 Mapping Methods

Environmental data were collected on a hand-held Trimble GeoXH GPS unit and an iPad. The GPS unit used ArcPad software to map and describe environmental

features. The iPad was used to collect photos and digital jurisdictional delineation datasheets.

3.6 Quality Assurance/Quality Control

Field data, including GPS data, field data sheets, photos, and log books, were subject to an initial daily quality assurance/quality control (QA/QC) review by each team in the field. A final QA/QC review was performed in the office by select field biologists, the field coordinator, and the geographic information system team.

4 Results

Tables 4-1 and 4-2 summarize, by Project component, the field survey results for wetlands and watercourses/waterbodies delineated in the study areas. Figures of the wetlands and watercourses/waterbodies within the study areas are provided in Attachment 2. Additional mapping displaying USGS topographic information, local roads, and land use/land cover are provided in Attachments 5, 6, and 7, respectively. Data packages with wetland and watercourse/waterbody field survey results are provided in Attachments 8 and 9, respectively.

Attachment 8 includes the following information:

- Wetland tables;
- Wetland determination data form/routine data form, depending on the applicable wetland manual; and
- Wetland/Upland photographs.

Attachment 9 includes the following information:

- Watercourse and waterbody tables;
- Watercourse data sheets; and
- Watercourse and waterbody photographs.

The following description of the on-site wetlands and waterbodies, are based on data collected by E & E during the field surveys completed in summer 2016, winter 2016/2017, spring 2017, and spring 2019.

4.1 Wetlands within the Study Areas

4.1.1 Madison Loop

Twenty-five wetlands were identified and delineated within the Madison Loop study area (Table 4-1). Data forms are included in Attachment 8.

Table 4-1 Summary of Field-Delineated Wetlands within the Madison Loop and Compressor Station 206 Study Areas

Facility	Type and Number of Wetlands in Study Area									
	PEM	PSS	PFO	E2EM	PEM / PSS	PEM / PFO	PEM/ E2EM	PFO/ E2EM	PEM / PSS / PFO	Total
Madison Loop	12	0	3	2	2	3	1	1	1	**25**
Compressor Station 206	2	0	0	0	0	3	0	0	2	**7**

Key:
PEM = Palustrine emergent
PSS = Palustrine scrub-shrub
PFO = Palustrine forested
E2EM = Emergent/intertidal/estuarine

4.1.2 Raritan Bay Loop

No wetlands were identified within the onshore Raritan Bay Loop study area.

4.1.3 Compressor Station 206

Seven wetlands were identified and delineated within the Compressor Station 206 study area (Table 4-1). Data forms are included in Attachment 8.

4.2 Watercourses and Waterbodies within the Study Areas

4.2.1 Madison Loop

E & E identified 15 watercourses and one waterbody within the Madison Loop study area (Table 4-2). Data forms are included in Attachment 9. One watercourse, WW-RS-005, was identified using remote-sensing methods because it was located within an inundated estuarine wetland inaccessible to field teams, W-T07-004. E & E did not complete physical survey of this watercourse due to the depth of water within the wetland surrounding the watercourse. E & E has delineated the watercourse's extent, using remote sensing, to be where the top of bank of the open channel is visible on aerial imagery. Photographs and a data form are unavailable for this feature. Under the current proposed limit of disturbance (LOD)/workspace for the Madison Loop, the field delineated wetland W-T07-004, and the internal channel to it that was inaccessible to the field teams (WW-RS-005), would be avoided entirely via a planned horizontal directional drill (HDD).

Table 4-2 Summary of Field-Delineated Watercourses and Waterbodies within the Madison Loop and Compressor Station 206 Study Areas

Facility	Type and Number of Watercourses in Study Area				
	Perennial Watercourse	Intermittent Watercourse	Ephemeral Watercourse	Waterbodies	Total
Madison Loop	3	7	5	1	**16**
Compressor Station 206	2	1	2	0	**5**

4.2.2 Raritan Bay Loop

No watercourses or waterbodies were identified within the onshore Raritan Bay Loop study area.

4.2.3 Compressor Station 206

E & E identified five watercourses within the Compressor Station 206 study area (Table 4-2). Data forms are included in Attachment 9.

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5 References

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. United States Fish and Wildlife Service Biological Report 79/31. Washington D.C.

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

Federal Interagency Committee on Wetland Delineation. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S.D.A Soil Conservation Service. Washington, D.C. Cooperative Technical Publication. 76 pp. plus appendices. https://www.fws.gov/northeast/ecologicalservices/pdf/wetlands/interagency%20wetland%20delineation%20manual%201989.pdf. Accessed January 31, 2017.

Gretag/Macbeth. 2000. Munsell® color. New Windsor, NY.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List*: 2016 wetland ratings. In *Phytoneuron* 30:1-17. http://rsgisias.crrel.usace.army.mil/NWPL/.

National Oceanic Atmospheric Administration (NOAA). 2017. Applied Climate Information System. Station New Brunswick 3 SE NJ. http://www.rcc-acis.org/. Accessed May 16, 2017.

New Jersey Administrative Code (N.J.A.C.). 2016a. Freshwater Wetlands Protection Act Rules N.J.A.C. 7:7A. Amended June 20, 2016. http://www.nj.gov/dep/rules/rules/njac7_7a.pdf. Accessed January 25, 2017.

New Jersey Administrative Code (N.J.A.C.). 2016b. Surface Water Quality Standards N.J.A.C. 7:9B. Re-adopted October 17, 2016. http://www.nj.gov/dep/rules/rules/njac7_9b.pdf. Accessed January 25, 2017.

New Jersey Department of Enviornmental Protection (NJDEP). 1986. NJDEP Wetlands of Somerset and Middlesex Counties. GIS Dataset. http://www.state.nj.us/dep/gis/wetshp.html.

New Jersey Department of Environmental Protection (NJDEP). 2002. Metadata for the NJDEP Upper Wetlands Boundary/Upper Wetlands Limit for New Jersey. NJDEP Office of Information Resources Management, Bureau of Geographic Information Systems. http://www.state.nj.us/dep/gis/dig-idownload/metadata/statewide/uwb_uwl.htm. Accessed January 25, 2017.

U.S. Army Corps of Engineers (USACE). 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2.0*. Eds. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-20. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Department of Agriculture (USDA) Soil Conservation Service. 1994. Changes in Hydric Soils of the United States. Federal Register 59(133): 35680-35681, July 13, 1994.

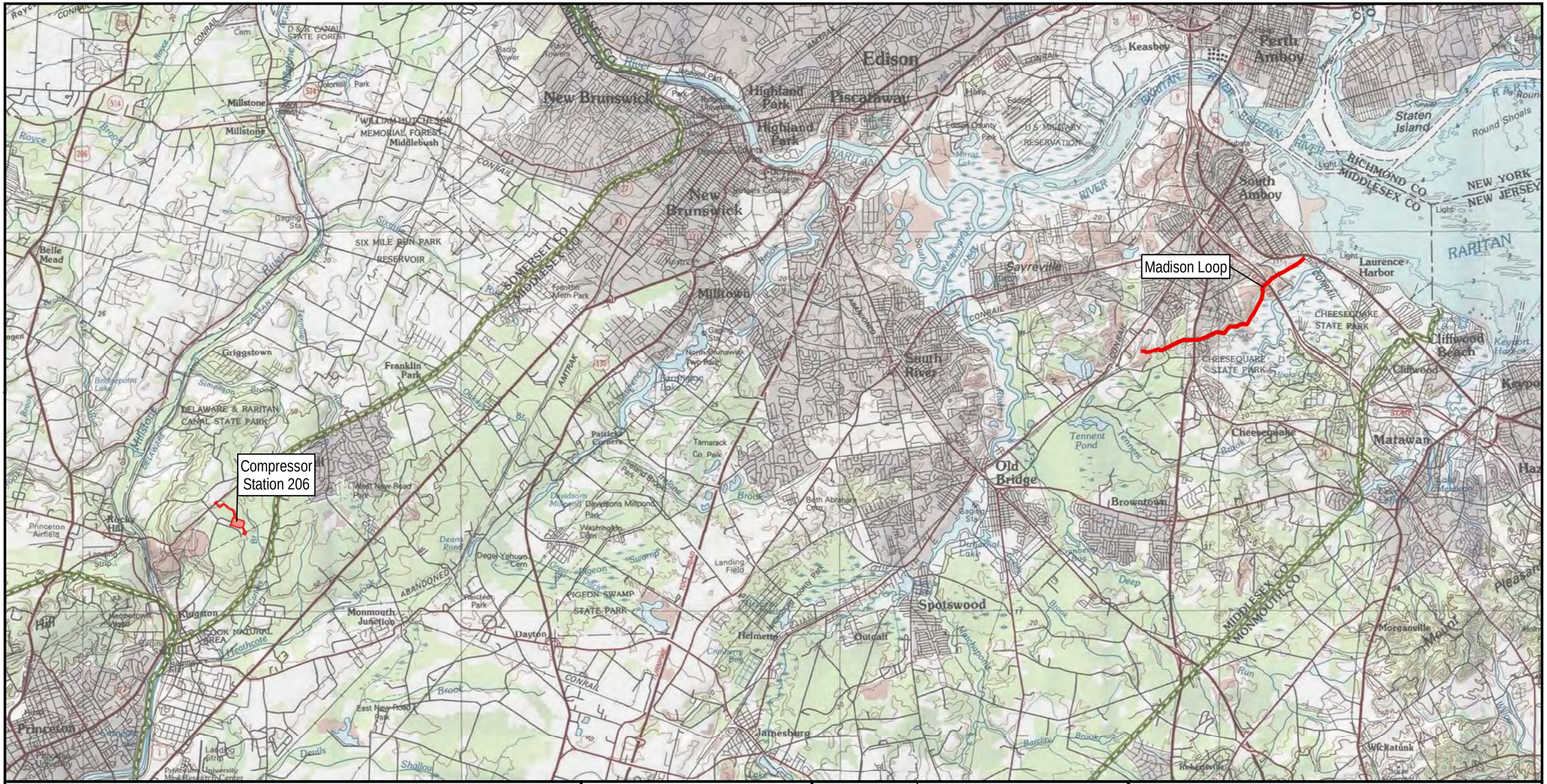
U.S. Environmental Protection Agency (EPA). 1994. Priority Wetlands for the State of New Jersey. Marine and Wetlands Protection Branch. http://www.nj.gov/dep/landuse/download/fw_017.pdf. Accessed January 25, 2017.

U.S. Fish and Wildlife Service (USFWS). 2016. National Wetlands Inventory Dataset. https://www.fws.gov/wetlands/Data/Data-Download.html. Accessed January 31, 2017.

U.S. Geological Survey (USGS). 2017. Hydrography: National Hydrography Dataset and Watershed Boundary Dataset. http://nhd.usgs.gov/. Accessed: January 31, 2017.

1 Project Location Map

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TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
PROJECT LOCATION MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

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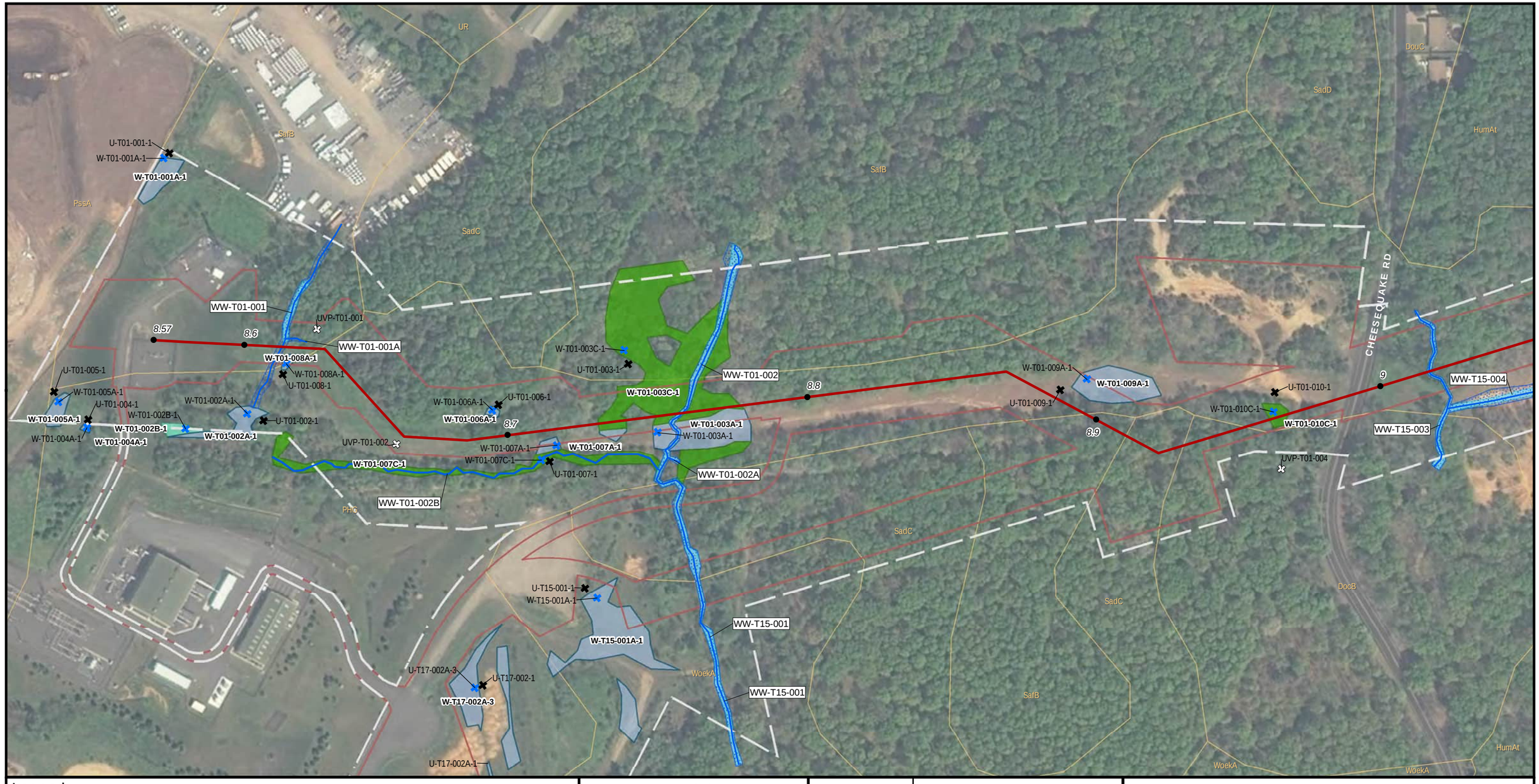
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2 Aerial Maps with Wetland, Watercourse, and Waterbody Locations

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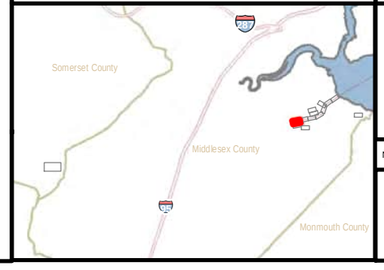
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- Madison Loop
- LOD
- Upland Verification Point
- Upland Data Point
- Wetland Data Point
- Waterway Line
- Surveyed Areas
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Top of Bank
- Ordinary High Water Mark
- Soil Type

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Feet

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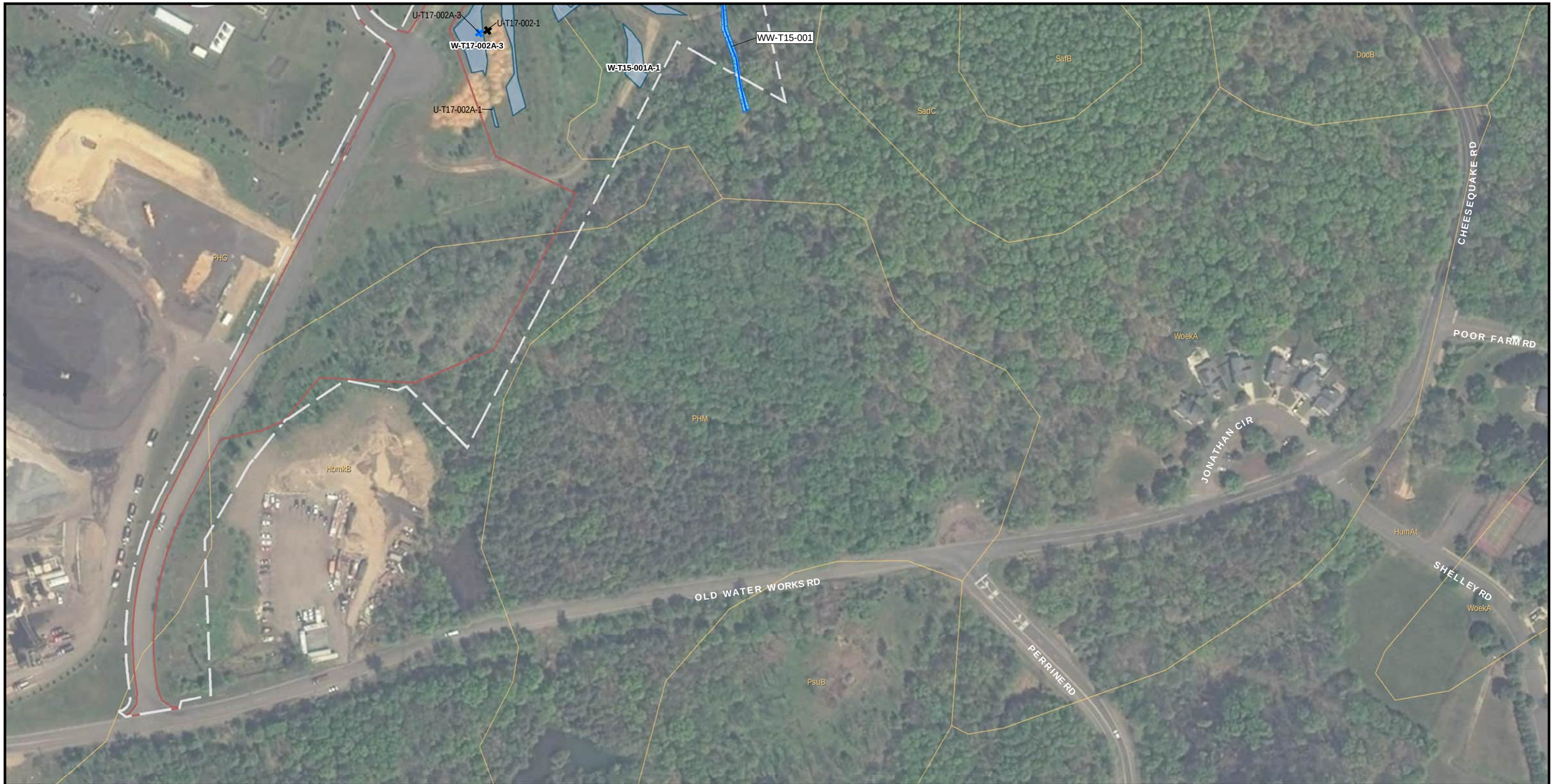
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RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

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Data Sources: Williams 2017; E&E 2017; ESRI 2012; SSURGO 2016; U.S. Fish and Wildlife Service, 2012.

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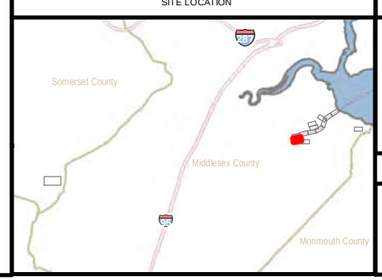
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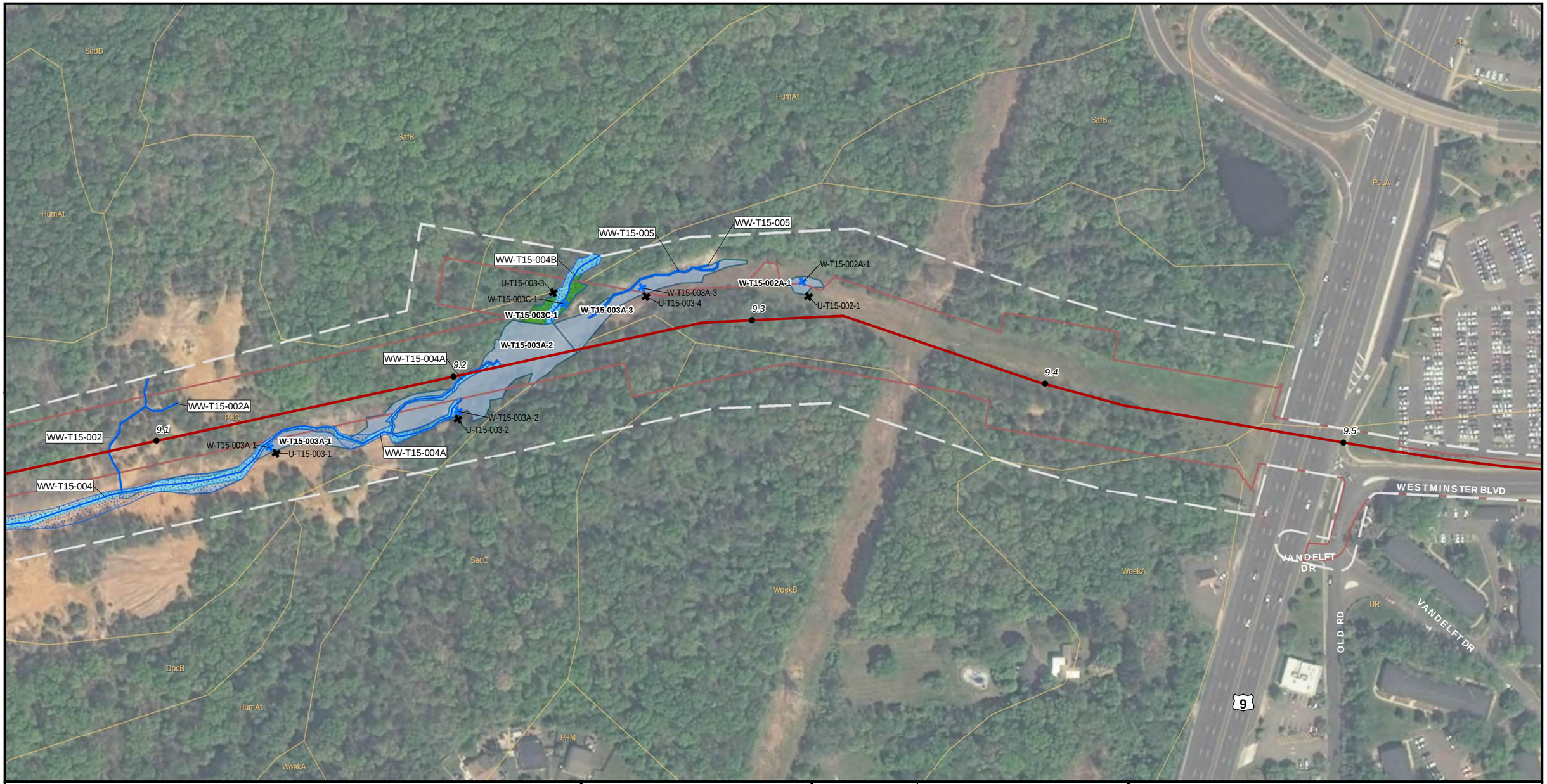
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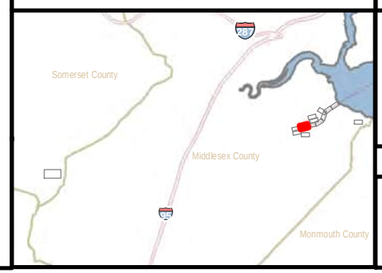
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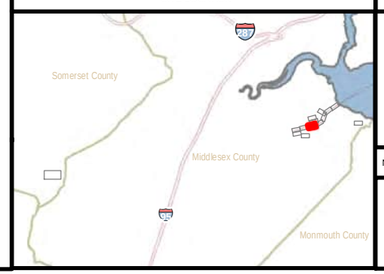
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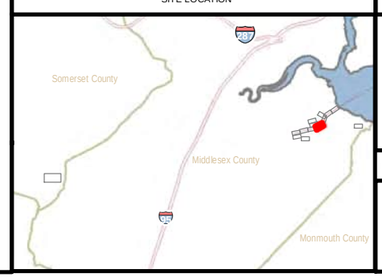


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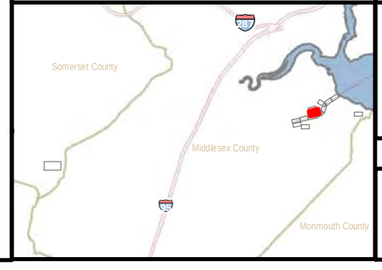
- LOD
- Upland Verification Point
- Surveyed Areas
- Soil Type

0 50 100 150 200

Feet

N

SITE LOCATION



DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	8/6/2019	MK	ISSUED FOR NJ WETLAND DELINEATION REPORT	1000891	CE	

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
FIELD DELINEATED WOTUS FEATURES AND SOIL MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

DRAWN BY: MK	DATE: 8/6/2019	ISSUE FOR BID: N/A	SCALE:
CHECKED BY: CE	DATE: 8/6/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver20a
APPROVED BY:	DATE:	DRAWING NUMBER:	SHEET 6 of 14
WO: 1000891	FIELD DATA: 8/6/2019	3:09 PM 8/6/2019	FIGURE 2

Data Sources: Williams 2017; E&E 2017; ESRI 2012; SSURGO 2016; U.S. Fish and Wildlife Service, 2012.

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Legend

LOD

Surveyed Areas

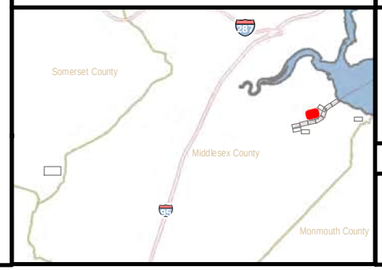
Soil Type

0 50 100 150 200

Feet

N

SITE LOCATION



DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	8/6/2019	MK	ISSUED FOR NJ WETLAND DELINEATION REPORT	1000891	CE	

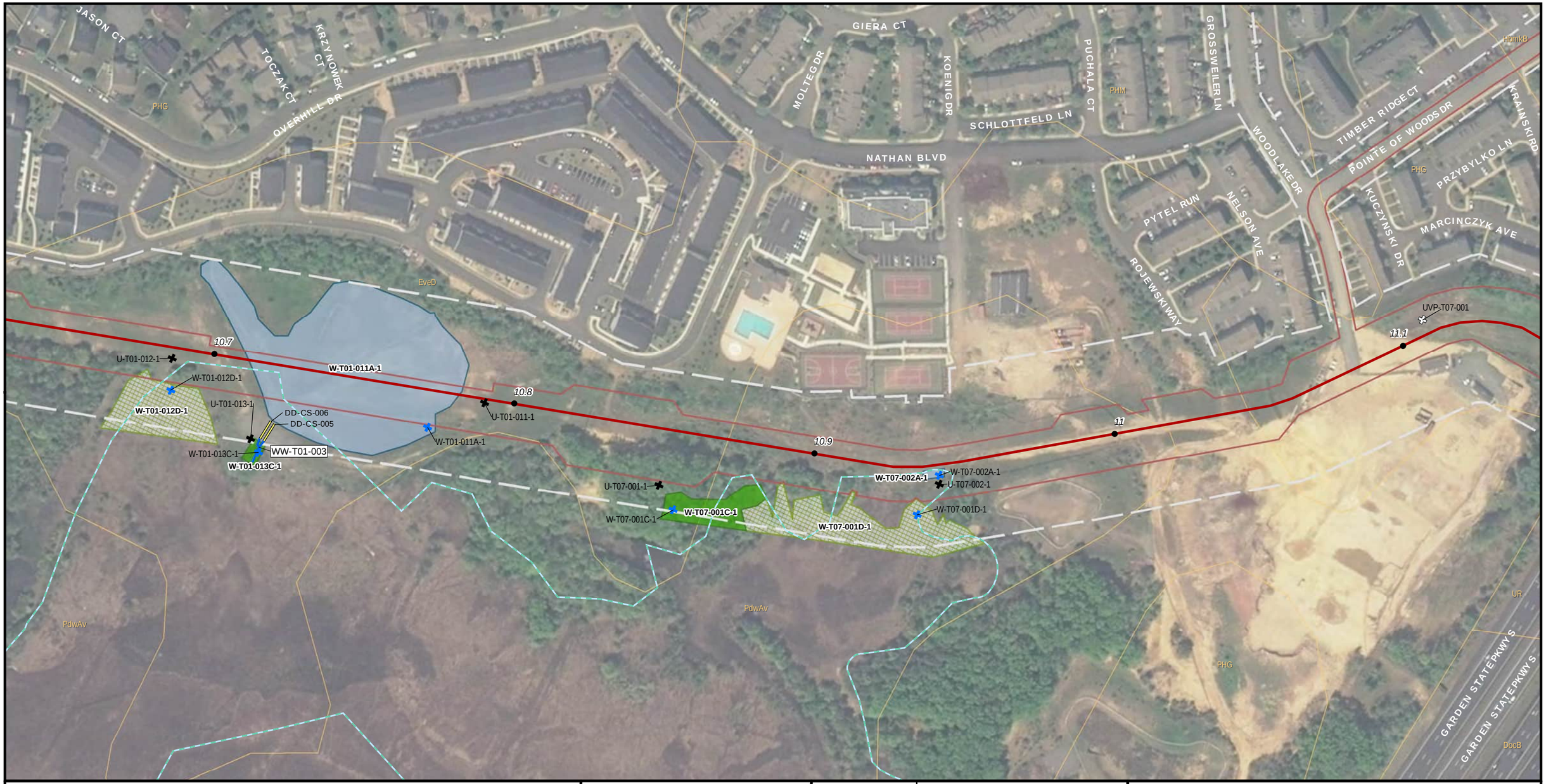
TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
FIELD DELINEATED WOTUS FEATURES AND SOIL MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

DRAWN BY: MK	DATE: 8/6/2019	ISSUE FOR BID: N/A	SCALE:
CHECKED BY: CE	DATE: 8/6/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver20a
APPROVED BY:	DATE:	DRAWING NUMBER: FIGURE 2	SHEET 7 of 14
WO: 1000891	FIELD DATA: 8/6/2019	3:09 PM 8/6/2019	

Data Sources: Williams 2017; E&E 2017; ESRI 2012; SSURGO 2016; U.S. Fish and Wildlife Service, 2012.

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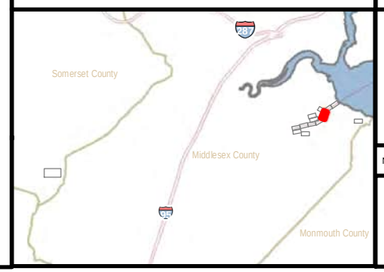
- Milepost
- Madison Loop
- LOD
- Upland Verification Point
- Upland Data Point
- Wetland Data Point
- Waterway Line

Jurisdictional Drain Lines
- Culvert
- Upper Wetland Boundary

- Surveyed Areas
- E2EM Wetland
- PEM Wetland
- PFO Wetland
- Top of Bank
- Ordinary High Water Mark
- Soil Type

0 50 100 150 200
Feet

SITE LOCATION



DRAWING NO.

REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	8/6/2019	MK	ISSUED FOR NJ WETLAND DELINEATION REPORT	1000891	CE	

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
FIELD DELINEATED WOTUS FEATURES AND SOIL MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

DRAWN BY: MK	DATE: 8/6/2019	ISSUE FOR BID: N/A	SCALE:
CHECKED BY: CE	DATE: 8/6/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver20a
APPROVED BY:	DATE:	DRAWING NUMBER: FIGURE 2	SHEET 8 of 14
WO: 1000891	FIELD DATA: 8/6/2019	3:10 PM 8/6/2019	

Data Sources: Williams 2017; E&E 2017; ESRI 2012; SSURGO 2016; U.S. Fish and Wildlife Service, 2012.

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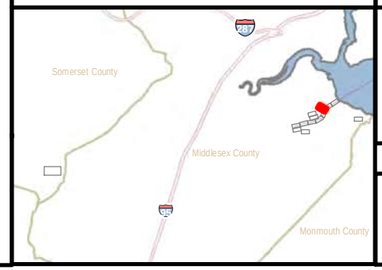
Legend

- Milepost
- Madison Loop
- LOD
- Upland Verification Point
- Surveyed Areas
- Soil Type

0 50 100 150 200

Feet

SITE LOCATION



DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	8/6/2019	MK	ISSUED FOR NJ WETLAND DELINEATION REPORT	1000891	CE	

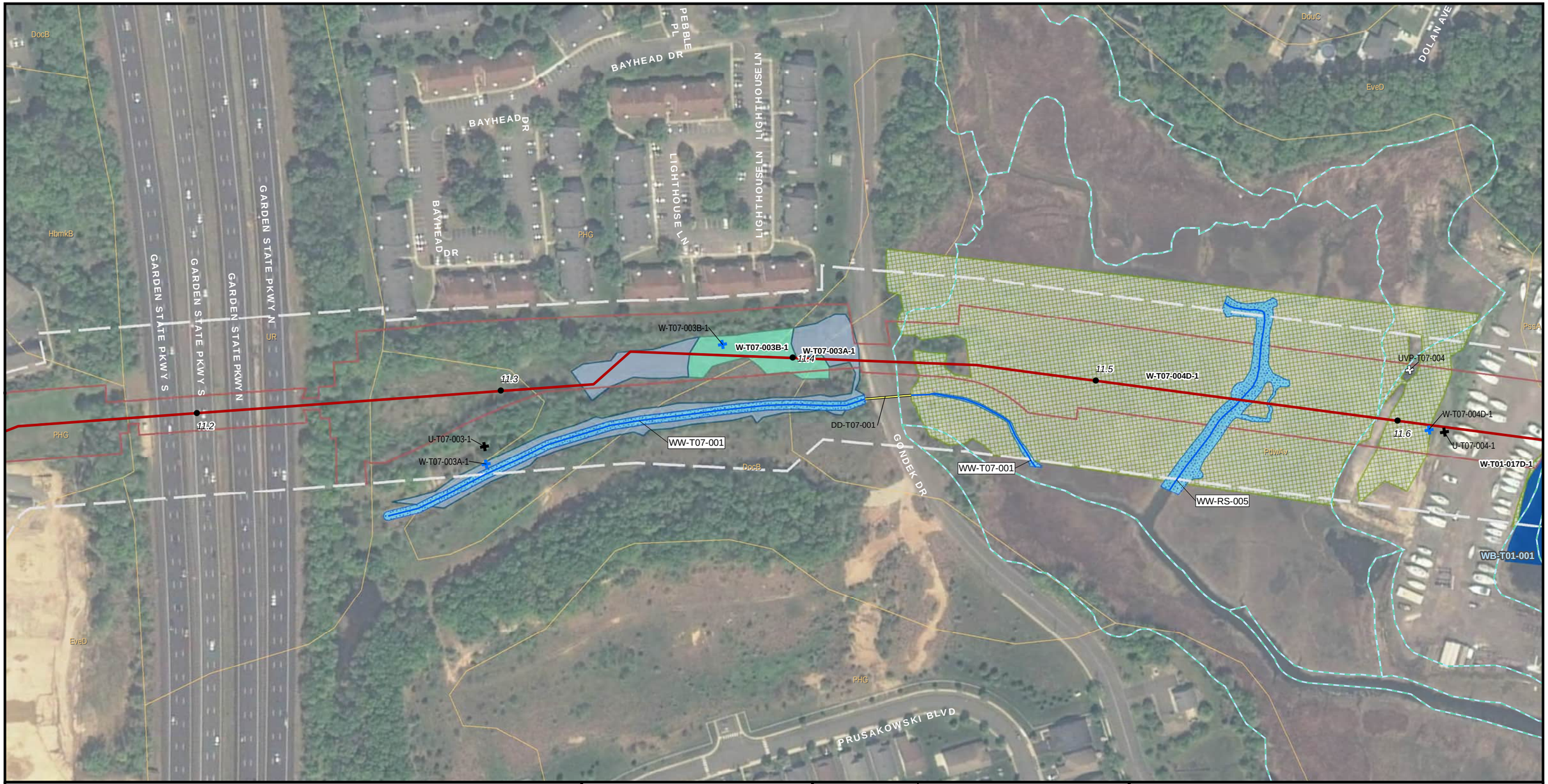
TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
FIELD DELINEATED WOTUS FEATURES AND SOIL MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

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CHECKED BY: CE	DATE: 8/6/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver20a
APPROVED BY:	DATE:	DRAWING NUMBER: FIGURE 2	SHEET 9 of 14
WO: 1000891	FIELD DATA: 8/6/2019	3:11 PM 8/6/2019	

Data Sources: Williams 2017; E&E 2017; ESRI 2012; SSURGO 2016; U.S. Fish and Wildlife Service, 2012.

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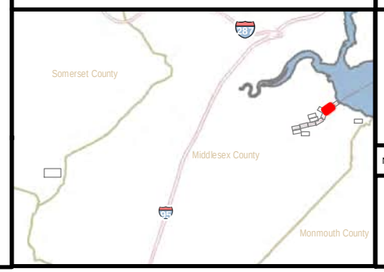
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- Milepost
- Madison Loop
- LOD
- Upland Verification Point
- Upland Data Point
- Wetland Data Point
- Waterway Line
- Jurisdictional Drain Lines
- Culvert
- Upper Wetland Boundary
- Surveyed Areas
- E2EM Wetland
- PEM Wetland
- PSS Wetland
- Top of Bank
- Waterbody
- Ordinary High Water Mark
- Soil Type

0 50 100 150 200

Feet

SITE LOCATION



DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	8/6/2019	MK	ISSUED FOR NJ WETLAND DELINEATION REPORT	1000891	CE	

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
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RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

DRAWN BY: MK	DATE: 8/6/2019	ISSUE FOR BID: N/A	SCALE:
CHECKED BY: CE	DATE: 8/6/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver20a
APPROVED BY:	DATE:	DRAWING NUMBER:	FIGURE 2
WO: 1000891	FIELD DATA: 8/6/2019	3:11 PM 8/6/2019	SHEET 10 of 14

Data Sources: Williams 2017; E&E 2017; ESRI 2012; SSURGO 2016; U.S. Fish and Wildlife Service, 2012.

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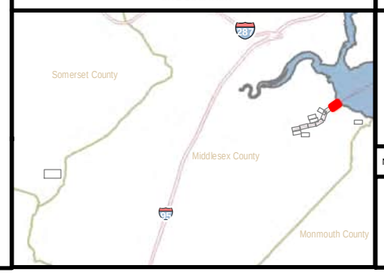
Legend

- Milepost
- Madison Loop
- LOD
- Upland Data Point
- Wetland Data Point
- Upper Wetland Boundary
- Surveyed Areas
- E2EM Wetland
- PEM Wetland
- Waterbody
- Soil Type

0 50 100 150 200

Feet

SITE LOCATION



DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
FIELD DELINEATED WOTUS FEATURES AND SOIL MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	8/6/2019	MK	ISSUED FOR NJ WETLAND DELINEATION REPORT	1000891	CE	

DRAWN BY: MK	DATE: 8/6/2019	ISSUE FOR BID: N/A	SCALE:
CHECKED BY: CE	DATE: 8/6/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver20a
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Data Sources: Williams 2017; E&E 2017; ESRI 2012; SSURGO 2016; U.S. Fish and Wildlife Service, 2012.

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Legend

LOD

Surveyed Areas

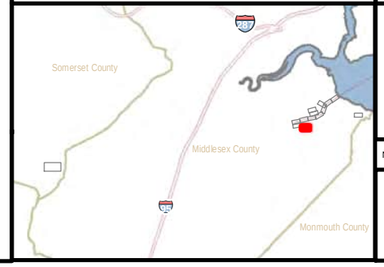
Soil Type

0 75 150 225 300

Feet

N

SITE LOCATION



DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
FIELD DELINEATED WOTUS FEATURES AND SOIL MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

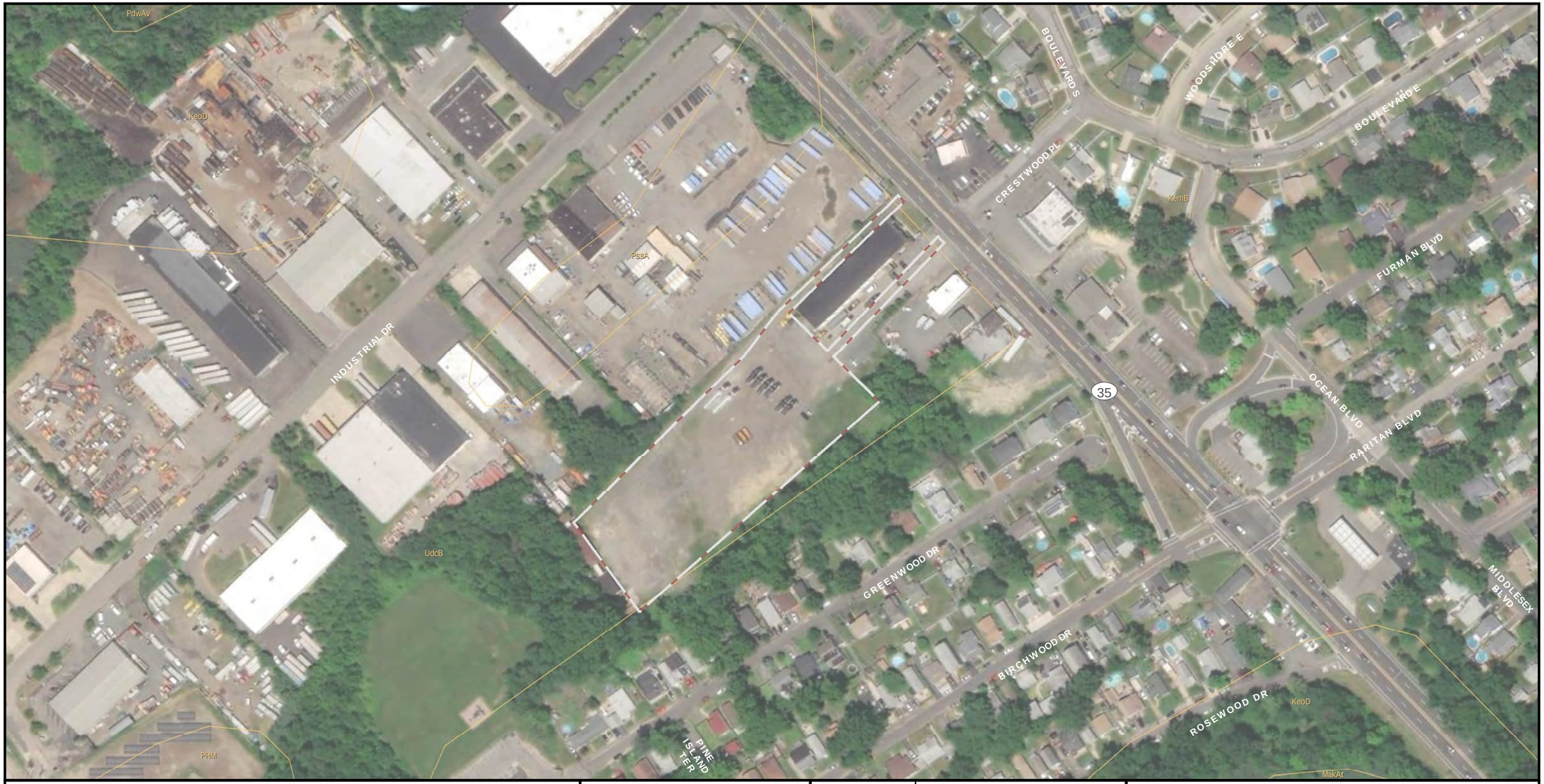
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DRAWN BY: MK	DATE: 8/6/2019	ISSUE FOR BID: N/A	SCALE:
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APPROVED BY:	DATE:	DRAWING NUMBER:	FIGURE 2
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Data Sources: Williams 2017; E&E 2017; ESRI 2012; SSURGO 2016; U.S. Fish and Wildlife Service, 2012.

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Legend

LOD

Surveyed Areas

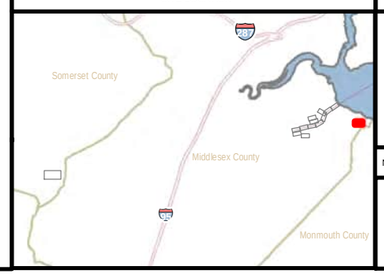
Soil Type

0 50 100 150 200

Feet

N

SITE LOCATION



DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
FIELD DELINEATED WOTUS FEATURES AND SOIL MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

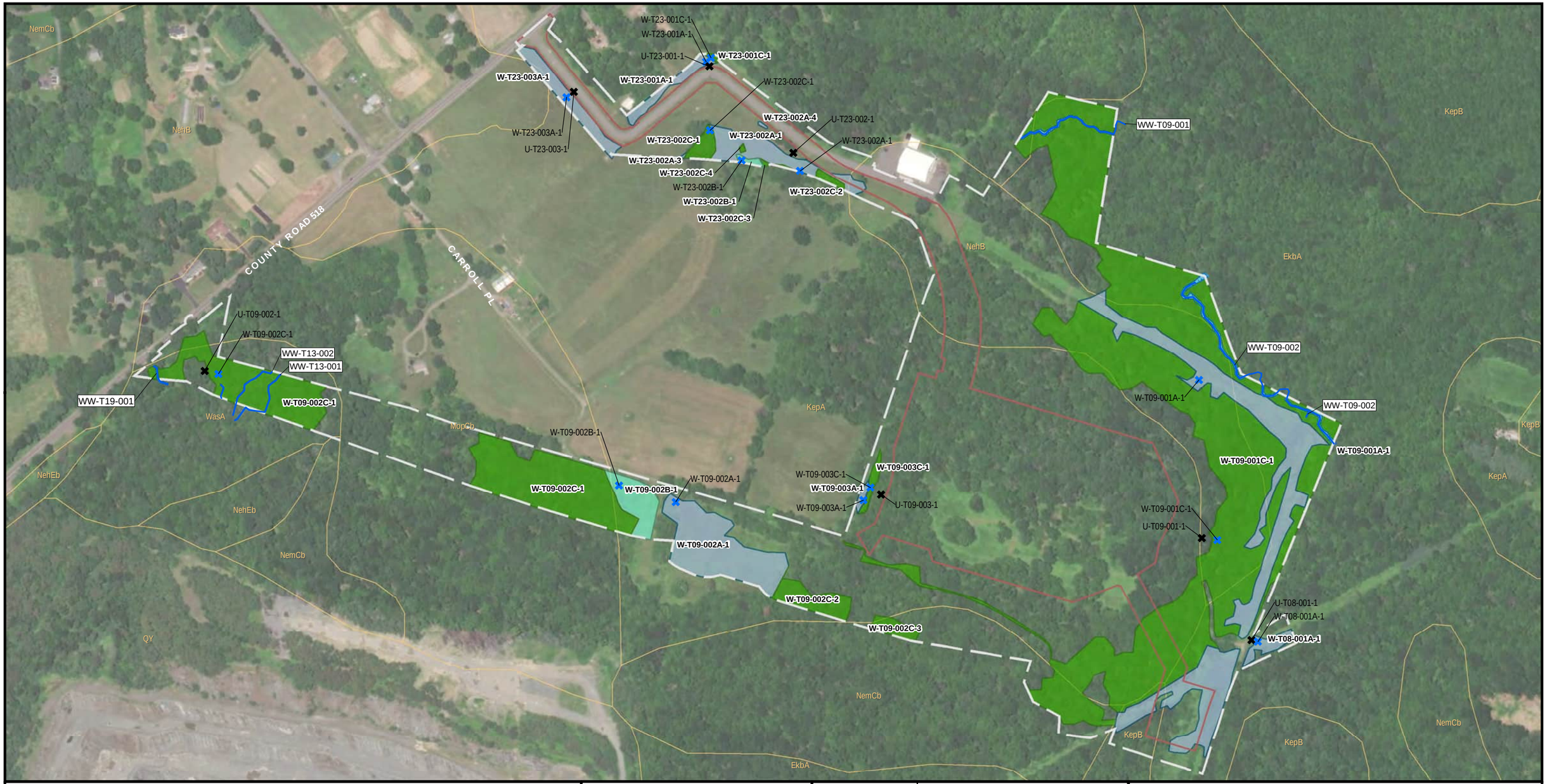
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DRAWN BY: MK	DATE: 8/6/2019	ISSUE FOR BID: N/A	SCALE:
CHECKED BY: CE	DATE: 8/6/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver20a
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Data Sources: Williams 2017; E&E 2017; ESRI 2012; SSURGO 2016; U.S. Fish and Wildlife Service, 2012.

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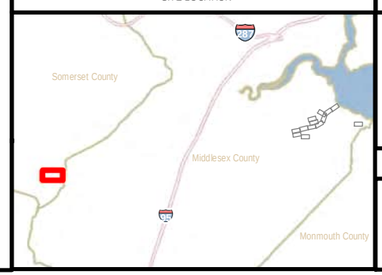
- LOD
- Upland Data Point
- Wetland Data Point
- Waterway Line
- Surveyed Areas
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Top of Bank
- Ordinary High Water Mark
- Soil Type

0 200 400 600

Feet

N

SITE LOCATION



DRAWING NO.

REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
FIELD DELINEATED WOTUS FEATURES AND SOIL MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	8/7/2019	MK	ISSUED FOR NJ WETLAND DELINEATION REPORT	1000891	CE	

DRAWN BY: MK	DATE: 8/7/2019	ISSUE FOR BID: N/A	SCALE:
CHECKED BY: CE	DATE: 8/7/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver23
APPROVED BY:	DATE:	DRAWING NUMBER:	FIGURE 2
WO: 1000891	FIELD DATA: 8/7/2019	3:25 PM 8/7/2019	SHEET 14 of 14

Data Sources: Williams 2017; E&E 2017; ESRI 2012; SSURGO 2016; U.S. Fish and Wildlife Service, 2012.

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3

Map of Freshwater and Coastal Waters/Wetlands Within 1,000-FT of MHWL and Under Dual Jurisdiction

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Wetland W-T01-017 (Coastal/Freshwater)

Wetland W-T07-004 (Coastal/Freshwater)

Wetland W-T07-003 (Freshwater)

Waterbody WB-T01-001 (Coastal)

Waterway WW-RS-005 (Coastal)

Waterway WW-T07-001 (Coastal)

Waterway WW-T07-001 (Freshwater)

Wetland W-T07-002 (Freshwater)

Wetland W-T01-011 (Coastal/Freshwater)

Wetland W-T01-012 (Coastal/Freshwater)

Wetland W-T07-001 (Coastal/Freshwater)

Wetland W-T01-015 (Freshwater)

Wetland W-T15-004 (Freshwater)

Wetland W-T01-016 (Freshwater)

Wetland W-T01-014 (Freshwater)

Waterway WW-T15-004 (Freshwater)

Waterway WW-T15-005 (Freshwater)

Wetland W-T15-002 (Freshwater)

Waterway WW-T01-004 (Freshwater)

Wetland W-T15-003 (Freshwater)

Waterway WW-T15-004 (Freshwater)

Waterway WW-T15-002 (Freshwater)

Waterway WW-T15-003 (Freshwater)

Waterway WW-T01-002 (Freshwater)

Wetland W-T01-010 (Freshwater)

Wetland W-T01-006 (Freshwater)

Wetland W-T01-009 (Freshwater)

Wetland W-T01-008 (Freshwater)

Waterway WW-T01-001 (Freshwater)

Wetland W-T01-007 (Freshwater)

Wetland W-T01-003 (Freshwater)

Wetland W-T15-001 (Freshwater)

Waterway WW-T15-001 (Freshwater)

To Contractor Yard (MADI-CY-MI-1-004)

Contractor Yard (MADI-CY-MI-1-004)

Contractor Yard (MADI-CY-MI-1-003)

Parlin

Ernston

Madison Park

Sayre Woods

Morgan Heights

Ernston-Rd

Bordentown-Ave

US-Highway-9

Garden-State-Pkwy

Cheesequake Creek

Hwy 35

Freshwater and Coastal Waters/Wetlands Crossed by the Madison Loop Within 1,000-ft of MHWL and Under Dual Jurisdiction

Wetlands
- W-T01-011
- W-T01-012
- W-T01-016
- W-T01-017
- W-T07-001
- W-T07-002
- W-T07-003
- W-T07-004

Waterways
- WW-RS-005
- WW-T07-001

Waterbodies
- WB-T01-001

Legend

- Milepost
- Approximate MHWL
- Approximate MHWL, 1000-ft buffer
- Proposed Limit of Disturbance
- Waterbodies Crossed by the Project
- Waterways Crossed by the Project
  - Coastal
  - Freshwater
- Wetlands Crossed by the Project
  - Coastal
  - Freshwater

0 0.25 0.5 Miles

N

SITE LOCATION

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	5/11/2017	AL	USACE Permit Application	1000891	MK	
B	5/23/2018	AL	Issued for NJ Permitting	1000891	MK	

DRAWING NO.

REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
FRESHWATER AND COASTAL WATERS/WETLANDS
WITHIN 1,000-FT OF MHWL AND UNDER DUAL JURISDICTION
NORTHEAST SUPPLY ENHANCEMENT PROJECT
NEW JERSEY

Williams

DRAWN BY: AL	DATE: 5/23/2018	ISSUE FOR BID: N/A	SCALE: 1:15,640
CHECKED BY: MK	DATE: 5/23/2018	ISSUE FOR CONSTRUCTION: N/A	Project features ver20
APPROVED BY:	DATE:	DRAWING NUMBER:	Figure 3
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Data Sources: Williams 2017; E&E 2017; ESRI 2012, 2017; USGS Surficial Geology Quad Maps, 1996.

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4 Biologists' Résumés

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JEFFREY A. MASON, PWS — Environmental Scientist

EDUCATION

B.A., Geography, Dartmouth College
M.A. Geography Program, U.C. Santa Barbara

CERTIFICATIONS

Certified Professional Wetland Scientist, Society of Wetland Scientists

A certified Professional Wetland Scientist (PWS) with 24 years of experience, Mr. Mason offers energy and industry clients' critical insight into a project's intersection with aquatic environments and resulting effects on siting, permitting, and mitigation strategies. Mr. Mason has worked across the Lower 48 and Alaska on a variety of public and private projects in the mining, oil & gas, transportation, wastewater, electrical utilities, and industrial development sectors. In addition to his expertise in jurisdictional determinations and delineations, and waters/wetland functional assessments, he is well-versed in project management; regulatory assistance and permitting; endangered and invasive species surveys; wildlife and habitat inventories; impact analyses and alternatives modelling; mitigation and wetland restoration; construction oversight and compliance monitoring; regulatory agency reporting and consultations; remote sensing; and GIS-based analyses of aquatic ecosystems.

Atlantic Sunrise Project, Pennsylvania, Maryland, Virginia, North Carolina, and South Carolina. Mr. Mason is a field team leader for WOTUS delineations and routing surveys for the approximately 197-mile Atlantic Sunrise pipeline project. He accompanies Williams' engineering and survey crews in staking the centerline of the proposed pipeline route and providing real-time recommendations for centerline placement with the goal of avoiding and minimizing environmental impacts to wetland, waterbody, and known T/E species habitat. In addition, he has assisted with the development and deployment of new tablet-based iPad field data collection technologies that E & E implemented specifically for this project. These technologies enable field teams to sync field data in real time to the secure cloud data management system for use by other field teams, as well as by project engineering, environmental, cultural, land, and permitting personnel. Mr. Mason is responsible for developing and conducting a remote sensing-based approach for the mapping of WOTUS on the 17 percent of the proposed pipeline route with no access available to the field teams. These remote sensing data are currently being used for the submittal of a conditioned individual 404 Clean Water Act permit to the USACE Baltimore District, as well as to assist Transco/Williams in the calculation of potential impacts and compensatory mitigation requirements for the project.

Missile Defense Agency/Navy's Survival, Evasion, Resistance, and Escape (SERE) School Project, Redington, Maine. The Missile Defense Agency was completing a NEPA EIS to explore additional locations in the United States suitable for future deployment of ballistic missiles and determine potential environmental impacts resulting from future deployment of the Continental United States Interceptor Site (CIS). Under E & E's NEPA contract with the United States Naval Facilities Engineering Command Atlantic Division (NAVFAC Atlantic), Mr. Mason conducted jurisdictional fieldwork quality assurance/quality control (QA/QC) in support of field survey teams. As task manager, he managed all aspects of three field teams conducting the jurisdictional determination and delineation of WOTUS, including wetlands fieldwork at the Navy's SERE school in Maine. He conducted client meetings and provided coordination with both the Navy and the Missile Defense Agency. In addition, Mr. Mason was responsible for the remote sensing-based waters/wetland mapping for portions of the study area and managed the 2015 field season planning for waters/wetlands work. He provided oversight and real-time data management during fieldwork season to ensure the project adhered to its tight schedule. He also provided on-site field crew management and coordination between Navy staff/SERE personnel and E & E in a top-secret base setting with severe site access restrictions.

Times Beach Aquatic Invasive Species and Habitat Restoration Demonstration Project, Buffalo, New York. Mr. Mason is a task manager for this regionally significant adaptive management project for invasive species control and management and avian habitat restoration. Mr. Mason manages fieldwork, including providing subcontractor oversight of mechanical and chemical invasive species control measures; on-site construction/restoration activities oversight; avian surveys; invasive species mapping using GPS/GIS; and vegetation monitoring activities. His duties include interfacing with USACE Buffalo and USACE Research and Development Center (ERDC) personnel; budget tracking; and providing monitoring report documentation, production, and reporting to USACE Buffalo District and ERDC.

Walnut Beach Aquatic Invasive Species and Habitat Restoration Demonstration Project, Ashtabula, Ohio. For the USACE Buffalo District, Mr. Mason is an E & E task manager for fieldwork for this aquatic invasive species control and management demonstration project. He provides subcontractor oversight of mechanical and chemical invasive species control measures and oversight of on-site construction/restoration activities. For the Walnut Beach project, Mr. Mason conducts T/E species mapping, inventory, and mitigation measures; and oversees avian surveys and vegetation monitoring activities.

Proposed Black Fork Wind Farm Project, Crawford and Richland Counties, Ohio. In support of Capital Power's proposed development of the Black Fork Wind Farm Project in Crawford and Richland counties in central Ohio, Mr. Mason conducted helicopter supported aerial bald eagle (*Haliaeetus leucocephalus*) nest surveys to identify and document new eagle nesting locations and to confirm the status of existing eagle nests previously mapped by the U.S. Fish and Wildlife Service (USFWS) within the project's 131,000 acre survey area. This effort included high resolution GPS mapping using an iPad tablet running ArcGIS Collector mobile mapping software to capture known nest locations, confirmed bald eagle sightings, additional raptor nest sites, and documentation of the helicopter survey track coverage across the project area.

Proposed Wind Farm Project, New York. In support of this confidential client's proposed development of a wind farm project, Mr. Mason conducted fixed wing aerial bald eagle (*Haliaeetus leucocephalus*) nest surveys to identify and document eagle nesting locations and to confirm the status of existing eagle nests previously mapped by the New York State Department of Environmental Conservation (NYSDEC) within the project's 24,000-acre survey area. This effort included high resolution GPS mapping using an iPad tablet running ArcGIS Collector mobile mapping software to capture known nest locations, confirmed bald eagle sightings, and documentation of the aircraft survey track coverage across the project area.

Proposed Wind Project, Illinois. Mr. Mason conducted helicopter supported bald eagle (*Haliaeetus leucocephalus*) nest surveys to identify new bald eagle nesting locations and to confirm the status of existing eagle nests previously mapped in the 23,400-acre survey area. This effort included high resolution GPS mapping using an iPad tablet running ArcGIS Collector mobile mapping software to capture known nest locations, confirmed bald eagle sightings, and documentation of the aircraft survey track coverage across the project area.

New York Energy Highway Initiative. As part of the New York Energy Highway Initiative, Mr. Mason was project wetland specialist for preparation of a critical issues analysis (CIA) and scoping statement as required under a new proceeding for the New York State Public Service Commission for Boundless Energy NY, LLC. He performed a desktop review of wetlands for the siting of four transmission routes in four different areas of New York State from western New York to areas near New York City bordering New Jersey.

Experience Prior to Joining E & E in 2013

Pebble Project's Proposed Copper, Gold, and Molybdenum Open Pit Hard Rock Mine, Alaska
Mr. Mason managed and led wetland jurisdictional determination and delineation field teams on Anglo-American and Northern Dynasty's Pebble Project near Iliamna, Alaska. The Pebble project is the largest porphyry copper, gold, and molybdenum deposit discovered on earth and sits at the head-waters of the most productive salmon fishery in the world (Bristol Bay). In 2014, the EPA proposed to kill the project under their Clean Water Act Section 404(c) authority and the project is currently on hold pending litigation. For four years, Mr. Mason was responsible for the production and QA/QC of legally defensible jurisdictional waters/wetland mapping products for the proposed mine and its facilities within the project area, which approaches 290,000 acres. These jurisdictional data and mapping products supported permitting packages for USACE Alaska District and the State of Alaska's Department of Natural Resources (AKDNR). In addition, Mr. Mason worked on the development and application of wetland functional assessment models to quantify impacts, support avoidance and minimization efforts, and generate NEPA EIS documentation.

Barrick's Donlin Gold Proposed Open Pit Hard Rock Gold Mine, Alaska. Mr. Mason managed and led wetland jurisdictional determination and delineation field teams on Barrick Gold Corporation's Donlin Gold project, which proposed a 313-mile, 14-inch diameter natural gas pipeline from Beluga, Alaska to the proposed open-pit mine site facilities near Crooked Creek, Alaska. Mr. Mason was responsible for the production and quality assurance/quality control (QA/QC) of legally defensible jurisdictional wetland mapping products for approximately 278,000 acres of project area, which included the proposed pipeline corridor, mine site, and facilities. These jurisdictional data and mapping products supported permitting packages submitted to USACE Alaska District and the AKDNR in 2013. Mr. Mason worked on the development and application of wetland functional assessment models to quantify impacts, support avoidance and minimization efforts, and generate NEPA EIS documentation.

Livengood Gold Mine Electrical Transmission Project, Alaska. Mr. Mason managed wetland delineation efforts for International Tower Hill Mine's Livengood Project, which included a proposed 97-mile electrical transmission right-of-way from mine site facilities near Livengood, Alaska to the 23,500-acre power generating plant location in Fairbanks, Alaska. He provided wetland assessments to identify potential project impacts and support future NEPA EIS documentation efforts, and provided QA/QC review of wetland mapping products.

Alaska Department of Transportation and Public Facilities—Foothills West Transportation Access Project, North Slope, Alaska. Mr. Mason managed wetland delineation field teams on this project, which is the cornerstone of Alaska Governor Sean Parnell's "Road to Resources" development initiative for the State of Alaska. The project, which exceeds 104,000 acres, proposes the construction of all-season gravel roads, associated bridges, pull-outs, maintenance facilities, temporary construction camps, and material sites for approximately 125 miles of the preferred route, as well as three alternative routes totaling an additional 175 miles in length. Mr. Mason was responsible for the production and QA/QC of wetland mapping products to support permitting packages submitted to the USACE Alaska District. Mr. Mason also provided project impact assessments on wetlands to support the alternatives analyses and NEPA EIS process.

Royal Dutch Shell March Point Refinery Wetland Mitigation Project, Anacortes, Washington. Mr. Mason managed the 38-acre compensatory wetland mitigation project associated with Shell Oil's expansion of their March Point Anacortes refinery tank farm. The project restored a formerly grazed and highly degraded pastureland adjacent to the Shell Oil tank farm into a palustrine forest and shrub wetland complex adjacent to the

Padilla Bay National Estuarine Research Reserve. Mr. Mason was responsible for the restoration design, construction oversight, performance monitoring, regulatory reporting, and agency consultations for the project.

The Boeing Company Longacres Industrial Park Wetland Restoration Project, Renton, Washington. Mr. Mason assisted with the planning, permitting, design, construction, and monitoring of Boeing's 12-acre office park wetland restoration that included a 6-acre open water pond, 4 acres of emergent and scrub-shrub wetland, and 2 acres of storm water treatment wetlands. The design sought to: connect existing water bodies and re-establish natural flow patterns on the site; retain, detain, and filter storm water from adjacent parking lots and buildings prior to discharge to the highly industrialized Duwamish River; and provide aquatic and emergent wetland habitat for birds, reptiles, and amphibians typically found in the Puget Sound lowlands.

Ticonderoga Paper Mill Compensatory Wetland Mitigation and Restoration Project, Ticonderoga, New York. For International Paper Company, Mr. Mason provided emergency spill response support, effluent pipeline construction oversight, compliance monitoring, and regulatory agency consultations related to the accidental rupture of the Ticonderoga paper mill's 48-inch high-density polyethylene (HDPE) effluent pipeline located adjacent to Lake Champlain. In consultation with the New York State Department of Environmental Conservation and the Adirondack Park Agency, Mr. Mason assisted with the emergency response effort, as well as the compensatory wetland mitigation planning, permitting, design, construction, and monitoring that was required by the regulatory agencies to mitigate the impacts of the accidental discharge of mill effluent to Lake Champlain.

Weyerhaeuser Company Wetland Delineation, Tacoma, Washington. Mr. Mason conducted jurisdictional determinations, delineations, and mapping on representative 40- and 160-acre parcels of Weyerhaeuser-owned timber land in Washington State. Weyerhaeuser used the results to calculate the approximate time and resources required to properly document and delineate the wetlands on all other Weyerhaeuser timber parcels in the U.S. in accordance with federal and state regulatory agency permitting standards.

Campus Compensatory Wetland Mitigation Project, Bothell, Washington. For a development project for the University of Washington/Cascadia Community College, Mr. Mason conducted wetland delineations on a 110-acre parcel. He collected riverine and wetland hydrogeomorphic (HGM) reference data throughout the Puget Sound lowland rivers and wetlands to support the design, construction, and monitoring of a 58-acre riverine and floodplain restoration of North Creek, a highly degraded and channelized river that flowed through the campus construction site.

Borden Ranch Wetland Assessment, Sacramento and San Joaquin Counties, California. Mr. Mason collected wetland field data, generated remote sensing analyses, developed and tested wetland functional assessment models, and co-authored a functional assessment guidebook for the Department of Justice (DOJ) and the Environmental Protection Agency (EPA) that assessed the effects on wetland ecosystem functions resulting from "deep ripping" agricultural activities on the 8,400 acre Borden Ranch in the San Joaquin and Sacramento River watersheds in the central valley of California. The project was part of the DOJ and EPA Region 9 enforcement case *Borden Ranch Partnership v. United States Army Corps of Engineers* (9th Cir. 2001) that went to the U.S. 9th Circuit Court of Appeals and resulted in several judicial interpretations and legal precedents for interpreting and enforcing Section 404 of the Clean Water Act. The EPA/USACE regulatory guidance letter RGL 96-02 – *Applicability of Exemptions under Section 404(f) to "Deep-Ripping" Activities in Wetlands* was a direct result of this enforcement case and the waters/wetland impact assessment work completed for this project.

Wetland Vegetation Mapping and HGM Functional Assessment Model Development, Multiple Sites, California and Alaska. For several sites in California and Alaska, Mr. Mason supervised teams that collected wetland and habitat field data that was incorporated into HGM wetland functional assessment models and HGM operational guidebooks. Several of these HGM efforts represented the first time nationally that remote sensing and GIS analyses had been incorporated into a federally sponsored wetland assessment approach. Locations included the south coast of Santa Barbara County, the Santa Margarita Watershed in San Diego and Riverside Counties, rivervine waters and wetlands of the central California coast, and rivervine and slope wetlands in southeast Alaska.

USFWS National Wetlands Inventory 2004-2009 Status and Trends Update to Congress, Oregon, Washington, Massachusetts, and New York. Mr. Mason managed and led field teams in Washington, Oregon, Massachusetts, and New York that validated representative wetland plots used by the USFWS's National Wetlands Inventory (NWI) to monitor the status and trends of the nation's wetland resources. The project required validating existing NWI wetland mapping, updating the wetland mapping data and line work, submitting datasheets documenting the site's conditions, and recording changes that may have occurred since the previous monitoring visit five years prior. The data collected for this project were used by the NWI in their 2004-2009 Status and Trends update that they are required by law to submit to Congress every five years.

USFWS Yukon Delta National Wildlife Refuge LiDAR and High Resolution Aerial Imagery Acquisition Project, Western Alaska. In support of USFWS research projects examining the effects of global sea level rise and storm surges on the wetland ecosystem functions and wildlife populations in the Yukon Delta National Wildlife Refuge, Mr. Mason provided project coordination and managed the primary subcontractor in the collection and validation of high-resolution imagery and LiDAR data for over 32,000 acres of the wildlife refuge. Mr. Mason was responsible for the production of digital materials and metadata to support the project.

Thermal Infra-Red Imaging and Mapping of the Umatilla River Floodplain, Umatilla County, Oregon. Mr. Mason supervised the collection of field data and total station surveys of floodplain geomorphology to support the acquisition and analysis of airborne thermal infra-red imagery and LiDAR data of off-channel floodplain pools that supported salmonid populations in the Umatilla River in eastern Oregon. The survey data assisted in calibrating the infra-red imagery and LiDAR data and were incorporated into spatial models that predicted the relationship between river stage, hyporheic flow, sediment particle size and distribution, and off-channel floodplain salmonid habitat availability.

Donlin Gold Mineral Exploration and Proposed Open Pit Hard Rock Gold Mine Project, Crooked Creek, Alaska. For Barrick Gold Corporation, Mr. Mason managed and led wetland jurisdictional determination and delineation field teams to support project permitting and the NEPA/EIS phase of the project, and he provided QA/QC on all documents sent to USACE Alaska District. For the alternatives analysis and facility design sections of the EIS, he developed wetland functional assessment models to quantify the impacts to wetlands within the 278,000-acre project area. Mr. Mason also provided technical support in developing GIS analytical techniques for the identification and feasibility of potential wetland mitigation sites within the Kuskokwim River and Crooked Creek watersheds to offset project impacts in each facility design scenario.

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REBECCA DUTTON — Ecologist



An experienced field biologist, Rebecca performs vegetation and wildlife investigations to support the preparation of EAs and EISs for existing and proposed energy facilities.

EDUCATION

B.S., Environmental Forest Biology, State University of New York College of Environmental Science and Forestry at Syracuse

Ms. Dutton has 11 years' experience with E & E. She conducts aquatic and terrestrial vegetation and wildlife investigations to support the preparation of EAs, EISs, and ERs for existing and proposed industrial manufacturing plants, wind farms, solar projects, pipeline facilities, UST sites, and sites containing hazardous substances and waste. She participates in wetland delineations, habitat evaluations, endangered species surveys, and environmental regulatory compliance evaluations. Her fieldwork includes leading wetland delineation and habitat assessment teams; conducting wildlife surveys; the sampling of biota, sediment, surface water, soil, and groundwater; and the monitoring of subcontractor activities to ensure timeliness, cost-effectiveness, and compliance with applicable regulations/permits. She is a lead wetland delineator in the following USACE regions: Arid West, Atlantic and Gulf Coast, Eastern Mountains and Piedmont, Great Plains, Mid-West, and Northcentral and Northeast. She also assists in field coordination for teams conducting field work and conducts post-activity inspections to evaluate the adequacy and effectiveness of restoration and abatement measures. She is a Maryland Qualified Professional, and can conduct Forest Stand Delineations and Forest Conservation Plans for projects in Maryland.

Solar and Wind Energy

Solar Power Generating Facilities, Fresno and Kings Counties, California. For a confidential client, Ms. Dutton is a member of the E & E team preparing initial studies/mitigated negative declarations (IS/MNDs) and conditional use permit applications for the development of solar generating facilities. She has conducted biological surveys for wetlands; bodies of surface water; and threatened, endangered, and sensitive species. She also has contributed to preparation of wildlife sections for six of the biological reports.

Navy Renewable Energy Program Office (REPO) – EAs for Renewable Energy Development, Mississippi, Indiana, and Tennessee. E & E prepared numerous EAs to support the Navy's plans to install solar and wind projects at multiple facilities near the Atlantic Ocean and Gulf of Mexico to increase energy security. For EAs to develop solar systems at Naval Air Station (NAS) Meridian and Naval Outlying Landing Field (NOLF) Joe Williams sites in Lauderdale and Kemper counties in Mississippi, Ms. Dutton led a team conducting wetland and waterbody delineations and assisted with the wetland delineation report. For the Naval Surface Activity (NSA) Crane site in Martin County, Indiana, Ms. Dutton assisted in writing the biological resources reports. For the NSA Mid-South site in Millington, Tennessee, Ms. Dutton conducted a general habitat and conditions survey.

SUCCESS STORIES

For E & E's support of a third-party EIS for Northern Pass Transmission Line, Ms. Dutton assisted in the preparation of site health and safety plans and winter survey protocol for this proposed 192-mile high-voltage direct current (HVDC) transmission line anticipated to deliver hydropower from Quebec to southern New Hampshire. She was the field coordinator for eight teams conducting field surveys, including wetlands and waterbodies surveys, sensitive plant species surveys, and breeding bird surveys. Once surveys were complete, Ms. Dutton assisted with the quality assurance of collected data, and contributed to the wetland delineation report. She also conducted herpetofauna surveys, wetland and waterbody surveys along roadways, and acoustic bat monitoring surveys (2011-2015).

Commercial Wind Energy Development Sites, Nevada and Oregon. For a confidential client, Ms. Dutton led three 2-person teams that completed greater sage grouse lek surveys at a proposed wind energy site in northeastern Nevada. She also conducted sage-grouse surveys at another proposed wind farm site in Elko County, Nevada. For a proposed biomass facility site in Oregon, she surveyed wetlands and bodies of surface water and wrote a brief report summarizing field conditions.

Post Rock Wind Project, Lincoln and Ellsworth Counties, Kansas. For Wind Capital Group, she was an E & E team member for surveys of wetlands and bodies of surface water to support the preliminary siting of wind energy infrastructure. She also provided QA reviews of the field datasheets and assisted in electronic data entry.

Wind Energy Projects, New York State. Ms. Dutton has conducted wetland delineations and stream surveys and provided electronic field data entry for several New York wind energy projects. For example, she supported the preparation of the EIS and environmental permit applications for the Ball Hill wind farm of Noble Environmental Power and conducted wetland delineations and stream surveys for the Ripley-Westfield Wind Farm for Babcock and Brown Renewable Holdings (now Pattern Renewables). For New Grange Wind Farm, LLC, she led wetland delineations and stream surveys, downloaded GPS data, entered electronic field data sheets, and provided survey database QA/QC. For the Crown City Wind Farm in central New York, she completed wetland delineations and stream surveys, downloaded GPS data, entered electronic files of field data, and created tables identifying existing streams and wetlands for the wetland report.

Black Fork Wind Project, Ohio. For this proposed 200-MW facility of Capital Power, Ms. Dutton was an E & E team member responsible for conducting bat mist-netting surveys.

Pipeline and LNG

Rio Bravo Pipeline Project, Texas. For NextDecade LLC—in connection with the Rio Grande LNG Terminal project—as part of the Rio Bravo project in Kleberg, Kenedy, Willacy, and Cameron counties, Ms. Dutton led a team conducting wetland and waterbody delineations throughout the project area. After completion of field work, she also assisted with desktop identification of wetlands and water resources on properties inaccessible during field surveys. She assisted with the wetland delineation report and researched information on mangrove restoration.

Atlantic Sunrise Project, Pennsylvania, Virginia, Maryland, North Carolina and South Carolina. E & E is conducting wetlands delineation and routing surveys for Williams Transco for the approximately 197-mile Atlantic Sunrise pipeline development project. Ms. Dutton led a team conducting wetland and waterbody delineations throughout the project area, assisted Williams' engineers with routing surveys, conducted forest aging surveys, and conducted noxious weeds and invasive species surveys.

Ruby Natural Gas Pipeline, Wyoming to Oregon. For El Paso Corporation (now Kinder Morgan, Inc.), Ms. Dutton conducted wetland delineations and stream surveys, downloaded GPS data, and provided QA/QC reviews of GPS data for this 675-mile, four-state natural gas pipeline crossing private, state, and federal lands, including those managed by DOI's Bureau of Land Management and the USDA Forest Service. She also prepared some of the tables for the soil investigations. Subsequently, she conducted surveys for pygmy rabbit (with radio and GPS collaring), sage grouse, old growth forest, habitat, migratory birds, raptors, other species-specific mammals and amphibians, and noxious weeds. She helped write the wildlife section for a short distribution line in Nevada. In addition, she provided QC reviews of computer-generated data sheets, reviewed and completed some of the

Jurisdictional Determination forms for streams and wetlands, updated tables concerning bodies of surface water for submission to the United States Army Corps of Engineers (USACE), and compiled a table delineating fish species present in streams and noting if any were listed as sensitive for the Jurisdictional Determination. In addition, she assisted in pipeline post-construction monitoring of streams in Oregon.

Williams Pipeline Projects, Pennsylvania, West Virginia, and Virginia. For Williams Gas Pipelines-Transco, Ms. Dutton Ms. Dutton conducted wetland delineations and stream surveys and provided electronic field data entry for the 340-mile Atlantic Access natural gas pipeline in Pennsylvania and West Virginia. For the Mid-Atlantic Connector natural gas project in Virginia, she surveyed wetlands and bodies of surface water at three sites and contributed to the biological report.

Northern Pass Transmission Line Third-Party EIS, Quebec, Canada to Deerfield, New Hampshire. Ms. Dutton assisted in the preparation of site health and safety plans and winter survey protocol for this proposed 192-mile high-voltage direct current (HVDC) transmission line anticipated to deliver hydropower from Quebec to southern New Hampshire. She was the field coordinator for eight teams conducting field surveys, including wetlands and waterbodies surveys, sensitive plant species surveys, and breeding bird surveys. Once surveys were complete, Ms. Dutton assisted with the quality assurance of collected data, and contributed to the wetland delineation report and resource reports. She also conducted herpetofauna surveys, wetland and waterbody surveys along roadways, and acoustic bat monitoring surveys.

Kern River Pipeline Mountain Pass Lateral Project, San Bernardino County, California. She conducted desert tortoise monitoring for this proposed project involving an approximately 9-mile pipeline and meter station.

Clearwater LNG Port, Oxnard, California. For the United States Coast Guard and California State Lands Commission, Ms. Dutton was a member of the team for E & E's preparation of the third-party EIS/EIR for this offshore deepwater port LNG project. She entered data gap responses into the project database and updated the spreadsheet used to track the status of the data gap investigations.

Columbia Gas Pipeline Integrity Management Program, Virginia and Maryland. Ms. Dutton provided technical assistance to Columbia Gas Transmission Corporation (a NiSource company), for integrity management activities under the DOT Pipeline Integrity Management Ruling. She contacted agencies regarding map information and contributed to several of E & E's wetland delineation projects.

Projects for Federal and State Agencies

Skyline Mine, Monument Valley, Utah. Under the Superfund Technical Assessment and Response Team (START) program for EPA Region 9, Ms. Dutton supported E & E's assessment of the dispersion of radiation and heavy metal contamination from abandoned uranium mine (AUM) waste piles. She led the team that conducted surveys for sensitive species and bodies of surface water on Navajo Nation lands scheduled for cleanup and she wrote the water and wildlife sections of the AUM survey report.

Hurricane Gustav and Ike Hazardous Waste Response, Southeastern Louisiana. In the aftermath of Hurricanes Gustav and Ike, Ms. Dutton was a member of the E & E team that supported the USACE Fort Worth District and EPA Region 6 in their quick-reaction, on-site hazardous waste assessment and management. She wrote the zone description section for all 37 zones in Terrebonne and LaFourche Parishes, wrote the recovery

activities section for Terrebonne Parish (10 zones), and modified the draft recovery reports for Terrebonne Parish (10 zones).

Andrews Air Force Base (AAFB), Maryland. To support the facilitywide wastewater monitoring program being conducted for the USACE Baltimore District, she contacted individuals at AAFB to gather information, downloaded data, conducted wastewater and stormwater sampling, labeled the samples, and prepared the containers for shipping.

Townsend Bombing Range, Townsend, Georgia. For the Southwest Division of the Naval Facilities Engineering Command, Ms. Dutton conducted species-specific plant surveys in support of E & E's EIS addressing proposed facility expansion.

Umatilla Chemical Agent Disposal Facility, Hermiston, Oregon. To support E & E's preparation of the post-trial burn risk assessment work plan for the Oregon Department of Environmental Quality, she cross checked toxicology information obtained from multiple sources.

Oxy-Coal/Carbon Sequestration Demonstration Project, Jamestown New York. For the Jamestown Board of Public Utilities, Ms. Dutton was a member of the E & E team that conducted wetland delineations and stream surveys along a current right-of-way, uploaded electronic field data sheets, created the photographic log, and contributed to the wetland report.

Belleayre Ski Center, Shandaken, New York. For the New York State Department of Environmental Conservation, Division of Lands, to support the expansion of the state-owned Belleayre Mountain Ski Center in a sensitive area of the Catskill Park, Ms. Dutton was a member of the E & E team that conducted bird and amphibian surveys, identified the amphibian species found, and compiled brief descriptions of the sites where they were located.

NCR-East Sites, Washington, DC. As part of E & E's CERCLA technical support project for the National Park Service, Ms. Dutton conducted proofreading and cross checks of documents being prepared as part of the environmental management program for National Capital Region (NCR)-East sites, including the Kenilworth North and South Landfills and the Washington Gas and Light site.

Additional Background

Additional Environmental Projects, Baltimore, Maryland. With Rummell Klepper & Kahl Engineers, LLP, Ms. Dutton assisted in wetland and forest delineation projects, benthic and fish sampling, water quality data collection and assessment, stream quality monitoring, GPS surveys to acquire data for geographic information system applications, and project background research.

Online MSDS Maintenance, Baltimore, Maryland. With the Environmental Health and Safety Department of W.R. Grace and Company, she assisted in material safety data sheet (MSDS) revisions, entered MSDSs and safety reports onto the corporate website, and supplied MSDS and safety information for meetings.

EVAN SHEPPARD, PWS — Environmental Scientist



Evan has extensive experience leading biological permitting and reporting tasks, and leads wetland delineation field surveys for projects varying in size from multi-state to local efforts.

EDUCATION

B.S., Environmental Science, cum laude, Allegheny College

CERTIFICATIONS

Professional Wetland Scientist, Society of Wetland Scientists

As a certified Professional Wetland Scientist (PWS), Mr. Sheppard deploys a wide range of tools to lead and support the environmental permitting of energy projects. Building on his command of wetland delineation and analysis, Mr. Sheppard has developed a particular expertise in the monitoring and restoration of wetlands and streams following pipeline construction. Mr. Sheppard has led field teams in conducting hundreds of wetland and stream delineations in Pennsylvania, New Jersey, West Virginia, and Ohio to support pipeline site selection and permitting, and has prepared Federal Energy Regulatory Commission (FERC) resource reports, post-construction monitoring reports, United States Army Corps of Engineers (USACE) joint permits, and general permits to support interstate and midstream natural gas projects. He has experience conducting habitat and threatened and endangered (T/E) species surveys. Mr. Sheppard also offers an extensive GIS background, which, as a manager, technical writer and field lead, allows for efficient processing of data and an improved QA/QC process. Mr. Sheppard deploys this GIS expertise to conduct remote assessments of water resources prior to or to supplement to field delineations.

Williams Northeast Supply Enhancement Project, Pennsylvania, New Jersey, and New York. Mr. Sheppard serves as a core team member for the Northeast Supply Enhancement Project providing critical technical support through field survey, reporting, permit application preparation, and data management. In particular, Mr. Sheppard authored the functional assessment report based on PADEP's new Condition 2 Rapid Assessment Protocols. This report was the first in the state written based on the new protocols. Additionally, Mr. Sheppard authored the FERC Resource Report 2 surface water sections, authored the New Jersey wetland delineation report, and authored portions of the USACE 404 permit application. Mr. Sheppard also led wetland delineations and invasive species surveys, and functioned as a protocol compliance liaison with wetland sub-contractors.

Atlantic Sunrise Project, Pennsylvania. Mr. Sheppard was a lead author of Resource Report 2 – Water Use and Quality for inclusion in the FERC application for the 197-mile Atlantic Sunrise pipeline project in Pennsylvania. Proposed by Transcontinental Gas Pipe Line Company, LLC (Transco), a subsidiary of Williams Partners LP, the project consists of installing new pipeline and pipeline loops across 11 Pennsylvania counties, constructing two new compressor stations, and adding 2.5 miles of replacement pipeline in Virginia. Mr. Sheppard led a wetland field team on three trips, totaling more than two months of field time, to delineate the proposed route. He also provided Quality Assurance (QA) on all field team data and ensured adherence to proper field protocols.

Northeast Supply Link Project, Pennsylvania, New Jersey, and New York. On behalf of Williams Gas Pipelines-Transco, E & E completed a FERC 7(c) filing for natural gas pipeline loops, a new greenfield compressor station, and several aboveground facility modifications in three states. As project manager, field coordinator, and field team lead, Mr. Sheppard leads the post-construction stream and wetland restoration monitoring for the project. Mr. Sheppard has guided the project through years of monitoring, reporting, consultation with agencies, and development of remedial action plans for problem sites. Mr. Sheppard has additionally developed lessons learned resources based on observations of the restoration issues on the Northeast

Supply Link Project, providing these resources for Transco's use to improve restoration success on future projects.

Summit Well Abandonment Project, Pennsylvania. Mr. Sheppard served as the technical lead for the Summit Well Abandonment Project throughout its permit application process. Mr. Sheppard single-handedly wrote a joint permit application (JPA) for 404/401 permits from PADEP and USACE, consulted with state and federal agency staff, and created a mitigation plan for compensatory in-situ wetland enhancement.

Navy Renewable Energy Program Office (REPO) – EAs for Renewable Energy Development, Central and Eastern United States. E & E managed environmental assessments (EAs) to support the Navy's plans to install solar and wind projects at multiple facilities near the Atlantic Ocean and Gulf of Mexico. As wetland team lead for the EA for Naval Weapon Station (NWS) Earle in New Jersey, Mr. Sheppard led one week of field work in winter to conduct a wetland delineation and bat habitat assessment. He researched, developed, and executed a wetland protocol specific to New Jersey, which uses a different USACE manual than the rest of the United States. He also authored the template wetland delineation report for the NWS Earle EA and five other facilities, authored the NWS Earle wetland delineation report, provided preliminary review of the other wetland delineation reports, and provided the wetland sections of the NWS Earle EA.

> *"This is probably the most integrated, smooth contract of this type that we've dealt with. … You guys did a great job."*
> —Matt Bell, Chief, Portfolio Optimization, JB MDL

Marshall County Pipeline Replacement Project, West Virginia. Mr. Sheppard was the field team lead, the lead author of Resource Report 2 – Water Use and Quality and Resource Report 3 – Fish, Wildlife, and Vegetation for inclusion in the FERC application, and the author of the 404 and 401 permit applications for the three-mile Marshall County Pipeline Replacement Project. Proposed by Texas Eastern Transmission, the project consists of the excavation and replacement of four parallel pipelines within Marshall County to mitigate potential strains on the pipelines during longwall mining activities.

Air Force Installation Complex Encroachment Management Action Plan, New Jersey. E & E, as a subcontractor to Woolpert, assisted the Air Force and local installation leadership, decision makers, and stakeholders in identifying, preventing, and reducing mission sustainment challenges facing Joint Base McGuire-Dix-Lakehurst (JB MDL) in New Jersey to develop its respective Air Force Installation Complex Encroachment Management Action Plan (ICEMAP).

Oakdale to Fraser Transmission Project, Broome and Delaware Counties, New York. E & E prepared the Part A Application for a Certificate of Environmental Compatibility and Public Need required for submittal to the New York State Public Service Commission (PSC), for NextEra Energy Transmission's proposed 57-mile, 345-kilovolt, single-circuit alternating current transmission line designed to advance New York State's energy grid in response to Governor Cuomo's Energy Highway Initiative. To guide project routing, Mr. Sheppard used GIS to conduct remote sensing of land cover and residences within the corridor along the proposed route.

THOMAS M. AUFFENORDE

EDUCATION:	*M.S., 1982, Botany* *Ohio University* *B.S., 1980, Biology* *University of Alabama in Huntsville*
AREAS OF EXPERTISE:	*Wetlands Identification, Ecology and Mitigation* *Environmental Analysis and Impact Assessment* *Environmental Compliance - Construction* *Threatened and Endangered Species* *Stormwater Pollution Prevention Plan (SWPPP) Compliance*
PROFESSIONAL AFFILIATIONS:	*Society of Wetland Scientists*
PROFESSIONAL CERTIFICATIONS:	*Society of Wetland Scientists - Professional Wetland Scientist* *USEPA Wetland Delineation Methodology* *Certified Stormwater Pollution Prevention Plan (SWPPP) Preparer* *Certified Compliance Inspector of Stormwater*

EXPERIENCE:

Mr. Auffenorde is a Vice President and has been employed at EcolSciences, Inc. since 1987. He has directed or participated in over 1,500 construction-related environmental studies for a wide range of clients including the development, legal, engineering and financial professions, as well as local, state and federal government agencies. During his employment with EcolSciences, Inc., his responsibilities have included construction-related wetland regulatory analysis and compliance, environmental impact assessment, Stormwater Pollution Prevention Plan (SWPPP) preparation and compliance, and threatened / endangered species studies. Mr. Auffenorde's project experience also includes extensive client contact, project management, and expert testimony pursuant to the municipal development approval process. Mr. Auffenorde has also been accepted as an expert in wetland regulatory compliance in New Jersey Superior Court. A summary of Mr. Auffenorde's relevant project experience includes:

<u>Environmental Compliance - Construction</u>

Reviewed hundreds of construction site plans for environmental compliance including preparation, submittal, and follow-up on State and Federal wetland permitting. Prepared hundreds of Environmental Impact Statements for the New Jersey municipal development approval process. Involved in the preparation of SWPP Plans and provided construction oversight of SWPPP compliance

- Provided SWPPP compliance oversight for a major utility on a 2-year 44-mile electric transmission line upgrade project in northern New Jersey.

- Active in preparation of SWPP Plans and in an oversight capacity on SWPPP compliance for residential and commercial construction projects

Wetland Studies

Directed and participated in more than 1,000 field studies in NJ, NY and PA for wetland regulatory compliance. Representative experience includes:

- The evaluation of more than 5,000 acres in the New Jersey Highlands.
- The evaluation of more than 2,000 acres in the complex red-shale soils of the New Jersey Piedmont.
- The evaluation of more than 1,000 acres in the sandy soils of the New Jersey Coastal Plain.
- The design and implementation of water table/soil saturation monitoring programs to determine the presence or absence of wetland hydrology in drained organic and mineral soils.

Wetlands Mitigation

Participated in the design, implementation, and monitoring of wetlands mitigation projects pursuant to regulatory violations and to compensate for wetland losses from approved wetland fills. Representative project experiences include:

- Design and coordination with state environmental agency personnel for a 20-acre wetlands restoration/enhancement project required pursuant to a settlement agreement involving wetland disturbances in Mt. Olive, New Jersey. The project involves hydrologic manipulation, extensive wetland plantings, and enhancement of wildlife habitat.
- Design, implementation, monitoring and coordination with state environmental agency personnel of a one acre wetlands restoration project pursuant to authorized wetland disturbances for clean-up of hazardous materials, Holmdel, New Jersey. Project is in the monitoring phase.
- Design, implementation, monitoring and coordination with state environmental agency personnel of a 2-acre wetlands creation project pursuant to authorized wetland fills for a Toys "R" Us warehouse, Mt. Olive, New Jersey. Project is in the monitoring phase.
- Design, implementation and coordination with state environmental agency personnel of a 3-acre wetlands restoration project for Exxon Research and Engineering Company, Florham Park, New Jersey. Project has received agency approval.

- Preparation and implementation of a one acre wetland creation project pursuant to authorized wetland fills for a residential development in Roxbury, New Jersey. Project has received agency approval.

Corridor/Utility Experience

- Designed, directed and participated in ecological studies, regulatory assessment and regulatory compliance for more than 200 linear miles of road corridors, gas and electric transmission right of ways and sewer and water alignments. Studies have been performed for the New Jersey DOT, Public Service Electric and Gas, Jersey Central Power and Light, New Jersey Natural Gas, and numerous local governments.

- Conducted and/or managed comprehensive investigations of regulated wetlands/waters and threatened and endangered species for the Public Service Electric and Gas 44-mile Susquehana – Roseland electric transmission line upgrade project. Provided regulatory support for environmental permitting. Managed environmental compliance during construction, interfacing with management for the oversight contractor and construction contractor. Duties included troubleshooting soil erosion and sediment control discharge issues, installation of functional wildlife crossings, working with contractors to minimize environmental impacts of construction, and design reviews of plan changes for environmental compliance and minimization of impacts.

- Investigation of Public Service Electric and Gas electric transmission lines for wetlands/waters and threatened or endangered species for vegetation maintenance activities. Worked collaboratively in the field with vegetation maintenance contractors and PSE&G right-of-way managers to ensure compliance with environmental permits and to minimize environmental impacts.

Threatened and Endangered Species Studies

Active in the design and implementation of numerous field studies for rare plant and animal species including, but not limited to: Bog Turtle, Wood Turtle, Pine Barrens Treefrog, Northern Pine Snake, Barred Owl, Coopers Hawk, Grasshopper Sparrow, Savannah Sparrow, Swamp Pink, Knieskern's Beaked Rush, and the plants listed in the Pinelands Comprehensive Management Plan.

- Performed an evaluation of eight NJ Superfund sites to determine the potential occurrence of the federally threatened plant species, Swamp Pink and Knieskern's Beaked-rush, for the USEPA.

- Participated in the design and implementation of a comprehensive threatened and endangered plant and animal studies on numerous large and small holdings in southern New Jersey and southern New York. Conducted field surveys for target Federal and State listed species identified by regulatory agencies, including the New Jersey Pinelands Commission, leading the botanical survey and plant identification efforts. Applied the timed-meander search

technique for threatened and endangered plant species. A partial list of species surveyed for include: Swamp Pink, Knieskern's Beaked-rush, Spreading Globeflower, Sickle-leaved Golden Aster, Pine Barrens Reedgrass, Southern Twayblade, Little Ladies Tresses, Broom Crowberry, Yellow Asphodel, Curly Grass Fern, Fairy Wand, Hookers Orchid, Puttyroot, and Globe-flowered Ludwigia.

Avifaunal Studies

- Intensive avifaunal field and literature studies associated with the preparation and implementation of a Bird Deterrent Plan required by the Federal Aviation Administration for a proposed ash-bypass landfill in Onondaga County, NY.

- Wintering/migratory bird field studies for the proposed redevelopment of Flushing Airport by the NY City Economic Development Corporation (formerly Ports and Trade).

- Assessment of the vegetation and surrounding landscape characteristics of long-eared owl (*Asio otus*) winter roosts in central New Jersey.

Commercial/Industrial/Residential Studies

- Wetlands delineation, impact assessment and mitigation for more than 1000 commercial, industrial and residential development projects in NJ, NY and PA for use in site planning, U.S. Army Corps of Engineers 404 permit acquisition, and acquisition of State wetland permits.

- Preparation of municipal EIS's for major developments in New Jersey for use in planning board submissions. Major issues commonly include wetlands, endangered or threatened species, stormwater drainage and floodplains.

- Expert testimony on wetlands delineation, regulatory compliance and environmental impact analysis.

Special Environmental Studies

A wide range of ecological studies have been conducted for various private clients, the USEPA and other government agencies. Representative studies include:

- An evaluation of the impacts of peat extraction on the functions and values of peatlands in the Pocono Mountain area of Pennsylvania for the USEPA, Region III.

- Conducted field studies, prepared the report and presented the results of the study at a public meeting for the Advance Identification of Wetlands along Moshannon Creek near Philipsburg, PA for the USEPA, Region III.

- Conducted field studies and prepared a report for the Advance Identification of Wetlands in Silkmans Swamp near Scranton, PA for the USEPA, Region III.

- Prepared a sampling plan, established permanent quadrats and prepared a report for the first year in a NJDEP-mandated 20-year study of the effects of the removal of groundwater upon the existing plant communities of Budd Lake Bog due to the construction of sanitary sewerage facilities. Budd Lake Bog is known to harbor several species of rare plants and is the northernmost occurrence of the Federally-threatened plant, Swamp Pink.

PUBLICATIONS:

Moskowitz, D.P. and T.M. Auffenorde. 2003. Bird Use of Two Simulated-Tree Cellular Towers in New Jersey. Records of New Jersey Birds 28(4): 88-91.

Moskowitz, D.P. and T.M. Auffenorde. 2000. Persistence of Skunk Cabbage (*Symplocarpus foetidus*) in a Drained Wetland. Wetland Journal 12(3): 23-29.

Moskowitz, D., T. Auffenorde and M. Kovacs. 1997. Vegetation and surrounding landscape characteristics of long-eared owl (*Asio otus*) winter roosts in central New Jersey. Records of New Jersey Birds 23(1): 2-6.

Auffenorde, T.M. and W.A. Wistendahl. 1985. The composition, structure and phenology of the vegetation at the O. E. Anderson Compass-Plant Prairie in unglaciated southeastern Ohio. Ohio Journal of Science 85:50-59.

Auffenorde, T. M. 1983. Demography and persistence of *Silphium laciniatum* at the O. E. Anderson Compass-Plant Prairie in southeastern Ohio. Proceedings of the Eighth North American Prairie Conference, R. Brewer (ed.), Department of Biology, Western Michigan University, p. 30-32.

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SCOTT E. MCDONNELL

EDUCATION:

Rutgers University, New Brunswick, New Jersey

- B.S. Ecology & Natural Resources, 2007, with Honors
- Environmental Geomatics Certificate, 2007
- B.S. Environmental & Business Economics, 1998

AREAS OF EXPERTISE:

- Wetlands Delineation and Permitting
- Threatened and Endangered Species Surveys
- Ecological Field Studies and Habitat Assessments
- Regulatory Assessments and Constraints Analysis
- Flood Hazard Area and Coastal Permitting
- Environmental Impact Statements
- Geographic Information Systems
- Botanical Surveys

PROFESSIONAL CERTIFICATIONS:

- Professional Wetland Scientist (No. 2266) – Society of Wetland Scientists
- Qualified Bog Turtle Surveyor (NJ/NY) – U.S. Fish & Wildlife Service
- Approved Tertiary Venomous Snake Monitor - NJDEP
- Wetland Delineation Certificate Series – Rutgers University OCPE
- OSHA 40 Hour HAZWOPER

PUBLICATIONS:

- Scott E. McDonnell and David P. Moskowitz. 2012. First Breeding Record of the Cicada *Okanagana rimosa* Say (Say's Cicada) in New Jersey. *Northeastern Naturalist* 19(1):140-142.

EXPERIENCE:

Mr. McDonnell is a Project Manager with EcolSciences, Inc. He has conducted numerous environmental studies for a wide range of clients focused in New Jersey, New York and Pennsylvania, including government agencies, major utilities, development and legal professions, and private industry. His responsibilities include: the implementation and documentation of wildlife habitat assessments and species surveys, the delineation of wetlands based on the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, the preparation of applications for Letters of Interpretation, Transition Area Waivers, General Permits and Individual Permits in accordance with the New Jersey Freshwater Wetlands Protection Act, Flood Hazard Area Control Act, Coastal Area Facility Review Act, and Waterfront Development Law, and the use of Geographic Information Systems (GIS) in its capacity as an instrument of environmental analysis.

A summary of Mr. McDonnell's relevant experience includes:

- Wetland delineations based on the Federal Manual three-parameter approach using indicators of hydrophytic vegetation, hydric soils, and wetland hydrology.

- Preparation of Environmental Impact Statements, Letters of Interpretation, Transition Area Waivers, General Permits, Individual Permits, CAFRA Permits, Waterfront Development Permits and U.S. Army Corps permits for numerous development projects occurring statewide.

- Phase I and II habitat evaluations and surveys for the Federally-threatened and State-endangered bog turtle (*Glyptemys muhlenbergii*).

- Field surveys for the State-endangered blue-spotted salamander (*Ambystoma laterale*), northern goshawk (*Accipiter gentiles*), red-shouldered hawk (*Buteo lineatus*), timber rattlesnake (*Crotalus horridus*) and southern gray treefrog *(Hyla chrysoscelis*), and the State-threatened red-headed woodpecker (*Melanerpes erythrocephalus*), barred owl (*Strix varia*), Cooper's hawk (*Accipiter cooperii*), wood turtle (*Glyptemys insculpta*) and pine barrens treefrog (*Hyla andersonii*) on proposed development properties throughout New Jersey.

- Field surveys, approved by New Jersey Department of Environmental Protection (NJDEP) and New Jersey Pinelands Commission, for the State-threatened northern pine snake (*Pituophis melanoleucus melanoleucus*) on proposed development properties in southern New Jersey. Such studies employed drift fences, funnel traps, grid searches and radio telemetry equipment.

- Field surveys for rare plants including, among others, the Federally-threatened small whorled pogonia (*Isotria medeoloides*) and swamp pink (*Helonias bullata*) and the NJ Pinelands Commission listed little ladies' tresses (*Spiranthes tuberosa*).

- Vernal habitat surveys in accordance with survey protocols developed by the NJDEP and the New York State Department of Environmental Conservation (NYSDEC). Pertinent information was gathered on hydrology, vegetation, observed reptile and amphibian species, and weather conditions.

- Submitted new sighting records of barred owl, Cooper's hawk, red-shouldered hawk, bog turtle, wood turtle, northern copperhead, northern pine snake, pine barrens treefrog, timber rattlesnake, swamp pink, pawpaw (*Asimina triloba*) and wahoo (*Euonymus atropurpureus*) to the NJDEP Endangered & Nongame Species Program and the New Jersey Natural Heritage Program.

Michael J. Levinson

EDUCATION:

B.A., 2008 – Environmental Science,
Concentration in Pollution Science
Cook College, Rutgers University, New Brunswick, N.J.

M.S. (Anticipated Graduation Spring 2016) – Biology: Ecology and Evolution
Montclair State University, Montclair, N.J.
Thesis: Effects of Land-Use Composition on Macroinvertebrate assemblages of the Passaic River

AREAS OF EXPERTISE:

Threatened & Endangered Species Survey & Studies
Construction Monitoring & Management
Wetland Delineations & Regulatory Review
Geographic Information System Software Projects

PROFESSIONAL CERTIFICATIONS:

Professional Wetland Scientist – Society of Wetland Scientists
Wetland Delineation Certificate – Rutgers University OCPE
OSHA 40 Hour HAZWOPER

PROFESSIONAL ASSOCIATIONS:

Member of the Society of Wetland Scientists

EXPERIENCE:

Mr. Levinson is a Project Manager with EcolSciences, Inc. and has more than seven years of environmental experience. His experience includes wetland delineation, wetland mitigation, land use permitting, environmental impact assessment & statement preparation and threatened & endangered species surveys. Additionally, Mr. Levinson is experienced in conducting site investigation (phase I and phase II), sampling of hazardous materials and the remedial investigation of contaminated sites. He has worked on a variety of projects and is familiar with local, state and federal regulations throughout the country and has used his skills in GIS mapping, regulatory compliance, and permit application preparation in order to assure that clients comply with all applicable regulations.

PSE&G R-1344 CSX Anomaly Repair, Ridgefield, New Jersey – Assisted Public Service Gas & Electric (PSE&G) project team with the permitting process throughout the utility investigation and cofferdam design required for the repair of this circuit. Because this repair was located in a CSX Train yard Correspondence with CSX representatives was crucial to assure that designs complied with the specifications that they set forth and that required permits were filed. Additionally MFS engineers aided in the development of the design of the proposed cofferdam to allow the contractors access to the existing utility to be repaired. Attended project related meetings to discuss construction and permitting constraints and requirements to ensure that all proposed field operations are conducted in accordance with the governing authorities. Aided in the development of plans to locate the existing utilities in the area to be submitted to CSX for approval prior to the construction of the proposed cofferdam. Assisted in the development of project drawings in AutoCAD.

PSE&G Edison-Metuchen Subsurface Investigation, Middlesex County, New Jersey – Provided on site evaluations of site and environmental constraints of proposed boring locations. Relocated boring locations outside of regulated areas, avoided the need for our client to file for permits which would delay project substantially. Additionally MFS Engineers Assisted in conducting a field subsurface investigation and development of subsurface design parameters for forty-seven borings. Coordinated with the client, several utility companies, and the MFS environmental scientist to assure that boring locations were being performed in safe locations. At the completion of field investigation and laboratory testing program, prepared a geotechnical engineering report, complete with a plan and profile of the boring alignment and incorporated presence of regulated natural features. Additionally, Engineer provided design recommendations for the construction of the drilled shaft foundations to support monopole structures. The design recommendations included design parameters for the subsurface conditions encountered at each proposed monopole foundation location.

Upper Montgomery Joint Sewer Authority, Pennsburg, Pennsylvania –Conducted a thorough wetland investigation of the study area. An office investigation included a review of available wetlands, surface water, and land use. Data obtained from the Pennsylvania Spatial Data Access (PASDA) and the U.S Fish & Wildlife (USFWS) GIS database. Flood zones within the project study area were also reviewed via available FEMA flood mapping. MFS then conducted a wetlands field delineation of a 100' area surrounding the project limit. Delineated regulated features were marked with flags and labeled for designation and survey plotting. These services as well as the geotechnical investigation conducted by MFS engineers and topographic and utility survey conducted by MFS surveyors were in support of upgrading the existing wastewater treatment plant.

Crown Central Pipeline Subsurface Investigation, Elizabeth, New Jersey – Provided on site evaluations of proposed boring locations and relocated borings to unregulated areas to eliminate the need for land use permits. Completed an office investigation to evaluate the potential permitting impacts of each of the crossing methods being considered for this project. Additionally MFS engineers assisted in conducting a field subsurface investigation for a proposed pipeline repair/replacement project. At the completion of the field investigation, Engineer prepared a geotechnical engineering report to evaluate the subsurface conditions and the feasibility of several river crossing alternatives as well as the results of this environmental office investigation. Alternatives evaluated were cut and cover, horizontal directional drilling, and jack and bore.

Camp Smith Range 1A Realignment - Wetland Delineation – Conducted an office and field wetland investigation of study area. Prepared a wetland report summarizing the findings of the investigation and a wetland plan depicting the survey located wetland line. Compiled this information to be used in the U.S Army Corps of Engineers (USACE) Jurisdictional Determination application. This determination assured that the proposed realignment to Range 1A would not conflict with any regulated natural features surrounding the study area. These services as well as a topographic survey conducted by MFS surveyors were in support of the redesign of the NY Army National Guard Camp Smith Range 1A.

PSE&G Q-1369 Pipe Corrosion Repair at 5th Ave and Trenton Ave - Permitting Assistance – Assisted Public Service Gas & Electric (PSE&G) project team with the permitting process throughout the utility investigation and cofferdam design required for the repair of this circuit. Because this repair is located within a U.S Army Corps of Engineers (USACE) levee wall, corresponded with USACE representatives was crucial to assure that designs complied with levee wall specifications. These services as well as the geotechnical investigation conducted by MFS engineers were in support of the design and construction of a cofferdam used to support the excavation through the USACE levee wall and access the anomaly to be repaired by PSE&G.

Lake Nelson SDA School Expansion - Wetland Investigation – Conducted an office and field wetland investigation of study area. Prepared a wetland report summarizing the findings of this investigation. Provided client with recommendations to assure that the expansion of the existing school would not trigger the need for any land use permits. These services as well as site/civil engineering provided by MFS engineers were in support of the expansion of the existing school building and associated parking area.

Notre Dame High School - Wetland Investigation – Conducted an office and field wetland investigation of study area. Prepared a wetland report summarizing the finding of the investigation. Provided client with recommendations to assure that the expansion of the existing school would not trigger the need for any land use permits. These services as well as site/civil engineering provided by MFS engineers were in support of the expansion of the existing school building and associated parking area.

Picatinny Arsenal- Bear Swamp Brook Channel Cleaning - Delineated fringe wetland along the stream, determined the depth to natural stream bed in debris/sediment accumulated portions of stream, prepared the Individual Freshwater Wetland Permit application which was submitted to the New Jersey Department of Environmental Protection (NJDEP).

Skillman Park, Montgomery Township, New Jersey - Conducted a wetland delineation and prepared a Statewide Freshwater Wetland General Permit 17A as well as a Request for Delaware and Raritan Canal Commission (DRCC) Individual Approval.

Nottingham Way Bridge Replacement, Hamilton Township, New Jersey - Conducted a wetland delineation and prepared the NJDEP Statewide General Permit 1.

The Greystone Park Psychiatric Hospital, Parsippany-Troy Hills, New Jersey - Preformed a comprehensive wetland delineation of both the old and new campus, aided with the surface water, sediment and soil sampling used in remediation efforts, Prepared NJDEP Freshwater Wetland Statewide General Permit 4.

West Thames St. Pedestrian Bridge, New York, New York - Contributed to the preparation of the National Environmental Policy Act (NEPA) Environmental Assessment.

New Jersey Turnpike Interchange 13 Improvements, City Elizabeth, New Jersey – Prepared an Environmental Constraints and Land Use Assessment of the proposed Improvements.

Post Acute Care Facility Permitting, Toms River Township, New Jersey – Conducted a wetland delineation, Prepared a LOI Presence/Absence Application & a NJDEP CAFRA Individual Permit

Garden State Parkway Interchange 105 Improvements, Tinton Falls Borough & Eatontown, New Jersey – Conducted a wetland delineation, prepared an Individual Freshwater Wetlands permit and Transition Area Waiver & Deforestation-Reforestation Plan.

Proposed replacement of the Tuckahoe River Bridge and Reconstruction of Route 50 from MP 6.12 to MP 7.25 – Completed a wetland field delineation, data collection, and the NJDEP Costal Area Facility Act (CAFRA)/Water Front Development/ Coastal Wetlands and Freshwater Wetland Individual Permit.

Route 173 over Pohatcong Creek-Bridge Replacement - Completed a field investigation, environmental research, figures and a write up for the Categorical Exclusion Document (CED).

Tall Pines Farm Dam, Stillwater Township, New Jersey - Completed a wetland field delineation, data collection and the NJDEP Statewide General Freshwater Wetland Permit No. 18 for dam repair.

Lawrenceville Nursing Center Expansion, Lawrenceville, New Jersey - Completed a wetland field delineation, data collection and the NJDEP Special Activity Transition Area Waiver for an averaging plan.

South Mountain Reservation – Trail Improvements - Completed a wetland field delineation, data collection and the NJDEP Statewide General Freshwater Wetland Permit No. 1 for maintenance and repair of existing features.

Ewing Senior and Community Center Green and Parking, Ewing Township, New Jersey - Completed a wetland field delineation, data collection and the NJDEP Statewide General Freshwater Wetland Permits No. 6 & 6A for Non-tributary wetland and adjacent transition areas.

Upper Ridgewood Drainage Improvements - Completed a wetland field delineation, data collection and the NJDEP Statewide General Freshwater Wetland Permit No. 11 for outfalls and intake structure.

Quarry Pond, The City of Englewood, New Jersey - Completed a wetland field delineation, data collection and the NJDEP Statewide General Freshwater Wetland Permit No. 4 for hazardous site investigation and cleanup. Also, assisted in the retrieval of the contaminated material lab data used in the Hazardous site Investigation.

Route 29 Permanent Bank Stabilization, Ewing & Delaware, New Jersey - Responsible for the completion of two NJDEP Statewide General Freshwater Wetland Permits for these Bank Stabilization Projects as well, as a Delaware and Raritan Canal Commission Application.

NYS&W Bike/Ped Path, Pequannock and Wayne, New Jersey - Assisted with the Completion of a categorical exclusion document. Assisted with the hazardous materials screening and sampling.

NJ Turnpike Interchange 18W Hazardous Materials Investigation, Bergen County, New Jersey - Responsible for retrieving lab data and formatting it as required by the NJDEP EDD (electronic data deliverable) reviewers. Prior to field work, performed decontamination of all sample equipment and instruments. Aided with phase one investigation, assisted with property deed searches, conducted GIS mapping inquiries, as well as historic photography aerial investigation. Created various CADD graphics depicting information such as sample location, sample results, historic fill, and stockpile location.

New Brunswick Bikeway, New Brunswick, New Jersey - Assisted with completion of a categorical exclusion document (CED) in accordance with current NEPA guidelines for this approximately 4-mile-long bikeway project. Assisted with hazardous materials screenings, ecological studies, and socioeconomic analysis.

BRAC Sites Wetland Delineations, Picatinny Arsenal, Rockaway, New Jersey - Assisted with wetland field delineations, data collection and completion of wetland delineation report.

Picatinny Arsenal Security Fence, Rockaway, New Jersey - Part of the wetland delineation team responsible for delineating freshwater wetlands and preparation of NJDEP Statewide General Freshwater Wetland Permit for this 1.5 mile fence replacement project.

Middlesex County Culvert Replacement, Rahway, New Jersey - Responsible for the completion of a NJDEP Statewide General Freshwater Wetland Permit for this culvert replacement project.

Atlantic Realty Development Corporation, Woodbridge, New Jersey - Prepared threatened and endangered species surveys.

Tuxedo Reserve, Orange & Rockland Counties, New York - Project responsibilities included wildlife & vegetation survey reports, wetland reports and permitting.

Ocean Acres, Barnegat Township, New Jersey - Project responsibilities included pine snake tracking/trapping, wetland reports and delineation assistance.

Stafford Business Park, Stafford Township, New Jersey - Responsible for pine snakes tracking/trapping and preparation of task related reports

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DANIEL P. LAUE

EDUCATION: University of New Hampshire, Durham, New Hampshire
B.S. Environmental Conservation with
Minor in Fresh Water Resource Management
Graduated Cum Laude (2012)

AREAS OF EXPERTISE:
Threatened & Endangered Species Survey & Studies
Construction Monitoring & Management
Wetland Delineations & Regulatory Review
Geographic Information System Software Projects

PROFESSIONAL CERTIFICATIONS:
Wetland Delineation Certificate – Rutgers University OCPE
OSHA 40 Hour HAZWOPER

PROFESSIONAL ASSOCIATIONS:
Volunteer, New Jersey Land Conservancy
Member of the Society of Wetland Scientists

EXPERIENCE:

Mr. Laue is an Environmental Scientist with EcolSciences, Inc. He has professional experience in threatened and endangered species surveys and monitoring, the delineation of wetlands, the management of federal, state and local environmental law and associated permit generation. As an environmental scientist with EcolSciences, Inc., Mr. Laue is involved in threatened and endangered species presence/absence surveys, habitat evaluations and construction monitoring activities, as well as wetland and water quality monitoring services during the construction of infrastructure and the assessment of soil stratum, hydrologic and vegetative characteristics of ecological habitats. Mr. Laue also creates maps, figures and tables using GIS software in aid of environmental studies and services and prepares permit applications for General Permits, Letters of Interpretation, Hardship Exceptions and Individual Permits in accordance with the New Jersey Freshwater Wetlands Protection Act.

Threatened & Endangered Species Surveys & Studies

Habitat assessments & field surveys for Federally and State-threatened & endangered species on proposed utility and private development properties:

- Assists Phase I and Phase II surveys for the Federally-threatened and New Jersey State-endangered bog turtle (*Glyptemys muhlenbergii).*

- Assists in a long-term New Jersey State-threatened wood turtle (*Glyptemys insculpta*) studies. Responsibilities include: recording locality data; radio telemetry studies; hibernacula survey; nest protection and safely assisting in the capturing of turtles for physical examination.

- Assists in habitat assessments and species presence/absence surveys for the New Jersey State-threatened wood turtle (*Glyptemys insculpta*), Pine Barrens tree frog (*Hyla andersonii*), blue spotted salamander (*Ambystoma laterale*) and long-tailed salamander (*Eurycea* longicauda) within wetland and riparian areas for over 100 acres of proposed development properties including major utility activities and future maintenance thereof.

- Assists in vernal habitat assessments for proposed utility projects throughout New Jersey, in accordance with survey protocols set by the New Jersey Department of Environmental Protection, including the collection of pertinent habitat information such as hydrology, vegetative composition, weather and presence of wildlife.

- Conducts Raptor surveys via call-playback and nest search sampling methods for State-endangered red-shoulder hawk (*Buteo lineatus*) and the State-threatened barred owl (*Strix varia*).

Environmental Construction Monitoring & Management

- Identifies and monitors wildlife movements on and adjacent to active construction sites, including the monitoring of reptiles and amphibians during multi-year utility upgrade projects including, utility right-of-way (ROW) maintenance activities and private development projects.

- Assist in the monitoring wood turtle habitat for ROW vegetation maintenance activities along numerous miles of overhead transmission line throughout New Jersey.

- Monitors the construction and restoration of major utility upgrade project access roads and associated utility infrastructure in environmentally sensitive areas as part of project environmental compliance.

Wetland Delineations and Permitting

- Performs wetland delineations based on the Federal Manual, three-parameter approach, using hydrophytic vegetation, hydric soils, and wetland hydrology as indicators of wetland presence.

- Characterizes wetland type and evaluates associated wetland functions, hydrology and environmental services such as threatened and endangered species habitat.

- Prepares application materials for NJDEP Freshwater Wetlands Protection Act Letters of Interpretation, Hardship Exceptions, Individual Permits, General Permits & Transition Area Waiver Averaging Plans.

Geographic Information Systems

- Evaluates potential environmental constraints using land use/land cover, wetlands, vernal habitat, riparian zones, and floodplains information, and NJDEP Landscape Project (species-specific habitat data) mapping for major utility upgrade projects and private development.

AMY S. GREENE ENVIRONMENTAL CONSULTANTS INC.

WILLIAM F. MACHOLDT, PWS

Senior Environmental Scientist

Years of Experience: 28

Education

- M.F.A. Visual Art, Bennington College, 2002
- B.S. Environmental Science, East Stroudsburg University, Stroudsburg, PA, 1984

Professional Affiliations

- Society of Wetland Scientists, Certified Professional Wetland Scientist - #2268
- Rutgers University Certified Wetland Delineator

Training

- American Red Cross, Adult First Aid/CPR: September, 2012
- Wetland Training Institute, Wetland Delineation Certification, 1990;
- Rutgers University, NJDEP Endangered and Nongame Species Program Landscape Project Training, 2005;
- Cook College, College of Continuing Professional Education Seminars, Rutgers – New Jersey Agricultural Experiment Station, Office of Continuing Professional Education:
  - Vegetation Identification for Wetland Delineation – Winter 2012;
  - NJ Wetland Mitigation Planning Hydrologic Budget Manual Training, NJ Coastal Permit Seminar, 1993;
  - Hydric Soils of NJ, 1991;
  - Wetland Identification, 1990;
  - Geology and Hydrogeology of NJ Coastal Plains, 1989;
  - NJ Freshwater Wetlands Permit Seminar, 1989;
  - Geology and Hydrogeology of Northern New Jersey, 1988;
  - New Flood Hazard Area Control Act Rules, November 2008;
  - Vegetation Identification for Wetland Delineation – South, September 2011
- NJ Wetlands Manual Training Workshop, August 2008,
- NJ Transit Operators / Contractors Safety Orientation, 2005;

KEY QUALIFICATIONS

Mr. Macholdt has extensive experience in management and performance of environmental studies including wetland delineation, wetland permitting, wetland mitigation design, hydrologic and soils investigations, wildlife studies, environmentally sensitive areas mapping, endangered and threatened species surveys, habitat restoration and environmental impact assessment. Mr. Macholdt has an excellent working knowledge of the New Jersey *Freshwater Wetlands Protection Act* as well as the Federal wetlands delineation methodology. He has prepared NEPA documentation in accordance with FTA and FHWA NEPA regulations and has prepared Environmental Impact Assessments in accordance with NJ EO 215 requirements. Mr. Macholdt has extensive experience in preparation of State and Federal environmental permit applications including NJDEP Freshwater and Coastal Wetlands Permits; Wetland Transition Area Waivers; Flood Hazard Area Permits; Waterfront Development Permits; NJ Pinelands Public Development Approval; USACE Section 10/404 wetland permits; and PADEP Section 105 Wetlands Permits. Mr. Macholdt is experienced in interaction and consultation with regulatory and resource protection agencies including NJDEP, PADEP, USACE, USFWS, NMFS, NPS, and others. Mr. Macholdt has provided these services on transportation, dam rehabilitation, drainage, wastewater, water supply, recreation and capital improvement projects throughout New Jersey.

RELEVANT EXPERIENCE

River Road Sewer Line Extension, Raritan Township, Hunterdon County, NJ. Hunterdon County Historical Society. Project Manager responsible for performance of field investigation and delineation of wetlands and the preparation of NJDEP applications. Permits obtained include Freshwater Wetlands General Permit #2 for installation of a utility line in wetlands and a NJDEP Flood Hazard Permit for placement of the utility line within a flood hazard area.

Meter Chamber #4 Pump Station Site, Bridgewater Township, Somerset County, NJ. Somerset-Raritan Valley Sewerage Authority. Project Manager responsible for performance of field investigation and delineation of wetlands and the preparation of NJDEP Letter of Interpretation application.

The College of New Jersey Proposed 26 kV Line, Ewing Township, Mercer County, NJ. The College of New Jersey. Project Manager responsible for wetland delineation for proposed construction of the underground kV electric utility line.

Rutgers University Busch Campus 69 kV Substation Expansion, Piscataway Township, Middlesex County, NJ. Rutgers, The State University of New Jersey Utilities Department. Project Manager responsible for wetland delineation and successful preparation of NJDEP Freshwater Wetlands General Permit #6 application.

Training - continued
- NJ Turnpike Authority Traffic Safety Training Class, 2012;
- MTA Metro-North Railroad Roadway Worker Procedures for Conductor Flags/Contract Employees, 2004
- AMTRAK Contractor Safety Training, March 2016.
- Wetland Training Institute, Penn State, Advanced Hydric Soils, May 2016

Awards
- NJ Historic Preservation Award, Rehabilitation of Somerset County Bridge No. E0801, Raritan Borough and Hillsborough Township, 2007

State Route 20 Safety, Drainage & Resurfacing, City of Paterson, Passaic County, NJ. New Jersey Department of Transportation/Taylor Wiseman & Taylor. Project Manager responsible for the delineation and documentation of wetlands within the project limits. Wetlands were identified and delineated utilizing the routine methodology outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1989), as required by the NJDEP. Also responsible for preparation of a Wetlands Delineation Report summarizing the findings and conclusions regarding the wetland delineation performed for the project.

County Route 14 (West Park Avenue) Roadway Improvements, Township of Ocean, Boroughs of Eatontown and Tinton Falls, Monmouth County, NJ. Monmouth County Department of Public Works & Engineering/Stantec Consulting Services, Inc. Project Manager responsible for the identification and delineation of wetlands within the project limits. Wetlands have been identified utilizing the routine methodology outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1989), as required by the NJDEP. Project also includes a full, detailed delineation of wetlands for an alternative yet to be chosen and an application for an NJDEP Letter of Interpretation to verify the location of the delineated wetlands. Also responsible for preparation of and Environmental Screening Report to identify onsite water quality, aquatic ecology, Green Acres encumbrances, and potentially required environmental permits.

Jersey Avenue Vehicular Bridge over Mill Creek, City of Jersey City, Hudson County, NJ. New Jersey Turnpike Authority/Hardesty & Hanover, LLP. Project Manager responsible for the delineation of wetlands within the project limits. Wetlands were identified and delineated utilizing the routine methodology outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1989), as required by the NJDEP, and in the 1987 U.S. Army Corps of Engineers (USACE) *Manual for Delineation Jurisdictional Wetlands Northcentral and Northeast Region Supplement*, as required by the USACE. Also responsible for preparation of an Executive Order 215 Environmental Assessment document and for preparation of applications for NJDEP Freshwater Wetlands General permit #10 and a Waterfront Development Permit, and for a USACE Nationwide Permit #14. The Waterfront Development Permit application also addressed compliance with the NJ Flood Hazard Area Control Act rules.

Interstate Route 295 Resurfacing Project (MP 1.0 to MP 11.6), Pennsville, Carney's Point, and Oldmans Townships, Salem County and Logan Township, Gloucester County, NJ. New Jersey Department of Transportation/Greenman-Pedersen, Inc. Project Manager responsible for wetland delineation and permitting. By coordinating with the NJDEP, Mr. Macholdt was able to reduce the effort for the delineation in areas where only transition area impacts were anticipated, saving time and money. Applications prepared included NJDEP Freshwater Wetlands Statewide General Permits and NJDEP Waterfront Development Permits.

Routes 1 and 9, Sections (25) and (26), City of Jersey City, Hudson County, NJ. New Jersey Department of Transportation/Hardesty and Hanover. Project Manager responsible for the performance of a wetland delineation and preparation of an Ecology Technical Environmental Study document for inclusion in the NEPA Environmental Assessment for the St. Paul's Avenue Bridge Replacement and Interim Improvements to Charlotte and Tonnelle Circles.

Burlington Wetland Site, Burlington Township, Burlington County, NJ. Hudson Environmental Services. Project Manager responsible for field delineation of wetlands on a 92-acre site and the preparation of an application for and receipt of an NJDEP Letter of Interpretation, Regulatory Line Verification.

Route 130 Crystal Lake Dam Rehabilitation, Bordentown and Mansfield Townships, Burlington County, NJ. New Jersey Department of Transportation/Greenman-Pedersen, Inc. Project Manager responsible for the delineation and documentation of wetlands and State open waters within the Route 130 Crystal Lake Dam Rehabilitation project area. Wetlands were identified and delineated utilizing the routine methodology outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989)*, as required by the NJDEP, and in the *1987 U.S. Army Corps of Engineers (USACE) Manual for Delineating Jurisdictional Wetlands Atlantic and Gulf Coastal Plain Supplement*, as required by the USACE. Also responsible for preparation of applications for NJDEP Coastal Wetlands and Waterfront Development Permits and Freshwater Wetlands General Permit #18 as well as USACE Nationwide Permit #23. The project is under construction.

Garden State Parkway Interchange Improvements/Interchange 141 to 157, Multiple Cities, Townships, and Boroughs; Bergen, Essex, Passaic, and Union Counties, NJ. New Jersey Turnpike Authority/Greenman Pedersen, Inc. Project Manager responsible for field investigations, wetland/open water delineations, evaluation of endangered and threatened species habitat, and environmental permitting for the project. Prepared applications for NJDEP Freshwater Wetlands General Permits and Flood Hazard Area Permits to authorize for Interchange Improvements. Obtained verification from NJDEP regarding the applicability of NJ EO 215. It was determined that several of the projects were exempt from preparation of an EA or EIS under Executive Order 215. Prepared an Environmental Assessment under EO 215 for Interchange 154-155P. Also responsible for coordination of environmental project team performance of Phase 1 Site Assessments for Hazardous Waste, Air Quality and Noise Analyses, Cultural Resources Surveys and public outreach under EO 172.

US Route 22 West of Robin Hood Road to East of Fairway Drive, Kenilworth and Mountainside Boroughs & Springfield and Union Townships, Union County, NJ. New Jersey Department of Transportation. Project Manager responsible for performance and oversight of a wetland delineation within the project limits. Wetlands were identified and delineated utilizing the routine methodology outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (1989), as required by the NJDEP. Documentation of the wetland delineation was also performed.

Sewer Pumping Station, Washington Township, Morris County, NJ. Washington Township Municipal Utilities Authority. Project Manager responsible for the performance of field investigation and delineation of wetlands and State open waters and the preparation of successful NJDEP Flood Hazard Area, Freshwater Wetlands General Permit #2, and Wetland Transition Area Waiver applications for the proposed pump station site.

Davenport Street Extension, Borough of Somerville, Somerset County, NJ. Somerset County Engineering Department/Keller & Kirkpatrick. Project Manager responsible for performance of field investigation and delineation of wetlands and State open waters and the preparation of environmental sections of a NEPA Categorical Exclusion document (CED).

State Route 34 and County Route 537 Intersection Improvements, Colts Neck Township, Monmouth County, NJ. Monmouth County/Greenman-Pedersen, Inc. Project Manager responsible for the delineation and documentation of wetlands and State open waters within the SR 34 and CR 537 Intersection project area. Wetlands were identified and delineated utilizing the routine methodology outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989)*, as required by the NJDEP. Also responsible for preparation of applications for NJDEP Freshwater Wetlands General Permit #10A and Individual Flood Hazard Area Permit.

Route 9 Over Waretown Creek Bridge Replacement, Ocean Township, Ocean County, NJ. New Jersey Department of Transportation/Greenman-Pedersen, Inc. Project Manager responsible for performance of field investigation, delineation of wetlands, and identification of required environmental permits for project implementation.

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AMY S. GREENE ENVIRONMENTAL CONSULTANTS INC.

SUSAN C. QUACKENBUSH, PWS

Project Manager

Years of Experience: 15

Education
- B.S. Marine Science, Coastal Carolina University, Conway, South Carolina, 2000

Languages Spoken
- English (Native Speaker)
- Spanish (Language Proficiency Index: Advanced-High)

Certifications
- Professional Wetland Scientist #2158 (2011)
- Rutgers University Certified Wetland Delineator (2002)

Professional Memberships
- Society of Wetland Scientists
- National Peace Corps Association

Training
- American Red Cross CPR and First Aid, September 2013;
- New Jersey Turnpike Authority Traffic Safety Training, May 2012;
- Rutgers University Division of Continuous Education and Outreach, *Improving NEPA: An FTA Update*, Webinar, June 2011;
- American Water Resources Association, Delaware Chapter: Wetland Delineation Field Training for the Atlantic and Gulf Coastal Plain Regional Supplement (2011);
- Amtrak Railroad Safety Training (2010);
- U.S. Peace Corps & U.S. Agency for International Development (USAID): Best Management Practices in Biodiversity Monitoring (2009);
- Mexican National Commission for Natural Protected Areas: VII National Congress of Natural Protected Areas of Mexico (2009);
- Autonomous University of San Luis Potosí, Mexico: Agenda 21 & Social Participation for Sustainable Development (2008);
- U.S. Peace Corps, Mexican Secretariat of the Environment and Natural Resources, Mexican National Forest Commission, Mexican National Commission for Natural Protected Areas, & State Government of Jalisco, Mexico: Best Management Practices in Natural Protected Areas (2008);

KEY QUALIFICATIONS

Ms. Quackenbush is experienced in performing environmental and ecological investigations. She is a Professional Wetland Scientist. As an Senior Environmental Scientist at ASGECI she performs wetland delineations, wetland functional assessment vegetation and wildlife surveys, including endangered and threatened species surveys, and performs essential fish habitat analyses. She prepares wetland, flood hazard area and other environmental permit applications in accordance with the NJ *Freshwater Wetlands Protection Act* and the NJ *Flood Hazard Area Control Act.* She also prepares US Army Corps of Engineers Section 404/10 wetlands Permit applications. She has identified sites for and designed wetland mitigation plans. She is also experienced in NJDEP Coastal permitting including CAFRA, Waterfront Development and Coastal Wetlands Permits. She has also prepared Categorical Exclusion Documentation in accordance with FHWA *National Environmental Policy Act* (NEPA) requirements and Environmental Impact Statements in accordance with NJ Executive Order 215. She has made presentations at public meetings.

RELEVANT EXPERIENCE

PSE&G Southern Reinforcement Project, Various Municipalities, Gloucester and Camden Counties, NJ. Environmental Resource Management/PSE&G. Project Manager responsible for the delineation of freshwater and tidal wetlands, Waters of the U.S., and State Open Water along approximately 23 miles of existing utility right-of-way and electrical substation facilities for proposed upgrades and improvements to the electrical distribution system. Wetlands were identified and delineated utilizing the routine methodology outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989)*, as required by the NJDEP, and in the *1987 U.S. Army Corps of Engineers (USACE) Manual for Delineating Jurisdictional Wetlands Atlantic Coastal Plain Supplement*, as required by the USACE. Wetlands mapped pursuant to the NJ *Coastal Wetlands Act of 1970* were identified and located within the project area. The project also included habitat assessment for threatened and endangered species including the Federally endangered plant, swamp pink as well as bald eagle. Two wetland delineation reports were prepared and submitted for the northern and southern portions of the project.

Minotola to Landis Transmission Lin, Buena Vista Township, Buena Borough, Vineland City, and Franklin Township, Atlantic, Cumberland, and Gloucester Counties, NJ. Conectiv Power Deliver Environmental Services. Environmental Scientist responsible for the preparation of a NJDEP Jurisdictional Determination request to determine the applicability of freshwater wetlands and stream encroachment permits pertaining to maintenance of the Minotola to Landis Transmission Line. Participated in the wetland delineation of the 6.42 mile transmission line corridor, and obtained NJDEP Freshwater Wetlands General Permit #1 for maintenance activities.

- Rutgers University, Cook College, College of Continuing Professional Education Seminars:
  - Wetland Construction Design (2005),
  - Endangered and Threatened Species of Northern New Jersey (2005),
  - Coastal Project Review Workshop (2004),
  - Coastal Vegetation Identification (2004),
  - GIS for Environmental Management (2002),
  - NJDEP Stream Encroachment Permitting Seminar (2002);
- Rutgers University, Cook College, College of Continuing Professional Education Seminars Wetland Delineation Series:
  - Methodology for Delineating Wetlands (2002)
  - Vegetation Identification for Wetland Delineation (2002)
  - Hydric Soils (2002)
- Special Pinelands Plants Course, Pinelands Preservation Alliance (2004);
- NJ Transit Railroad Safety Training (2004, 2012);
- Beginning Microstation Training, Michael Baker Jr., Inc., (2002)

ACUA Plasma Gasification Energy Facility, Block 703; Lots 4&5, Egg Harbor Township, Atlantic County, NJ. NRG, Inc./Atlantic County Utilities Authority/SCS Engineers, PC. Project Manager responsible for routine onsite wetland delineation, threatened and endangered species habitat assessment, and preparation of NJDEP Freshwater Wetlands General Permit #6 (GP#6) and CAFRA applications for Public Development, including Statement of Compliance with the NJ Coastal Zone Management Rules. Permit applications were prepared following an accelerated project schedule. The permits will authorize construction of a plasma gasification facility within the existing ACUA solid waste management complex, including impacts to isolated freshwater wetlands and wetland transition area.

SRVSA Proposed Pipeline Alignment/Outfall, Bridgewater & Franklin Townships, Somerset County, NJ. Somerset Raritan Valley Sewerage Authority/Camp Dresser & McKee. Environmental Scientist responsible for assisting in detailed onsite wetland delineation, and preparing/submitting freshwater mussel habitat assessment to NJDEP.

Route 206 over CSX Railroad Improvements, Montgomery Township, Somerset County, NJ. New Jersey Department of Transportation/Vollmer Associates, LLP. Environmental Scientist responsible for delineating wetlands through field analysis of flora, hydrology and soils. Prepared Wetland Delineation Report for inclusion in NJDEP freshwater wetland permit application. Prepared Technical Environmental Studies for Ecology and Wetlands, Programmatic 4(f)-Recreational Land, Socioeconomic and Environmental Justice for inclusion in the Categorical Exclusion Document. Compiled Categorical Exclusion Document in compliance with FHWA NEPA requirements.

Denver Service Center, Natchez Trace Parkway, Hinds and Madison Counties, MS. National Park Service/General Services Administration. Project Manager responsible for the delineation of onsite wetlands along six miles of National Park as part of planning for new multipurpose trail and parking facility. Prepared detailed wetland delineation report, including wetland functional assessments.

Interstate 95 Northbound, M.P 6.76 – M.P. 8.94 Wetland Delineation, Mercer County, NJ. New Jersey Department of Transportation/Michael Baker Jr., Inc. Environmental Scientist responsible for the performance of routine on-site wetland delineation, through field analysis of flora, hydrology, and soils.

Alexandria Airport Proposed New Hangar, Alexandria Township, Hunterdon County, NJ. Alexandria Airpark, LLC/W. Thomas Watkinson III, Engineering & Planning P.C. Environmental Scientist responsible for delineating wetlands through field analysis of flora, hydrology and soils on a 77-acre site, and preparation of an application for NJDEP Letter of Interpretation – Regulatory Line Verification.

Bridge Scour Countermeasures Project, Multiple Bridges in Bergen, Morris, Passaic, and Sussex Counties, NJ. New Jersey Department of Transportation/Arora Associates. Environmental Scientist responsible for communicating with agencies, researching and documenting ecological resources, creating and updating checklists in preparation for field work. Assisted in wetland delineation and survey for threatened and endangered species at the bridge sites. Prepared applications for NJDEP Freshwater Wetlands, Stream Encroachment and Waterfront Development Permit and USACE Section 404 Wetlands Permit. Performed bog turtle Phase I and Phase II assessments, as well as freshwater mussel surveys in compliance with USFWS and NJDEP protocol.

Garden State Parkway Bridge Nos.28.0S &28.5S Replacement, Upper Township, Cape May County, New Jersey and City of Somers Point and Egg Harbor Township, Atlantic County, NJ. NJ Turnpike Authority/Michael Baker Jr., Inc. Project Manager responsible for delineation of wetlands and preparation of a Wetland Delineation Report for the proposed replacement of the southbound bridges over Great Egg Harbor Bay and Drag Channel. Wetlands were identified and delineated utilizing the routine methodology outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989)*, as required by the NJDEP, and in the *1987 U.S. Army Corps of Engineers (USACE) Manual for Delineating Jurisdictional Wetlands Atlantic Coastal Plain Supplement*, as required by the USACE. Performed a Submerged Aquatic Vegetation Survey, Essential Fish Habitat Assessment Report, and Threatened & Endangered Species Habitat Assessment. Prepared applications for a U.S. Army Corps of Engineers Jurisdictional Determination, and NJDEP Coastal General Permit for Geotechnical Borings. Performed Section 7 of the *Endangered Species Act* Consultation with National Marine Fisheries Service (NMFS) for acoustic effects to Federally listed threatened & endangered **sea turtles** and **Atlantic sturgeon**. Identified a nesting pair of the NJ State endangered peregrine falcon on the existing bridge structure, and worked with NJDEP ENSP and Conserve Wildlife Foundation of NJ to design and construct an alternate nesting structure which has been used successfully in the 2013 breeding season. Under subsequent contract for Final Design; obtained all NJDEP and USACE approvals including NJDEP CAFRA, Waterfront Development, Coastal Wetlands, Freshwater Wetlands, Coastal Zone Consistency, Water Quality Certificate, USACE Section 404/10. Prepared No Net Loss Reforestation Plan and riparian compensation plan.

Installation of Variable Message Signs at New & Existing Locations on the Garden State Parkway, Multiple Municipalities, Multiple Counties, NJ. NJ Turnpike Authority/Arora & Associates, P.C. Environmental Scientist performing field investigation / wetland delineation / environmental permitting of numerous locations along the Garden State Parkway. Wetlands were identified and delineated utilizing the routine methodology outlined in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands (1989)*, as required by the NJDEP. Environmental investigations / permitting were performed under a tight schedule.

Route 33B – Kozloski/Halls Mill Road Interchange Improvements, Freehold Township, Monmouth County, NJ. New Jersey Department of Transportation/Michael Baker Jr., Inc. Environmental Scientist responsible for communicating with agencies, researching and documenting ecological resources. Assisted in wetland delineations and prepared application for NJDEP Freshwater Wetlands Individual Permit. Performed hydrologic and hydraulic analysis for inclusion in NJDEP Flood Hazard Area Permit application.

Hudson Bergen Light Rail Transit System Tri-Channel Box Extension, North Bergen Township, Hudson County, NJ. New Jersey Transit/Parsons Brinckerhoff Quade & Douglas, Inc. Environmental Scientist responsible for the performance of routine on-site wetland delineation, through field analysis of flora, hydrology, and soils.

Bayonne Municipal Utilities Authority Water Main Extension, City of Bayonne, Hudson County, NJ. Bayonne Municipal Utilities Authority/Hatch Mott MacDonald. Project Manager responsible for delineation of onsite wetlands, and preparation of NJDEP Upland Waterfront Development application for new water main installation. Also prepared Environmental Documentation in accordance with NJ Infrastructure Trust Financing requirements and USEPA Environmental Document.

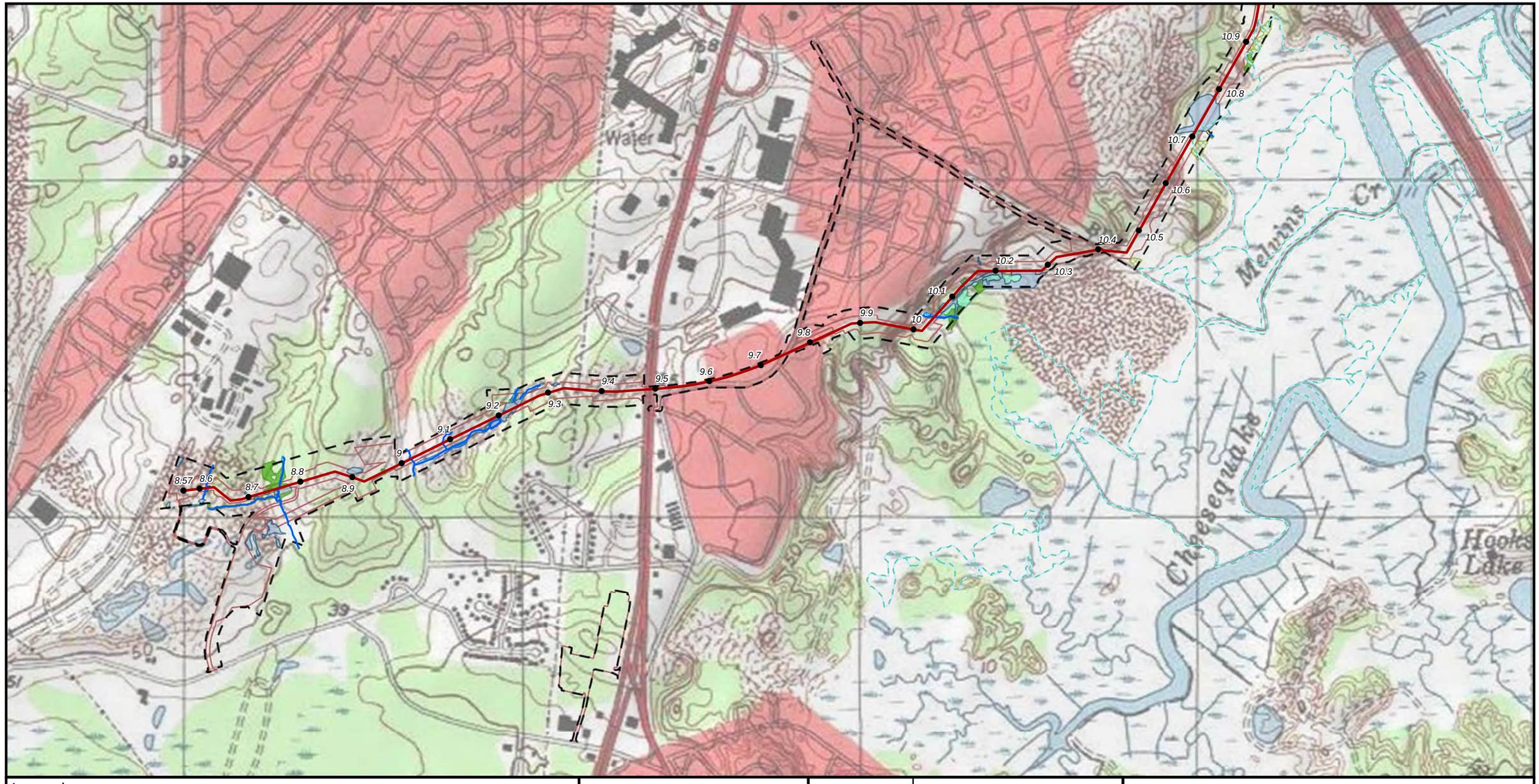
Cramer's Creek Pumping Station Rehabilitation, Clinton Township, Hunterdon County, NJ. Clinton Township Sewerage Authority/Hatch Mott McDonald. Environmental Scientist responsible for delineating wetlands through field analysis of flora, hydrology, and soils. Prepared Wetland Delineation Report and NJDEP General Permit #10, #11, and Transition Area Waiver applications.

Design Services for the Garden State Parkway Southern Interchange Improvements Study Interchange 0 to Interchange 125, Multiple Municipalities, Multiple Counties, NJ. NJ Turnpike Authority/Stantec Consulting Services, Inc. Environmental Scientist performing preliminary field investigations for wetlands and endangered and threatened species habitat at multiple interchange locations along the Garden State Parkway. Environmental constraints and environmental permit requirements were identified to assist with development and evaluation of project alternatives and preparation of feasibility study.

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5 USGS Topographic Maps

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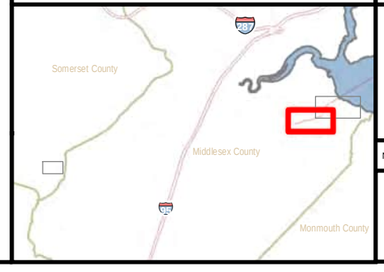
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- LOD
- Waterway Line
- Jurisdictional Drain Lines
- Culvert
- Upper Wetland Boundary
- Surveyed Areas
- E2EM Wetland
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Top of Bank
- Ordinary High Water Mark

0 350 700 1,050 1,400

Feet

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SITE LOCATION



DRAWING NO.

REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
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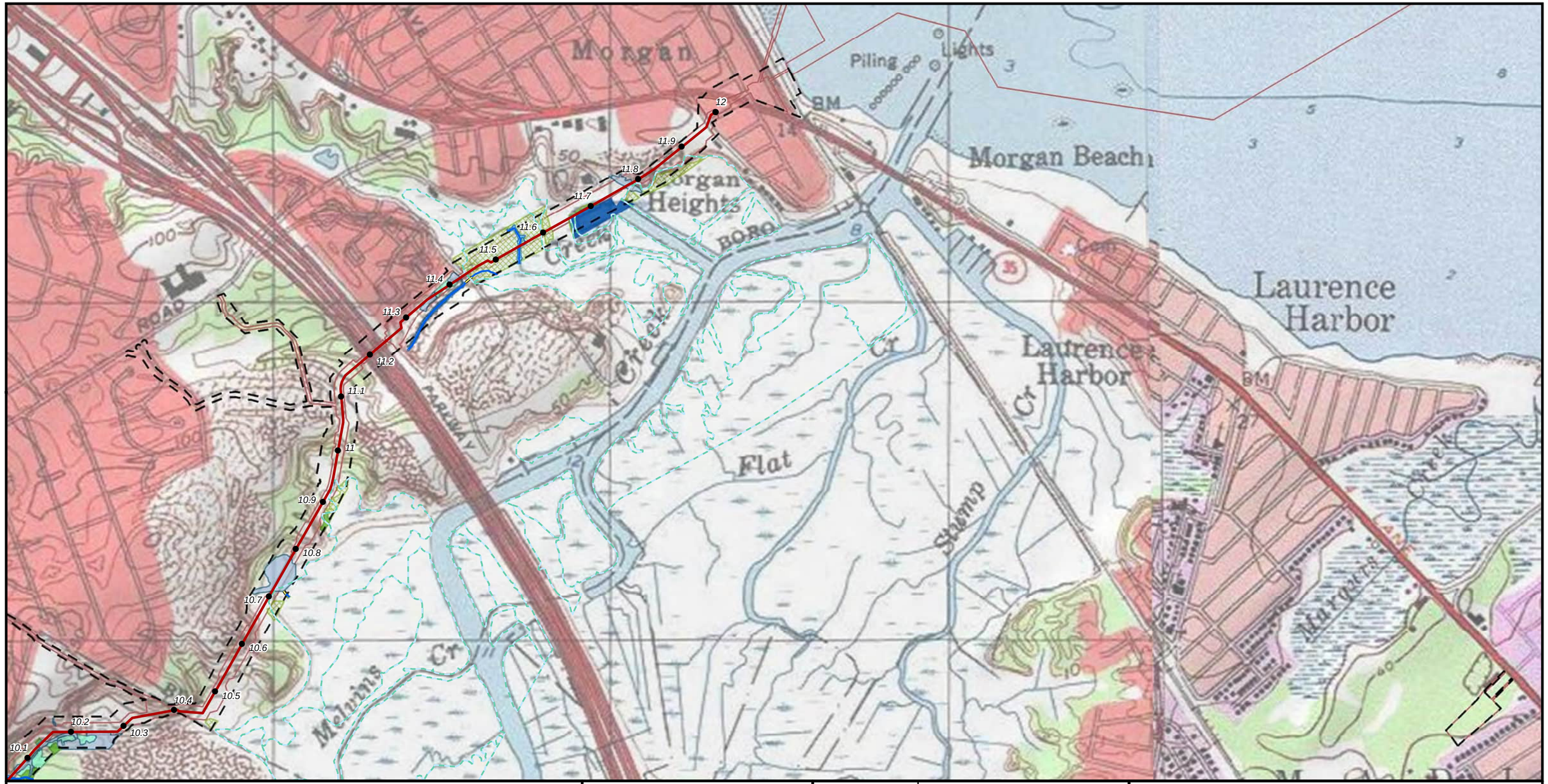
TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
USGS TOPOGRAPHIC MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

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Data Sources: Williams 2017; E&E 2017; USGS Topo 2016
Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

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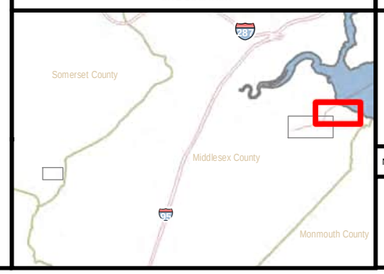
- Milepost
- Madison Loop
- LOD
- Waterway Line
- Jurisdictional Drain Lines
- Culvert
- Upper Wetland Boundary
- Surveyed Areas
- E2EM Wetland
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Top of Bank
- Waterbody
- Ordinary High Water Mark

0 350 700 1,050 1,400

Feet

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SITE LOCATION



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TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
USGS TOPOGRAPHIC MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

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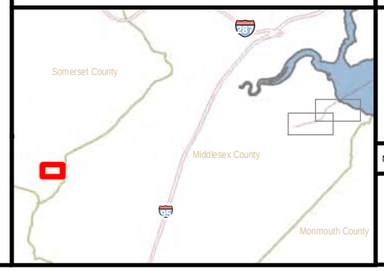
- LOD
- Waterway Line
- Surveyed Areas
- PEM Wetland
- PFO Wetland
- PSS Wetland
- Top of Bank
- Ordinary High Water Mark

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SITE LOCATION



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TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
USGS TOPOGRAPHIC MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

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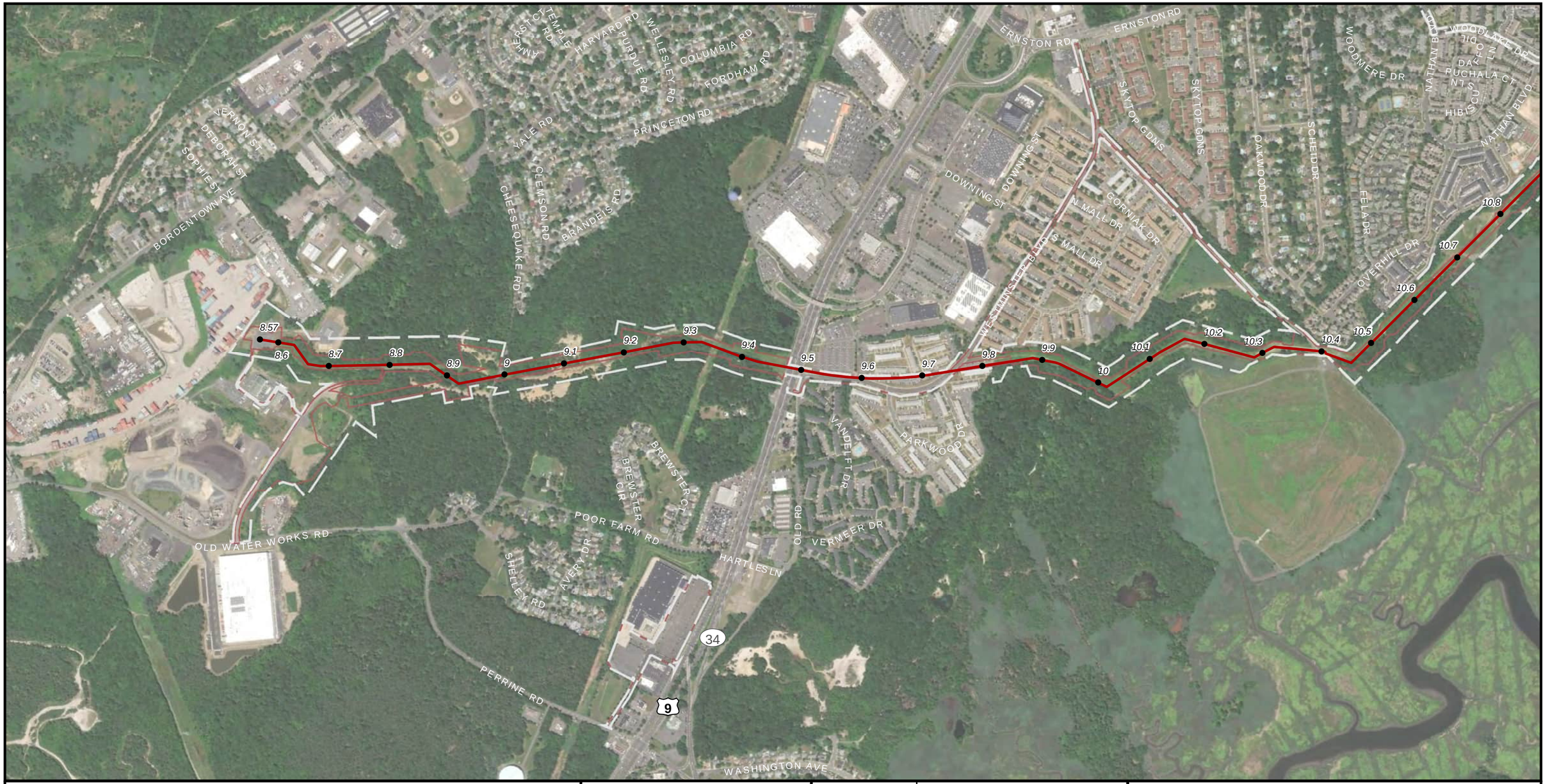
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6 Local Road Maps

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- Milepost
- Madison Loop
- LOD
- Surveyed Areas

0 500 1,000 1,500 2,000

Feet

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SITE LOCATION



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NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
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TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
LOCAL ROAD MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

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Data Sources: Williams 2017; E&E 2017; ESRI 2012

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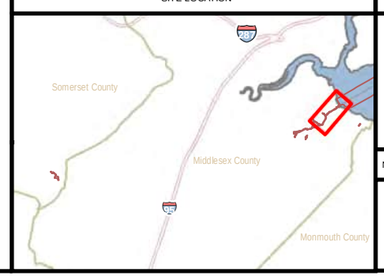
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- Milepost
- Madison Loop
- LOD
- Surveyed Areas

0 500 1,000 1,500 2,000

Feet

SITE LOCATION



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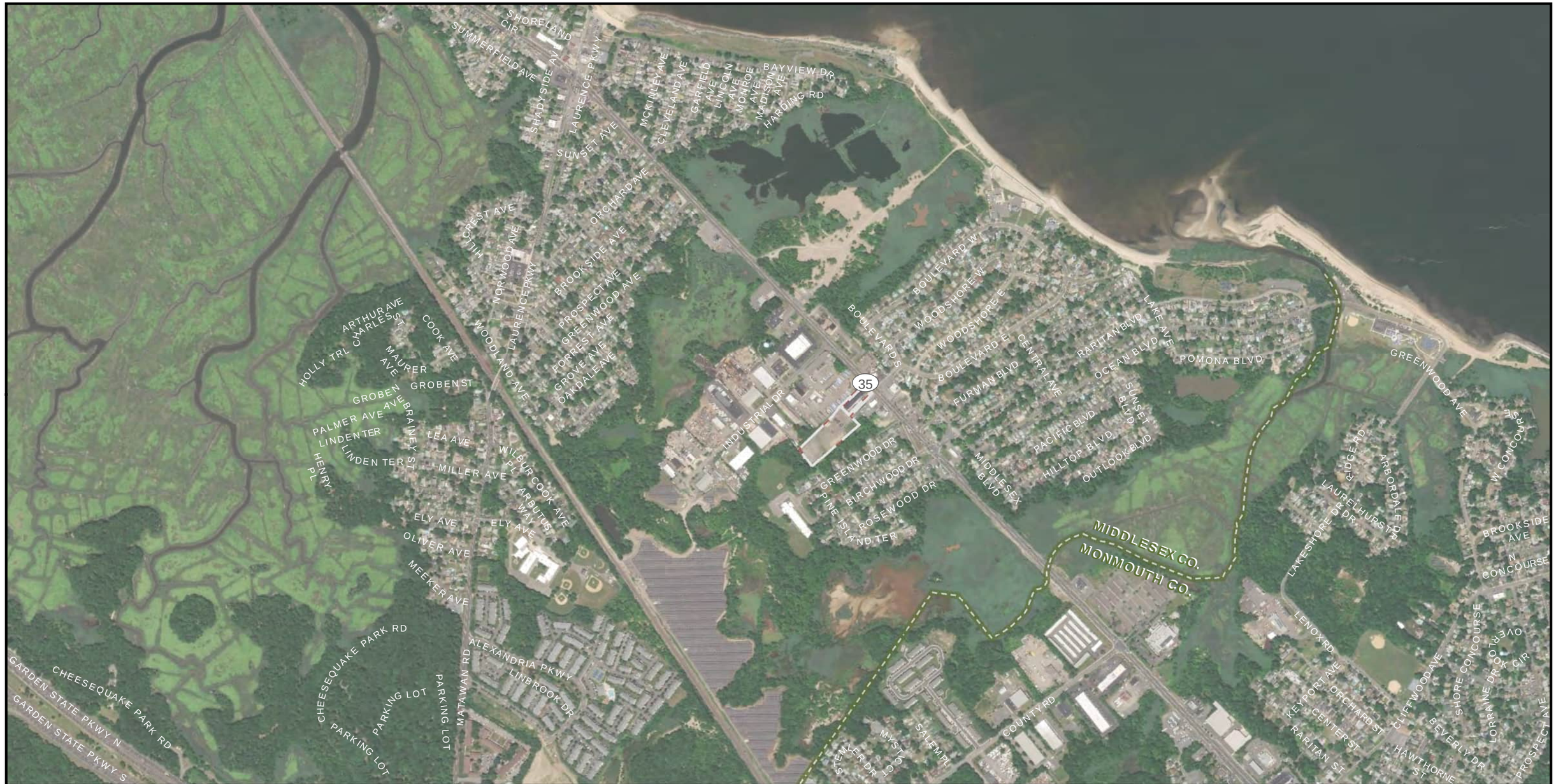
TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
LOCAL ROAD MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

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WO: 1000891	FIELD DATA: 8/6/2019	12:34 PM 8/6/2019	FIGURE 6

Data Sources: Williams 2017; E&E 2017; ESRI 2012

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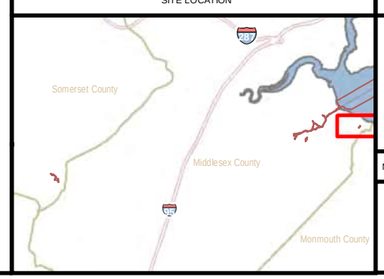
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- LOD
- Surveyed Areas
- County Boundary

0 500 1,000 1,500 2,000 Feet

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SITE LOCATION



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TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
LOCAL ROAD MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

DRAWN BY: CE	DATE: 8/6/2019	ISSUE FOR BID: N/A	SCALE: 1:10,170
CHECKED BY: MK	DATE: 8/6/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver23
APPROVED BY:	DATE:	DRAWING NUMBER:	SHEET 3 of 4
WO: 1000891	FIELD DATA: 8/6/2019	12:35 PM 8/6/2019	FIGURE 6

Data Sources: Williams 2017; E&E 2017; ESRI 2012

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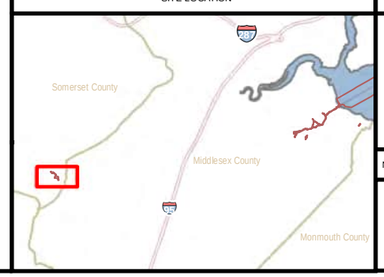
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- LOD
- Surveyed Areas
- County Boundary

0 500 1,000 1,500 2,000 Feet

N

SITE LOCATION



DRAWING NO.

REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	8/6/2019	CE	ISSUED FOR NJ WETLAND DELINEATION REPORT REFERENCE	1000891	MK	

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
LOCAL ROAD MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

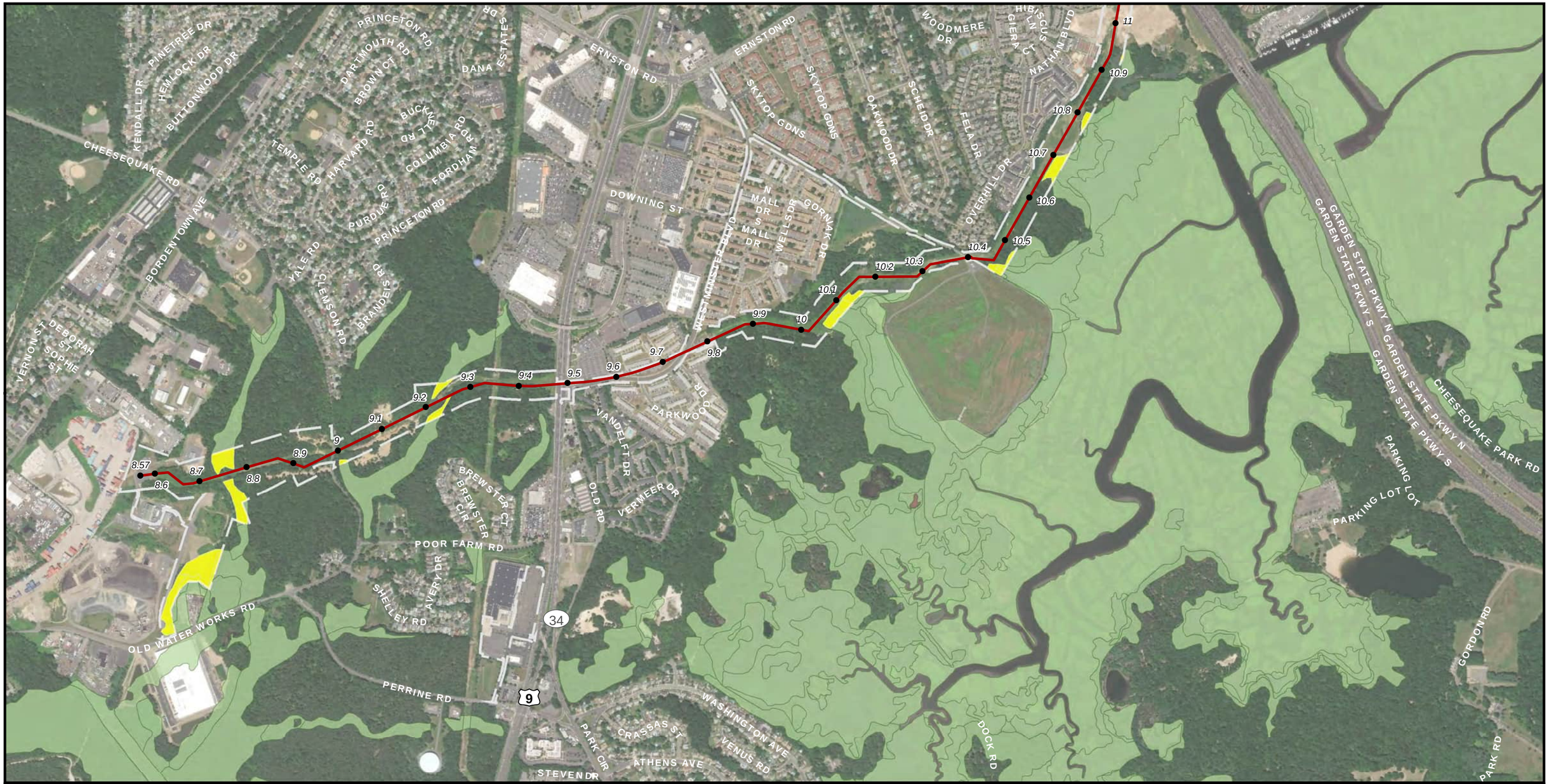
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CHECKED BY: MK	DATE: 8/6/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver23
APPROVED BY:	DATE:	DRAWING NUMBER:	FIGURE 6
WO: 1000891	FIELD DATA: 8/6/2019	12:35 PM 8/6/2019	SHEET 4 of 4

Data Sources: Williams 2017; E&E 2017; ESRI 2012

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7 Land Use / Land Cover Wetland Maps

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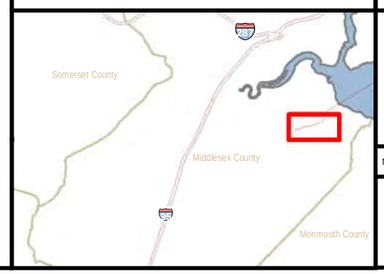
- Milepost
- Madison Loop
- Surveyed Areas
- LULC Wetlands within Survey Corridor
- LULC Wetlands
- County Boundary

0 500 1,000 1,500 2,000

Feet

N

SITE LOCATION



DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	8/6/2019	CE	ISSUED FOR NJ WETLAND DELINEATION REPORT REFERENCE	1000891	MK	

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
LAND USE/LAND COVER WETLAND MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

DRAWN BY: CE	DATE: 8/6/2019	ISSUE FOR BID: N/A	SCALE: 1:12,425
CHECKED BY: MK	DATE: 8/6/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver23
APPROVED BY:	DATE:		
WO: 1000891	FIELD DATA: 8/6/2019	DRAWING NUMBER: 12:46 PM 8/6/2019	FIGURE 7 — SHEET 1 of 2

Data Sources: NJ DEP 2012; Williams 2017; E&E 2017; ESRI 2012

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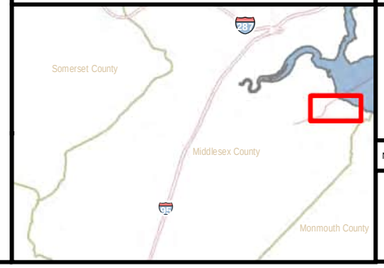
- Milepost
- Madison Loop
- Surveyed Areas
- LULC Wetlands within Survey Corridor
- LULC Wetlands
- County Boundary

0 500 1,000 1,500 2,000

Feet

N

SITE LOCATION



DRAWING NO.	REFERENCE TITLE

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
LAND USE/LAND COVER WETLAND MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	8/6/2019	CE	ISSUED FOR NJ WETLAND DELINEATION REPORT REFERENCE	1000891	MK	

DRAWN BY: CE	DATE: 8/6/2019	ISSUE FOR BID: N/A	SCALE: 1:12,425
CHECKED BY: MK	DATE: 8/6/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver23
APPROVED BY:	DATE:	DRAWING NUMBER: FIGURE 7	SHEET 2 of 2
WO: 1000891	FIELD DATA: 8/6/2019	12:47 PM 8/6/2019	

Data Sources: NJ DEP 2012; Williams 2017; E&E 2017; ESRI 2012

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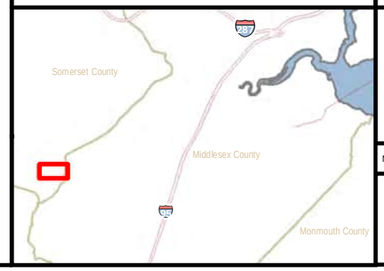
- Surveyed Areas
- LULC Wetlands within Survey Corridor
- LULC Wetlands
- County Boundary

0 500 1,000 1,500 2,000

Feet

N

SITE LOCATION



DRAWING NO.	REFERENCE TITLE

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.
A	8/6/2019	CE	ISSUED FOR NJ WETLAND DELINEATION REPORT REFERENCE	1000891	MK	

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
LAND USE/LAND COVER WETLAND MAP
RARITAN BAY LOOP, MADISON LOOP AND COMPRESSOR STATION 206
NORTHEAST SUPPLY ENHANCEMENT PROJECT (NESE)
NEW JERSEY

Williams

DRAWN BY: CE	DATE: 8/6/2019	ISSUE FOR BID: N/A	SCALE: 1:6,935
CHECKED BY: MK	DATE: 8/6/2019	ISSUE FOR CONSTRUCTION: N/A	Project features ver23
APPROVED BY:	DATE:	DRAWING NUMBER: FIGURE 7	SHEET 3 of 2
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Data Sources: NJ DEP 2012; Williams 2017; E&E 2017; ESRI 2012

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8 Wetlands Data Packages

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8A. Wetland Tables

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Wetlands Delineated within the Madison Loop Study Area

Wetland ID	Datasheet ID	Milepost	Latitude Longitude	Township/ County	USGS Quad	Acreage[1]	Cowardin Class[2]	HUC-14 Subwatershed	Datasheet Completed[3]	Hydrology Indicator	Hydrophytic Vegetation Indicator	Hydric Soil Indicator	Wetland Description	Category 1[4]	EPA Priority[5]	Potential Vernal	Ditch/ Swale/ Isolated	Resource Value (feet)
W-T01-001	A-1	8.57	40.443181 -74.316246	Old Bridge/ Middlesex	South Amboy	0.06	PEM	02030105160060 (Tennent Brook)	1989	Soil saturation, Water marks, Drift lines, Sediment deposits, Water-stained leaves, Surface scouring, Drainage patterns, Hydric soils	>50 percent dominant, Percent cover, Prevalence index	Aquic or peraquic moisture regime, Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles)	Small isolated PEM in depression in former detention basin. Currently impounded by fill and grading.	FW2-NT	None	Yes	Isolated	0
W-T01-005	A-1	8.57	40.442020 -74.316683	Old Bridge/ Middlesex	South Amboy	0.03	PEM	02030105160060 (Tennent Brook)	1989	Sediment deposits, Water-stained leaves, Drainage patterns	>50 percent dominant, Percent cover, Prevalence index	Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles)	Small depressional PEM that extends outside the study area.	FW2-NT	None	Yes	Isolated	0
W-T01-004	A-1	8.57	40.441920 -74.316479	Old Bridge/ Middlesex	South Amboy	0.00	PEM	02030105160060 (Tennent Brook)	1989	Water-stained leaves, Hydric soils	>50 percent dominant, Percent cover, Prevalence index	Low-chroma soils (chroma ≤1)	Small isolated depressional PEM that extends outside the study area. Area is periodically disturbed due to location by compressor station and easements.	FW2-NT	None	Yes	Isolated	0
W-T01-002	A-1	8.60	40.442122 -74.315516	Old Bridge/ Middlesex	South Amboy	0.04	PEM	02030105160060 (Tennent Brook)	1989	Soil saturation, Oxidized root channels, Water marks, Drift lines, Sediment deposits, Water-stained leaves, Surface scouring, Drainage patterns, Hydric soils	>50 percent dominant, Percent cover, Prevalence index	Aquic or peraquic moisture regime, Low-chroma/mottled soils (chroma ≤2 with mottles)	Small PEM section of wetland on slope partially within existing ROW that extends outside the study area. The wetland is fed by stream WW-T01-001, and drains to WW-T01-002B outside the study area.	FW2-NT	None	No	No	50
	B-1	8.58	40.441994 -74.315861	Old Bridge/ Middlesex	South Amboy	0.01	PSS	02030105160060 (Tennent Brook)	1989	Drift lines, Sediment deposits, Water-stained leaves, Surface scouring, Drainage patterns, Hydric soils	>50 percent dominant, Percent cover, Prevalence index	Gleyed soils	Small PSS section of wetland at the edge of the existing ROW. The wetland is fed by stream WW-T01-001, and drains to WW-T01-002B outside the study area.	FW2-NT	None	No	No	50
W-T01-008	A-1	8.61	40.442377 -74.315306	Old Bridge/ Middlesex	South Amboy	0.01	PEM	02030105160060 (Tennent Brook)	1989	Water-stained leaves, Hydric soils	>50 percent dominant, Percent cover, Prevalence index	Low-chroma/mottled soils (chroma ≤2 with mottles)	Small depressional PEM in existing mowed ROW. Adjacent to stream WW-T01-001.	FW2-NT	None	Yes	None	50

Wetlands Delineated within the Madison Loop Study Area

Wetland ID	Datasheet ID	Milepost	Latitude Longitude	Township/ County	USGS Quad	Acreage[1]	Cowardin Class[2]	HUC-14 Subwatershed	Datasheet Completed[3]	Hydrology Indicator	Hydrophytic Vegetation Indicator	Hydric Soil Indicator	Wetland Description	Category 1[4]	EPA Priority[5]	Potential Vernal	Ditch/ Swale/ Isolated	Resource Value (feet)
W-T01-007	A-1	8.71	40.442167 -74.313560	Old Bridge/ Middlesex	South Amboy	0.02	PEM	02030105160060 (Tennent Brook)	1989	Sediment deposits, Water-stained leaves, Surface scouring, Drainage patterns	>50 percent dominant, Percent cover, Prevalence index	Aquic or peraquic moisture regime, Gleyed soils, Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles)	Small riverine PEM at the edge of the existing ROW. Abutting stream WW-T01-002B.	FW2-NT	None	No	Ditch	50
	C-1	8.69	40.442118 -74.313638	Old Bridge/ Middlesex	South Amboy	0.19	PFO	02030105160060 (Tennent Brook)	1989	Soil saturation, Drift lines, Surface scouring, Drainage patterns	>50 percent dominant, Percent cover, Prevalence index	Low-chroma soils (chroma ≤1)	Small long narrow riverine PFO section of wetland in a man-made drainage ditch. Abutting stream WW-T01-002B.	FW2-NT	None	No	Ditch	50
W-T01-006	A-1	8.70	40.442291 -74.313965	Old Bridge/ Middlesex	South Amboy	0.01	PEM	02030105160060 (Tennent Brook)	1989	Ground inundation, Soil saturation, Drift lines, Sediment deposits, Water-stained leaves, Surface scouring, Drainage patterns, Hydric soils	>50 percent dominant, Percent cover, Prevalence index	Organic soils (histosols), Sulfidic material/odor, Reducing soil conditions	Small slope PEM in an existing access road to the existing ROW. Adjacent to stream WW-T01-002B.	FW2-NT	None	No	None	0
W-T01-003	A-1	8.77	40.442320 -74.312926	Old Bridge/ Middlesex	South Amboy	0.21	PEM	02030105160060 (Tennent Brook)	1989	Water marks, Drift lines, Sediment deposits, Drainage patterns	>50 percent dominant, Percent cover, Prevalence index	Low-chroma/mottled soils (chroma ≤2 with mottles)	Small slope PEM section of wetland in existing ROW. Abutting stream WW-T01-002.	FW2-NT	None	No	None	50
	C-1	8.75	40.442680 -74.313180	Old Bridge/ Middlesex	South Amboy	0.87	PFO	02030105160060 (Tennent Brook)	1989	Ground inundation, Soil saturation, Water marks, Drift lines, Water-stained leaves, Drainage patterns	>50 percent dominant, Percent cover, Prevalence index	Aquic or peraquic moisture regime, Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles), High organic content in surface horizon	Medium slope PFO section of wetland outside of existing ROW. Abutting stream WW-T01-002.	FW2-NT	None	No	None	50
W-T15-001	A-1	8.73	40.441484 -74.313145	Old Bridge/ Middlesex	South Amboy	0.36	PEM	02030105160060 (Tennent Brook)	1989	Ground inundation, Water-stained leaves, Drainage patterns	>50 percent dominant, Percent cover, Prevalence index	Other	Small depressional PEM at the edge of a current construction zone. Adjacent to WW-T15-001.	FW2-NT	None	No	None	50
W-T17-002	A-3	8.69	40.440982 -74.313818	Old Bridge/ Middlesex	South Amboy	0.20	PEM	02030105160060 (Tennent Brook)	1989	Ground inundation, Soil saturation, Drainage patterns, Hydric soils	>50 percent dominant, Percent cover, Prevalence index	Other	Small slope PEM in previously heavily impacted area with fill piles surrounding the wetland. Adjacent to WW-T15-001.	FW2-NT	None	Yes	Swale	0

Wetlands Delineated within the Madison Loop Study Area

Wetland ID	Datasheet ID	Milepost	Latitude Longitude	Township/ County	USGS Quad	Acreage[1]	Cowardin Class[2]	HUC-14 Subwatershed	Datasheet Completed[3]	Hydrology Indicator	Hydrophytic Vegetation Indicator	Hydric Soil Indicator	Wetland Description	Category 1[4]	EPA Priority[5]	Potential Vernal	Ditch/ Swale/ Isolated	Resource Value (feet)
W-T01-009	A-1	8.90	40.442891 -74.310315	Old Bridge/ Middlesex	South Amboy	0.16	PEM	02030105160060 (Tennent Brook)	1989	Sediment deposits, Water-stained leaves	>50 percent dominant, Percent cover, Prevalence index	Other	Small isolated depressional PEM within existing ROW. Significantly influenced by surrounding grading and excavation activities in ROW.	FW2-NT	None	Yes	Isolated	50
W-T01-010	C-1	8.96	40.442874 -74.309151	Old Bridge/ Middlesex	South Amboy	0.03	PFO	02030105160060 (Tennent Brook)	1989	Sediment deposits, Water-stained leaves, Surface scouring	>50 percent dominant, Percent cover, Prevalence index	Reducing soil conditions, Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles)	Small isolated depressional PFO wetland at the edge of the existing ROW.	FW2-NT	None	Yes	Isolated	50
W-T15-003	A-1	9.23	40.443790 -74.306093	Old Bridge/ Middlesex	South Amboy	0.81	PEM	02030105160060 (Tennent Brook)	1989	Oxidized root channels, Water-stained leaves	>50 percent dominant, Percent cover, Prevalence index	Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles)	Medium slope PEM section of wetland in existing ROW in valley bottom created when original pipeline was installed. Abutting streams WW-T015-004A, WW-T15-004B, and WW-T15-005. Adjacent to streams WW-T15-004, WW-T15-002, and WW-T15-002A.	FW2-NT	None	No	None	50
	A-2	9.20	40.444166 -74.304999	Old Bridge/ Middlesex	South Amboy	(same as A-1)	PEM	02030105160060 (Tennent Brook)	1989	Oxidized root channels, Water-stained leaves, Drainage patterns	>50 percent dominant, Percent cover, Prevalence index	Low-chroma/mottled soils (chroma ≤2 with mottles)	Secondary PEM pit describing characteristics of wetland.	FW2-NT	None	No	None	50
	A-3	9.23	40.444942 -74.304065	Old Bridge/ Middlesex	South Amboy	(same as A-1)	PEM	02030105160060 (Tennent Brook)	1989	Soil saturation, Oxidized root channels, Water-stained leaves, Drainage patterns	>50 percent dominant, Percent cover, Prevalence index	Low-chroma/mottled soils (chroma ≤2 with mottles)	Tertiary PEM pit describing characteristics of wetland.	FW2-NT	None	No	None	50
	C-1	9.24	40.444779 -74.304540	Old Bridge/ Middlesex	South Amboy	0.05	PFO	02030105160060 (Tennent Brook)	1989	Soil saturation, Surface scouring, Drainage patterns	>50 percent dominant, Percent cover, Prevalence index	Sulfidic material/odor, Organic streaking in subsurface horizons	Small slope PFO section of wetland within the banks of stream WW-T15-004B.	FW2-NT	None	No	None	50
W-T15-002	A-1	9.32	40.445148 -74.303089	Old Bridge/ Middlesex	South Amboy	0.03	PEM	02030105160060 (Tennent Brook)	1989	Water-stained leaves, Drainage patterns	>50 percent dominant, Percent cover, Prevalence index	Low-chroma/mottled soils (chroma ≤2 with mottles)	Small depressional PEM in ROW in previously heavily impacted area. Adjacent to WW-T15-005.	FW2-NT	None	No	None	0
W-T01-014/ W-T15-004	W-T01-014A-1	10.19	40.448036 -74.286892	Old Bridge/ Middlesex	South Amboy	1.82	PEM	02030104060010 (Cheesequake Creek/Whale Creek)	1989	Drift deposits, Drainage patterns,	>50 percent dominant, Percent cover, Prevalence index	Low-chroma/mottled soils (chroma ≤2 with mottles)	Large depressional PEM section of wetland partially within the existing ROW that extends outside study area. Abutting stream WW-T01-004.	FW2-NT	None	No	None	50
	W-T01-014B-1	10.11	40.447883 -74.286945	Old Bridge/ Middlesex	South Amboy	1.02	PSS	02030104060010 (Cheesequake Creek/Whale Creek)	1989	Soil saturation, Water-stained leaves, Drainage patterns,	>50 percent dominant, Percent cover, Prevalence index	Aquic or peraquic moisture regime	Large depressional PSS section of wetland that extends outside study area. Abutting stream WW-T01-004.	FW2-NT	None	No	None	50

Wetlands Delineated within the Madison Loop Study Area

Wetland ID	Datasheet ID	Milepost	Latitude Longitude	Township/ County	USGS Quad	Acreage[1]	Cowardin Class[2]	HUC-14 Subwatershed	Datasheet Completed[3]	Hydrology Indicator	Hydrophytic Vegetation Indicator	Hydric Soil Indicator	Wetland Description	Category 1[4]	EPA Priority[5]	Potential Vernal	Ditch/ Swale/ Isolated	Resource Value (feet)
	W-T01-014C-1	10.15	40.44783 -74.288782	Old Bridge/ Middlesex	South Amboy	0.34	PFO	02030104060010 (Cheesequake Creek/Whale Creek)	1989	Soil saturation, Water marks, Sediment deposits, Drift deposits, Water-stained leaves, Drainage patterns,	>50 percent dominant, Percent cover, Prevalence index	Low-chroma/mottled soils (chroma ≤2 with mottles)	Small depressional PFO section of wetland that extends outside study area. Abutting stream WW-T01-004.	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	None	50
	W-T15-004C-1	10.05	40.446852 -74.290030	Old Bridge/ Middlesex	South Amboy	0.01	PEM	02030104060010 (Cheesequake Creek/Whale Creek)	1989	Soil saturation, Oxidized root channels	>50 percent dominant, Percent cover, Prevalence index	Low-chroma/mottled soils (chroma ≤2 with mottles)	Small riverine (storm water outlet) PFO section of wetland in a small valley. Abutting stream WW-T01-004.	FW2-NT	Raritan Bay Estuary Wetlands	No	Swale	50
W-T01-015	A-1	10.17	40.447878 -74.288813	Old Bridge/ Middlesex	South Amboy	0.02	PEM	02030104060010 (Cheesequake Creek/Whale Creek)	1989	Surface water, Saturation, Water marks, Sediment deposits, Drift deposits, Drainage patterns, Dry-season water table, FAC-neutral test	Rapid test, Dominance test, Prevalence index	Sandy redox	Small slope PEM wetland between man-made soil piles. Appears isolated.	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	Ditch	0
W-T01-016	D-1	10.45	40.448318 -74.282903	Sayreville/ Middlesex	South Amboy	0.12	E2EM	02030104060010 (Cheesequake Creek/Whale Creek)	AGCP	Drainage patterns, Saturation visible on aerial imagery, Geomorphic position, FAC-neutral test	Dominance test, Prevalence index	Depleted matrix, Redox dark surface	Small slope E2EM wetland that is mapped as a NWI E2SS/E2EM wetland. Wetland continues outside study area. Wetland is located above coastal wetlands as mapped pursuant to the NJ Wetlands Act of 1970 and is regulated as freshwater wetland pursuant to the NJ Freshwater Wetlands Protection Act (FWPA) Rules. Wetland is also located within 1000 ft. of the MHWL and is subject to USACE jurisdiction (Attachment 3).	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	None	50
W-T01-012	D-1	10.69	40.451389 -74.280608	Sayreville/ Middlesex	South Amboy	0.28	E2EM	02030104060010 (Cheesequake Creek/Whale Creek)	AGCP	High water table, Saturation, Water marks, Water-stained leaves, Hydrogen sulfide odor, Oxidized rhizospheres along living roots, FAC-neutral test	Rapid test, Dominance test, Prevalence index	Hydrogen sulfide, Depleted matrix	Small estuarine fringe E2EM Phragmites dominated wetland at the base of Landfill slope. A portion of this wetland is located above coastal wetlands as mapped pursuant to the NJ Wetlands Act of 1970 and is regulated as freshwater wetland pursuant to the NJ Freshwater Wetlands Protection Act (FWPA) Rules. A second portion is a coastal wetland. Wetland is also located within 1000 ft. of the MHWL and is subject to USACE jurisdiction (Attachment 3).	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	None	50

Wetlands Delineated within the Madison Loop Study Area

Wetland ID	Datasheet ID	Milepost	Latitude Longitude	Township/ County	USGS Quad	Acreage[1]	Cowardin Class[2]	HUC-14 Subwatershed	Datasheet Completed[3]	Hydrology Indicator	Hydrophytic Vegetation Indicator	Hydric Soil Indicator	Wetland Description	Category 1[4]	EPA Priority[5]	Potential Vernal	Ditch/ Swale/ Isolated	Resource Value (feet)
W-T01-013	C-1	10.72	40.451617 -74.280062	Sayreville/ Middlesex	South Amboy	0.00	PFO	02030104060010 (Cheesequake Creek/Whale Creek)	AGCP	Surface water, Drift deposits, Water-strained leaves, Oxidized rhizospheres along living roots, FAC-neutral test	Dominance test, Prevalence index	Other	Very small estuarine fringe PFO wetland by the end of a culverted stream. Wetland is located above coastal wetlands as mapped pursuant to the NJ Wetlands Act of 1970 and is regulated as freshwater wetland pursuant to the NJ Freshwater Wetlands Protection Act (FWPA) Rules. Wetland is also located within 1000 ft. of the MHWL and is subject to USACE jurisdiction (Attachment 3).	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	None	N/A (located below NJ Coastal Wetland Mapping Line)
W-T01-011	A-1	10.74	40.452466 -74.279835	Sayreville/ Middlesex	South Amboy	1.99	PEM	02030104060010 (Cheesequake Creek/Whale Creek)	AGCP	Water marks, Sediment deposits, Drift deposits, Oxidized rhizospheres along living roots, Drainage patterns, Geomorphic position, FAC-neutral test	Dominance test, Prevalence index	Other	Large depressional PEM wetland designed as a stormwater retention basin partially within the existing ROW. Wetland is a detention basin with man-made berm and concrete lined channels. A portion of this wetland is located above coastal wetlands as mapped pursuant to the NJ Wetlands Act of 1970 and is regulated as freshwater wetland pursuant to the NJ Freshwater Wetlands Protection Act (FWPA) Rules. A second portion is a coastal wetland. Wetland is also located within 1000 ft. of the MHWL and is subject to USACE jurisdiction (Attachment 3).	FW2-NT	Raritan Bay Estuary Wetlands	No	None	50
W-T07-001	C-1	10.87	40.453424 -74.278809	Sayreville/ Middlesex	South Amboy	0.14	PFO	02030104060010 (Cheesequake Creek/Whale Creek)	AGCP	Saturation, Sediment deposits, Water-stained leaves, FAC-neutral test	Dominance test, Prevalence index	Depleted below dark surface, Depleted matrix	Small estuarine fringe PFO section of wetland at the bottom of a bluff. A portion of this wetland is located above coastal wetlands as mapped pursuant to the NJ Wetlands Act of 1970 and is regulated as freshwater wetland pursuant to the NJ Freshwater Wetlands Protection Act (FWPA) Rules. A second portion is a coastal wetland. Wetland is also located within 1000 ft. of the MHWL and is subject to USACE jurisdiction (Attachment 3).	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	None	50
	D-1	10.92	40.454499 -74.278252	Sayreville/ Middlesex	South Amboy	0.45	E2EM	02030104060010 (Cheesequake Creek/Whale Creek)	AGCP	Saturation, Geomorphic position, FAC-neutral test	Rapid test, Dominance test, Prevalence index	Depleted matrix	Small estuarine fringe E2EM section of wetland at base of bluff. A portion of this wetland is located above coastal wetlands as mapped pursuant to the NJ Wetlands Act of 1970 and is regulated as freshwater wetland pursuant to the NJ Freshwater Wetlands Protection Act (FWPA) Rules. A second portion is a coastal wetland. Wetland is also located within 1000 ft. of the MHWL and is subject to USACE jurisdiction (Attachment 3).	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	None	50

Wetlands Delineated within the Madison Loop Study Area

Wetland ID	Datasheet ID	Milepost	Latitude Longitude	Township/ County	USGS Quad	Acreage[1]	Cowardin Class[2]	HUC-14 Subwatershed	Datasheet Completed[3]	Hydrology Indicator	Hydrophytic Vegetation Indicator	Hydric Soil Indicator	Wetland Description	Category 1[4]	EPA Priority[5]	Potential Vernal	Ditch/ Swale/ Isolated	Resource Value (feet)
W-T07-002	A-1	10.94	40.454681 -74.278418	Sayreville/ Middlesex	South Amboy	0.01	PEM	02030104060010 (Cheesequake Creek/Whale Creek)	AGCP	Water marks, Sediment deposits, Drift deposits, Presence of reduced iron, Surface soil cracks, Drainage patterns, FAC-neutral test	Rapid test, Dominance test, Prevalence index	Depleted matrix	Small depressional PEM wetland within existing ROW. Wetland is located above coastal wetlands as mapped pursuant to the NJ Wetlands Act of 1970 and is regulated as freshwater wetland pursuant to the NJ Freshwater Wetlands Protection Act (FWPA) Rules. Wetland is also located within 1000 ft. of the MHWL and is subject to USACE jurisdiction (Attachment 3).	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	None	0
W-T07-003	A-1	11.36	40.458658 -74.275481	Sayreville/ Middlesex	South Amboy	0.95	PEM	02030104060010 (Cheesequake Creek/Whale Creek)	AGCP	Surface water, High water table, Saturation, Iron deposits, Water-stained leaves, Hydrogen sulfide odor, Oxidized rhizospheres along living roots, Thin muck surface, Drainage patterns, Saturation visible on aerial imagery, Geomorphic position, FAC-Neutral test	Dominance test, Prevalence index	Hydrogen sulfide	Medium riverine PEM along an excavated ditch and within the existing ROW. Abutting WW-T07-001 along the ditch. Wetland is located above coastal wetlands as mapped pursuant to the NJ Wetlands Act of 1970 and is regulated as freshwater wetland pursuant to the NJ Freshwater Wetlands Protection Act (FWPA) Rules. Wetland is also located within 1000 ft. of the MHWL and is subject to USACE jurisdiction (Attachment 3).Portion of wetland along ditch (WW-T07-001) up gradient of the road likely functions as a tidal wetland, despite the culvert, on extreme tidal events.	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	Ditch	50
	B-1	11.39	40.459783 -74.274719	Sayreville/ Middlesex	South Amboy	0.30	PSS	02030104060010 (Cheesequake Creek/Whale Creek)	AGCP	Water-stained leaves, Oxidized rhizospheres along living roots, Drainage patterns, Geomorphic position, FAC-neutral test	Dominance test, Prevalence index	Depleted matrix	Small riverine/depressional PSS within the existing ROW. Abutting WW-T07-001. Wetland is located above coastal wetlands as mapped pursuant to the NJ Wetlands Act of 1970 and is regulated as freshwater wetland pursuant to the NJ Freshwater Wetlands Protection Act (FWPA) Rules. Wetland is also located within 1000 ft. of the MHWL and is subject to USACE jurisdiction (Attachment 3).	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	None	50
W-T07-004	D-1	11.49	40.461398 -74.270833	Sayreville/ Middlesex	South Amboy	5.60	E2EM	02030104060010 (Cheesequake Creek/Whale Creek)	AGCP	Presence of reduced iron, Surface soil cracks, Saturation visible on aerial imagery, Geomorphic position, FAC-neutral test	Rapid test, Dominance test, Prevalence index	Depleted matrix, Redox dark surface	Very large estuarine fringe wetland partially within the existing ROW and extends outside the study area. Wetland is located as a coastal wetlands as mapped pursuant to the NJ Wetlands Act of 1970 (Attachment 3).	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	None	150

Wetlands Delineated within the Madison Loop Study Area

Wetland ID	Datasheet ID	Milepost	Latitude Longitude	Township/ County	USGS Quad	Acreage[1]	Cowardin Class[2]	HUC-14 Subwatershed	Datasheet Completed[3]	Hydrology Indicator	Hydrophytic Vegetation Indicator	Hydric Soil Indicator	Wetland Description	Category 1[4]	EPA Priority[5]	Potential Vernal	Ditch/ Swale/ Isolated	Resource Value (feet)
W-T01-017	A-1	11.77	40.462413 -74.267965	Sayreville/ Middlesex	South Amboy	0.44	PEM	02030104060010 (Cheesequake Creek/Whale Creek)	AGCP	Saturation, Sediment deposits, FAC-neutral test	Rapid test, Dominance test, Prevalence index	Depleted matrix	Small estuarine fringe PEM section of wetland along Marina fill limit and storm water outlet partially within existing ROW. A portion of this wetland is located above coastal wetlands as mapped pursuant to the NJ Wetlands Act of 1970 and is regulated as freshwater wetland pursuant to the NJ Freshwater Wetlands Protection Act (FWPA) Rules. A second portion is a coastal wetland. Wetland is also located within 1000 ft. of the MHWL and is subject to USACE jurisdiction (Attachment 3). This portion of the wetland is not tidally influenced due to fill and an embankment.	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	None	50
	D-1	11.83	40.461453 -74.270133	Sayreville/ Middlesex	South Amboy	0.67	E2EM	02030104060010 (Cheesequake Creek/Whale Creek)	AGCP	High water table, Saturation, Drift deposits, Hydrogen sulfide odor, FAC-neutral test	Rapid test, Dominance test, Prevalence index	Hydrogen sulfide, Redox dark surface	Multi-part tidal wetland. Medium size estuarine fringe (E2EM) section of wetland that extends around the marina as well as outside the study area to the east of Cheesequake Creek. A portion of this wetland is located above coastal wetlands as mapped pursuant to the NJ Wetlands Act of 1970 and is regulated as freshwater wetland pursuant to the NJ Freshwater Wetlands Protection Act (FWPA) Rules. A second portion is a coastal wetland. Wetland is also located within 1000 ft. of the MHWL and is subject to USACE jurisdiction (Attachment 3).	FW2-NT/ SE-1	Raritan Bay Estuary Wetlands	No	None	150

[1] Acreages less than 0.01 acre may show as 0.00 due to rounding.

[2] Cowardin et al. (1979) wetland classifications: PEM = palustrine emergent wetland; PSS = palustrine scrub-shrub wetland; PFO = palustrine forested wetland; E2EM = estuarine intertidal emergent wetland; UPL = Upland.

[3] Datasheets completed based on position relative to the Upper Wetland Boundary limit. 1989 = Routine Data Form under the 1989 Federal Interagency Delineation Manual, AGCP= Jurisdictional Field Data Sheet under the 1987 Manual and Atlantic Gulf Coastal Plain (AGCP) Regional Supplement

[4] FW2-NT: Freshwater non-trout waters; SE-1: saline waters of estuaries (http://www.nj.gov/dep/rules/rules/njac7_9b.pdf)

(c) In all FW2 waters the designated uses are:
1. Maintenance, migration and propagation of the natural and established biota;
2. Primary contact recreation;
3. Industrial and agricultural water supply;
4. Public potable water supply after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection; and
5. Any other reasonable uses.

(d) In all SE-1 waters the designated uses are:
1. Shellfish harvesting in accordance with N.J.A.C. 7:12;
2. Maintenance, migration and propagation of the natural and established biota;
3. Primary contact recreation; and
4. Any other reasonable uses.

[5] http://www.nj.gov/dep/landuse/download/fw_017.pdf

Wetlands Delineated within the Compressor Station 206 Study Area

Wetland ID	Datasheet ID	Milepost	Latitude Longitude	Township/ County	USGS Quad	Acreage[1]	Cowardin Class[2]	HUC-14 Subwatershed	Datasheet Completed[3]	Hydrology Indicator	Hydrophytic Vegetation Indicator	Hydric Soil Indicator	Wetland Description	Category 1[4]	EPA Priority[4]	Potential Vernal	Ditch/ Swale/ Isolated	Resource Value (feet)
W-T09-001	A-1	CS 206	40.404009 -74.595487	Franklin/ Somerset	Monmouth Junction	4.65	PEM	02030105110010 (Heathcote Brook), 02030105110030 (Millstone River)	1989	Ground inundation, Soil saturation, Aerial photography	>50 percent dominant, Percent cover, Prevalence index	Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles)	Large slope (i.e., slope HGM class that is groundwater dominated) PEM section of wetland partially within existing ROW. Wetland extends beyond study area. Abutting streams WW-T09-001 and WW-T09-002.	FW2-NT	None	No	None	50
	C-1	CS 206	40.402262 -74.595222	Franklin/ Somerset	Monmouth Junction	18.16	PFO	02030105110030 (Millstone River)	1989	Sediment deposits, Water-stained leaves, Surface scouring	>50 percent dominant, Percent cover, Prevalence index	Reducing soil conditions, Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles)	Very large and topographically controlled slope (i.e., slope HGM class that is groundwater dominated) PFO section of wetland partially within existing ROW. Wetland extends beyond study area. Abutting streams WW-T09-001 and WW-T09-002.	FW2-NT	None	No	None	150
W-T09-002	A-1	CS 206	40.402653 -74.602693	Franklin/ Somerset	Monmouth Junction	2.10	PEM	02030105110030 (Millstone River)	1989	Oxidized root channels, Water-stained leaves, Surface scouring, Drainage patterns, Morphological adaptations	>50 percent dominant, Percent cover, Prevalence index	Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles), Mg or Fe concretions	Small depressional PEM section of wetland partially within existing dirt road and hay field. Wetland extends outside study area. Adjacent to stream WW-T13-002 outside study area.	FW2-NT	None	No	None	50
	B-1	CS 206	40.402851 -74.603535	Franklin/ Somerset	Monmouth Junction	0.66	PSS	02030105110030 (Millstone River)	1989	Oxidized root channels, Water marks, Water-stained leaves, Drainage patterns	>50 percent dominant, Percent cover, Prevalence index	Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles), Mg or Fe concretions	Small depressional PSS section of wetland. Wetland extends outside study area. Adjacent to stream WW-T13-002 outside study area.	FW2-NT	None	No	None	50
	C-1	CS 206	40.404077 -74.609217	Franklin/ Somerset	Monmouth Junction	5.24	PFO	02030105110030 (Millstone River)	1989	Drift lines, Sediment deposits, Water-stained leaves, Surface scouring, Drainage patterns, Morphological plant adaptations	>50 percent dominant, Percent cover, Prevalence index	Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles)	Large depressional and slope PFO section of wetland partially within existing access road. Wetland extends outside study area. Abutting streams WW-T13-001 and WW-T13-002.	FW2-NT	None	No	None	150

Wetlands Delineated within the Compressor Station 206 Study Area

Wetland ID	Datasheet ID	Milepost	Latitude Longitude	Township/ County	USGS Quad	Acreage[1]	Cowardin Class[2]	HUC-14 Subwatershed	Datasheet Completed[3]	Hydrology Indicator	Hydrophytic Vegetation Indicator	Hydric Soil Indicator	Wetland Description	Category 1[4]	EPA Priority[4]	Potential Vernal	Ditch/ Swale/ Isolated	Resource Value (feet)
	C-2 [5]	CS 206	40.401627 -74.600905	Franklin/ Somerset	Monmouth Junction	0.57	PFO	02030105110030 (Millstone River)	See C-1	Drift lines, Sediment deposits, Water-stained leaves, Surface scouring, Drainage patterns, Morphological plant adaptations	Drift lines, Sediment deposits, Water-stained leaves, Surface scouring, Drainage patterns, Morphological plant adaptations	Drift lines, Sediment deposits, Water-stained leaves, Surface scouring, Drainage patterns, Morphological plant adaptations	Large depressional/slope section of PFO wetland outside existing access road LOD. Wetland extends outside study area to the south.	FW2-NT	None	No	None	150
	C-3 [5]	CS 206	40.401322 -74.599758	Franklin/ Somerset	Monmouth Junction	0.25	PFO	02030105110030 (Millstone River)	See C-1	Drift lines, Sediment deposits, Water-stained leaves, Surface scouring, Drainage patterns, Morphological plant adaptations	Drift lines, Sediment deposits, Water-stained leaves, Surface scouring, Drainage patterns, Morphological plant adaptations	Drift lines, Sediment deposits, Water-stained leaves, Surface scouring, Drainage patterns, Morphological plant adaptations	Large depressional/slope section of PFO wetland outside existing access road LOD. Wetland extends outside study area to the south.	FW2-NT	None	No	None	150
W-T09-003	A-1	CS 206	40.402697 -74.600202	Franklin/ Somerset	Monmouth Junction	0.07	PEM	02030105110010 (Heathcote Brook)	1989	Drift lines, Surface scouring	>50 percent dominant, Percent cover, Prevalence index	Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles)	Small depressional PEM section of wetland created by construction and maintenance of access roads.	FW2-NT	None	Yes	Isolated	0
	C-1	CS 206	40.402763 -74.600132	Franklin/ Somerset	Monmouth Junction	0.12	PFO	02030105110010 (Heathcote Brook)	1989	Drift lines, Sediment deposits, Water-stained leaves, Morphological plant adaptations	>50 percent dominant, Percent cover, Prevalence index	Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles)	Small depressional PFO section of wetland created by construction and maintenance of access roads.	FW2-NT	None	Yes	Isolated	0
W-T08-001	A-1	CS 206	40.401161 -74.594693	Franklin/ Somerset	Monmouth Junction	0.23	PEM	02030105110010 (Heathcote Brook)	1989	Oxidized root channels	>50 percent dominant, Percent cover, Prevalence index	Low-chroma soils (chroma ≤1), Low-chroma/mottled soils (chroma ≤2 with mottles)	Small slope/depressional PEM within an existing ROW.	FW2-NT	None	No	None	50
W-T23-001	A-1	CS 206	40.40739 -74.602364	Franklin/ Somerset	Monmouth Junction	0.30	PEM	02030105110010 (Heathcote Brook)	1989	Oxidized root channels, water stained leaves, hydric soils	>50 percent dominant, Percent cover, Prevalence index	Low-chroma/mottled soils (chroma ≤2 with mottles)	Small depressional PEM wetland adjacent to and northwest of the EPA access road.	FW2-NT	None	No	None	50

Wetlands Delineated within the Compressor Station 206 Study Area

Wetland ID	Datasheet ID	Milepost	Latitude Longitude	Township/ County	USGS Quad	Acreage[1]	Cowardin Class[2]	HUC-14 Subwatershed	Datasheet Completed[3]	Hydrology Indicator	Hydrophytic Vegetation Indicator	Hydric Soil Indicator	Wetland Description	Category 1[4]	EPA Priority[4]	Potential Vernal	Ditch/ Swale/ Isolated	Resource Value (feet)
	C-1	CS 206	40.40742 -74.602301	Franklin/ Somerset	Monmouth Junction	0.02	PFO	02030105110010 (Heathcote Brook)	1989	Water marks, water-stained leaves, hydric soils	>50 percent dominant, Percent cover, Prevalence index	None – best professional judgement determination that fill layer perching water table	Small depressional PFO wetland adjacent to and North of the EPA access road.	FW2-NT	None	No	None	150
W-T23-002	A-1	CS 206	40.40623 -74.601056	Franklin/ Somerset	Monmouth Junction	0.89	PEM	02030105110010 (Heathcote Brook)	1989	Oxidized root channels, water marks, drainage patterns, hydric soils	>50 percent dominant, Percent cover, Prevalence index	Low-chroma/mottled soils (chroma ≤2 with mottles)	Depressional PEM wetland South of the EPA access road in the Higgins' farm pasture. Adjacent to sections of grazed PSS and PFO wetland complex. Heavy grazing and soil compaction by cattle.	FW2-NT	None	No	None	50
	B-1	CS 206	40.40633 -74.601879	Franklin/ Somerset	Monmouth Junction	0.05	PSS	02030105110010 (Heathcote Brook)	1989	Water marks, water-stained leaves	>50 percent dominant	Low-chroma/mottled soils (chroma ≤2 with mottles)	Depressional PSS wetland South of the EPA access road in the Higgins' farm pasture. Adjacent to sections of grazed PEM and PFO wetland complex. Heavy grazing and soil compaction by cattle.	FW2-NT	None	No	None	50
	C-1	CS 206	40.40662 -74.602312	Franklin/ Somerset	Monmouth Junction	0.32	PFO	02030105110010 (Heathcote Brook)	1989	Water marks, sediment deposits, water-stained leaves	>50 percent dominant, Percent cover, Prevalence index	None	Depressional PFO wetland South of the EPA access road in the Higgins' farm pasture. Adjacent to sections of grazed PEM and PSS wetland complex. Heavy grazing and soil compaction by cattle.	FW2-NT	None	No	None	50
W-T23-003	A-1	CS 206	40.40700 -74.604321	Franklin/ Somerset	Monmouth Junction	0.60	PEM	02030105110010 (Heathcote Brook)	1989	Ground inundation, soil saturation	>50 percent dominant, Percent cover, Prevalence index	Low-chroma/mottled soils (chroma ≤2 with mottles)	Small depressional PEM wetland adjacent to and West/Southwest of the EPA access road. Heavy grazing and soil compaction by cattle.	FW2-NT	None	No	None	50

[1] Acreages less than 0.01 acre may show as 0.00 due to rounding.

[2] Cowardin et al. (1979) wetland classifications: PEM = palustrine emergent wetland; PSS = palustrine scrub-shrub wetland; PFO = palustrine forested wetland; E2EM = estuarine intertidal emergent wetland; UPL = Upland.

[3] 1989= Routine Data Form under the 1989 Federal Interagency Delineation Manual

[4] FW2-NT: Freshwater non trout waters; SE-1: saline waters of estuaries (http://www.nj.gov/dep/rules/rules/njac7_9b.pdf)
(c) In all FW2 waters the designated uses are:
1. Maintenance, migration and propagation of the natural and established biota;
2. Primary contact recreation;
3. Industrial and agricultural water supply;
4. Public potable water supply after conventional filtration treatment (a series of processes including filtration, flocculation, coagulation, and sedimentation, resulting in substantial particulate removal but no consistent removal of chemical constituents) and disinfection; and
5. Any other reasonable uses.

(d) In all SE-1 waters the designated uses are:
1. Shellfish harvesting in accordance with N.J.A.C. 7:12;
2. Maintenance, migration and propagation of the natural and established biota;
3. Primary contact recreation; and
4. Any other reasonable uses.

[4] http://www.nj.gov/dep/landuse/download/fw_017.pdf

[5]Transco delineated these two additional PFO wetland polygons beyond the limit of disturbance (LOD) to allow for the additional buffering and the creation of the new 150-ft transition areas associated with the re-classified wetlands due to the accepted barred owl report. See W-T09-002C-1 datasheets for relevant jurisdictional delineation data.

Upland Verification Points Delineated within the Madison Loop Study Area

Wetland ID	Datasheet ID	Milepost	Latitude Longitude	Township/ County	USGS Quad	HUC-14 Subwatershed	Datasheet Completed	Description
UVP-T01-001	None	8.61	40.442559 -74.315143	Old Bridge/ Middlesex	South Amboy	02030105160060 (Tennent Brook)	No	Area with hydrophytic vegetation present. No hydrology or hydric soils present.
UVP-T01-002	None	8.66	40.442077 -74.314535	Old Bridge/ Middlesex	South Amboy	02030105160060 (Tennent Brook)	No	Area with hydrophytic vegetation present. No hydrology or hydric soils present.
UVP-T01-004	None	8.96	40.442647 -74.309011	Old Bridge/ Middlesex	South Amboy	02030105160060 (Tennent Brook)	No	Area with hydrophytic vegetation present. No hydrology or hydric soils present.
UVP-T01-008	None	10.10	40.447440 -74.289401	Old Bridge/ Middlesex	South Amboy	02030104060010 (Cheesequake Creek/Whale Creek)	No	Evidence of erosion during storm events. No hydrophytic vegetation or hydric soils present.
UVP-T01-005	None	10.30	40.448208 -74.286047	Old Bridge/ Middlesex	South Amboy	02030104060010 (Cheesequake Creek/Whale Creek)	No	Area with hydrophytic vegetation present. No hydrology or hydric soils present.
UVP-T01-003	UVP-T01-003	10.39	40.450025 -74.287749	Old Bridge/ Middlesex	South Amboy	02030104060010 (Cheesequake Creek/Whale Creek)	1989	Heavily disturbed area with hydrophytic vegetation present. No hydrology or hydric soils present.
UVP-T01-006	None	10.39	40.449206 -74.285430	Old Bridge/ Middlesex	South Amboy	02030104060010 (Cheesequake Creek/Whale Creek)	No	Area in roadside depression. No hydric soils or hydrophytic vegetation present.
UVP-T01-007	None	10.44	40.448537 -74.283235	Sayreville/ Middlesex	South Amboy	02030104060010 (Cheesequake Creek/Whale Creek)	No	Area with hydrophytic vegetation present. No hydrology or hydric soils present.
UVP-T01-010	None	10.44	40.448734 -74.283249	Sayreville/ Middlesex	South Amboy	02030104060010 (Cheesequake Creek/Whale Creek)	No	Area with hydrophytic vegetation present. No hydrology or hydric soils present.
UVP-T07-001	UVP-T07-001	11.10	40.457066 -74.278265	Sayreville/ Middlesex	South Amboy	02030104060010 (Cheesequake Creek/Whale Creek)	1989	Maintained ROW with some hydrophytic vegetation present. No hydrology or hydric soils present.
UVP-T01-009	None	11.15	40.457539 -74.277384	Sayreville/ Middlesex	South Amboy	02030104060010 (Cheesequake Creek/Whale Creek)	No	Area with hydrology present. No hydric soils or hydrophytic vegetation present.

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8B. Wetland Data Sheets and Photographs

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Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Scott McDonnell, Michael Levinson Date: 8/15/2016 9:58:57 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T01-001A-1 Determination: ☐ Upland ☐ Wetland ☑ Isolated Wetland HGM Class: Depressional Field Cowardin classification: PEM NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Populus deltoides	10%	FAC	H	Juncus tenuis	10%	FAC
S	Salix nigra	5%	OBL	H	Carex lurida	5%	OBL
H	Typha latifolia	30%	OBL	H	Persicaria pensylvanica	5%	FACW
H	Scirpus cyperinus	20%	OBL	H	Salix discolor	2%	FACW
H	Phragmites australis	10%	FACW				
H	Juncus effusus	10%	OBL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	70	x 1 =	70	
FACW species	17	x 2 =	34	
FAC species	20	x 3 =	60	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	107	(A)	164	(B)

Prevalence Index = B/A = 1.53

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☑ Soil Saturation
- ☐ Oxidized Root Channels
- ☑ Water Marks
- ☑ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☑ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☑ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation: 8

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: Observed saturation (~8") and surface ponding in wetland.

SOILS

Soil Survey:
Map Unit (Series and Phase): Sassafras loam, 2 to 5 percent slop
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-8	A	10YR 3/1	10YR 3/6	Many (>20%)	Medium (5mm - 15mm)	Prominent	CL
8-20	A	10YR 4/6					L
8-20	A	10YR 4/1					L
20-24	B	10YR 5/8					SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:

(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☑ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☐ Jurisdictional ☑ Isolated
What is this based on?
No adjacent/abutting connection.

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☑ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☑ No flow

Rationale/Remarks:

Area is a depressional wetland resulting from remnants of former detention basin and is impounded by adjacent fill and/or historic grading. Soils are derived from fill, excavation, or re-grading of natural profile. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Scott McDonnell, Michael Levinson
Applicant/owner: Williams Transco	Date: 8/15/2016 10:37:42 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T01-001-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Robinia pseudoacacia	20%	UPL	H	Carex lurida	5%	OBL
H	Artemisia vulgaris	50%	UPL	H	Setaria pumila	5%	FAC
H	Persicaria pensylvanica	20%	FACW				
H	Phleum pratense	15%	FACU				
H	Lotus corniculatus	10%	FACU				
H	Lythrum salicaria	10%	OBL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	15	x 1 =	15	
FACW species	20	x 2 =	40	
FAC species	5	x 3 =	15	
FACU species	25	x 4 =	100	
UPL species	70	x 5 =	350	
Totals	135	(A)	520	(B)

Prevalence Index = B/A = 3.85

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

does not meet vegetation field indicators

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale: does not meet hydrology field indicators

SOILS

Soil Survey:
Map Unit (Series and Phase): Sassafras loam, 2 to 5 percent slop
Subgroup: Aquic Hapludults
Drainage Class: Well Drained.

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-20	A	7.5YR 4/4					L

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: Area is loamy fill atop rocky fill. Does not meet soil field indicators. Rock refusal at 20 inches.

JURISDICTIONAL DETERMINATION

Wetland Determination
Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship
Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Located on a fill pile/berm 10 feet north of the wetland sample point. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.064 Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Light Industrial Distance to nearest roadway or other development 0

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present No

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-001

Latitude 40.44324149 Longitude -74.31626529

Prepared by: Scott McDonnell, Matt Church Date 8/15/2016 9:37:34 AM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

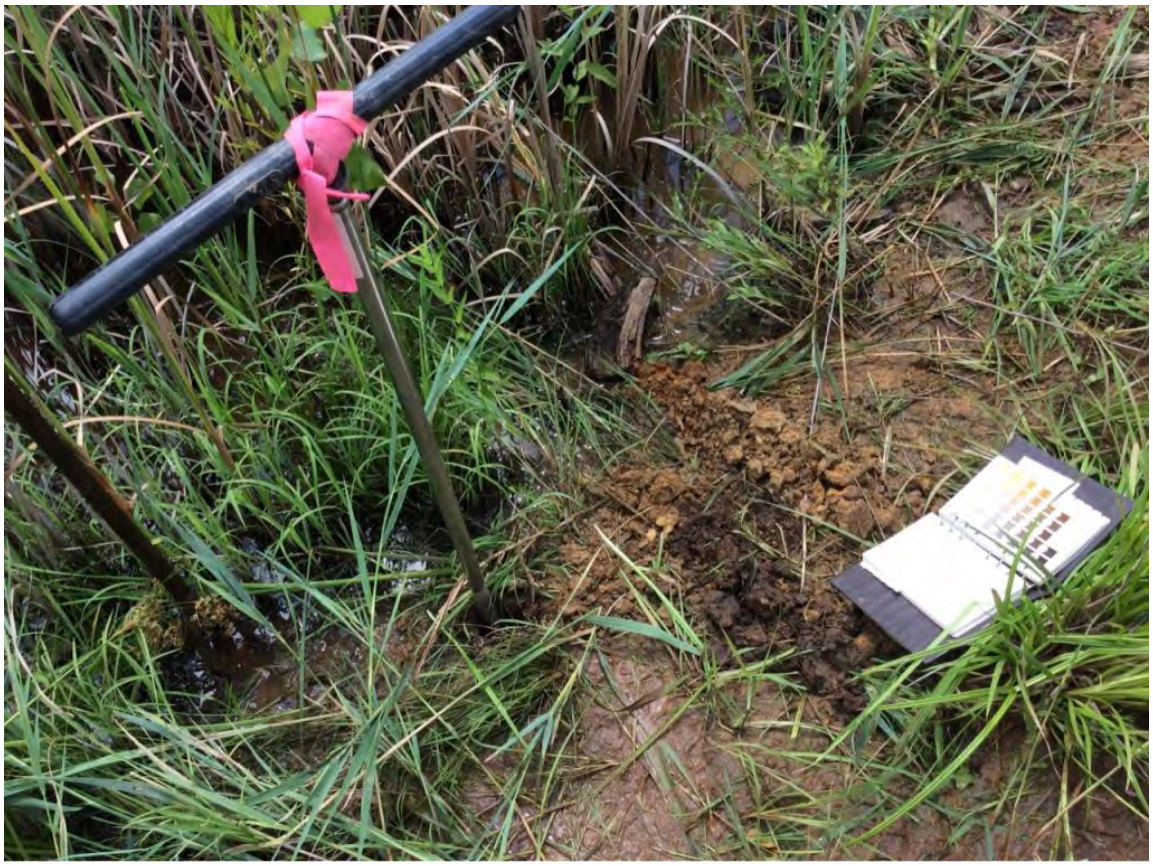
Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	4,15	☐	
Floodflow Alteration	No	9	☐	
Fish and Shellfish Habitat	No	2	☐	
Sediment/Toxicant Retention	Yes	9	☑	isolated depression with fill
Nutrient Removal	No		☐	
Production Export	No	2	☐	
Sediment/Shoreline Stabilization	No	2,3	☐	
Wildlife Habitat	No		☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: old stormwater basin/depression incidental to construction activities. Final QA: Dutton 02/17 * Refer to backup list of numbered considerations.

W-T01-001 Photo Log



ID:W-T01-001A-1 Date:08/15/2016 Direction:S Position:Wetland Overview



ID:W-T01-001A-1 Date:08/15/2016 Direction:N Position:Wetland Pit

W-T01-001 Photo Log



ID:U-T01-001-1 Date:08/15/2016 Direction:N Position:Upland Overview



ID:U-T01-001-1 Date:08/15/2016 Direction:N Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Scott McDonnell, Michael Levinson Date: 8/16/2016 6:38:14 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T01-002A-1 Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland HGM Class: Slope Field Cowardin classification: PEM NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Phragmites australis	75%	FACW				
H	Impatiens capensis	10%	FACW				
H	Eleocharis sp.	5%					
H	Alisma subcordatum	5%	OBL				
V	Lonicera japonica	20%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	5	x 1 =	5	
FACW species	85	x 2 =	170	
FAC species	0	x 3 =	0	
FACU species	20	x 4 =	80	
UPL species	0	x 5 =	0	
Totals	110	(A)	255	(B)

Prevalence Index = B/A = 2.32

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☑ Soil Saturation
- ☑ Oxidized Root Channels
- ☑ Water Marks
- ☑ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☑ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☑ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation: 4

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☑ Yes ☐ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4	A	10YR 3/2	10YR 4/2	Many (>20%)	Fine (< 5mm)	Faint	CL
4-8	A	10YR 4/2	10YR 4/4	Common (2% - 20%)	Medium (5mm - 15mm)	Distinct	COSL
8-12	A	2.5Y 4/1	10YR 5/6	Common (2% - 20%)	Fine (< 5mm)	Prominent	LFS
12-20	A	10YR 3/2	10YR 4/6	Common (2% - 20%)	Medium (5mm - 15mm)	Prominent	LFS

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☑ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
Abutting stream

Stream reach name (if known):
WW-T01-001, WW-T01-002B

Approximate distance to water body/reach:
0'

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☑ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Slope wetland, receiving waters from waterway WW-T01-001 draining south into waterway WW-T01-002B outside of the study corridor.
Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Scott McDonnell, Michael Levinson Date: 8/16/2016 7:17:51 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T01-002B-1 Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland HGM Class: Slope Field Cowardin classification: PSS NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer rubrum	40%	FAC	H	Rubus pubescens	5%	FACW
T	Betula populifolia	10%	FAC	V	Lonicera japonica	10%	FACU
T	Quercus palustris	10%	FACW	V	Parthenocissus quinquefolia	2%	FACU
S	Acer rubrum	20%	FAC				
S	Vaccinium corymbosum	15%	FACW				
S	Viburnum recognitum	10%	FAC				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	30	x 2 =	60	
FAC species	80	x 3 =	240	
FACU species	12	x 4 =	48	
UPL species	0	x 5 =	0	
Totals	122	(A)	348	(B)

Prevalence Index = B/A = 2.85

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☑ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☑ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☑ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: shallow roots, sedimentation, debris deposition

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-11	A	N 5/0	10YR 5/6	Many (>20%)	Medium (5mm - 15mm)	Prominent	SIL
11-24	B	N 7/0	10YR 6/2	Many (>20%)	Fine (< 5mm)	Prominent	SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☑ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: Natural soils appear to be present.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
Abutting stream

Stream reach name (if known):
WW-T01-001, WW-T01-002B

Approximate distance to water body/reach:
0'

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☑ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

PSS sample point of a PEM/PSS wetland complex, with phragmites dominated PEM area extending outside the study area. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Scott McDonnell, Michael Levinson Date: 8/16/2016 6:53:31 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: U-T01-002-1 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: UPL NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Juniperus virginiana	20%	FACU				
T	Acer rubrum	20%	FAC				
H	Artemisia annua	20%	FACU				
V	Lonicera japonica	40%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	20	x 3 =	60	
FACU species	60	x 4 =	240	
UPL species	0	x 5 =	0	
Totals	80	(A)	300	(B)

Prevalence Index = B/A = 3.75

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

does not meet vegetation field indicators

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale: does not meet hydrology field indicators

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4	A	10YR 5/3					SIL
4-12	A	10YR 6/3	7.5YR 5/8	Common (2% - 20%)	Medium (5mm - 15mm)	Prominent	SIL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: Rock refusal at 12 inches. Does not meet soil indicators.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Located on a berm 30 feet east of PEM wetland sample point, 10 feet from wetland edge. Sheppard final QA 1/2017.

Wetland Function-Value Evaluation Form

Total area of wetland 0.051 Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Forested Distance to nearest roadway or other development 45 ft

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? medium

How many tributaries contribute to the wetland? 2 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-002

Latitude 40.44209758 Longitude -74.31546156

Prepared by: Scott McDonnell, Michael Levinson Date 8/16/2016 5:58:20 AM

Wetland Impact:
Type PEM/PSS Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	2	☐	
Floodflow Alteration	No	3,5,6,7,9,10,13,14,15,18	☐	
Fish and Shellfish Habitat	No		☐	
Sediment/Toxicant Retention	Yes	1,2,3,6	☑	
Nutrient Removal	Yes	3,4,8,9,10,11,13,12,14	☑	
Production Export	No	7	☐	
Sediment/Shoreline Stabilization	No	1,3,4,9,15	☐	
Wildlife Habitat	No	3,5,6,7,13	☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No	2,7	☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: wetland detains water during flood events. wetland retains and detains sediment. Final QA: Dutton 02/17* Refer to backup list of numbered considerations.

W-T01-002 Photo Log



ID:W-T01-002A-1 Date:08/16/2016 Direction:S Position:Wetland Overview



ID:W-T01-002A-1 Date:08/16/2016 Direction:N Position:Wetland Pit

W-T01-002 Photo Log



ID:W-T01-002B-1 Date:08/16/2016 Direction:SW Position:Wetland Overview



ID:W-T01-002B-1 Date:08/16/2016 Direction:SW Position:Wetland Pit

W-T01-002 Photo Log



ID:U-T01-002-1 Date:08/16/2016 Direction:N Position:Upland Overview



ID:U-T01-002-1 Date:08/16/2016 Direction:N Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Scott McDonnell, Michael Levinson Date: 8/16/2016 10:40:35 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T01-003A-1 Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland HGM Class: Slope Field Cowardin classification: PEM NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Liquidambar styraciflua	30%	FAC				
H	Microstegium vimineum	40%	FAC				
H	Persicaria sagittata	20%	OBL				
H	Persicaria pensylvanica	20%	FACW				
H	Juncus canadensis	10%	OBL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	30	x 1 =	30	
FACW species	20	x 2 =	40	
FAC species	70	x 3 =	210	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	120	(A)	280	(B)

Prevalence Index = B/A = 2.33

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☑ Water Marks
- ☑ Drift Lines
- ☑ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☑ Yes ☐ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4	A	2.5Y 6/3					
4-20	B	10YR 3/2	10YR 4/6	Common (2% - 20%)	Fine (< 5mm)	Prominent	FSL
4-20	B		2.5Y 5/4	Common (2% - 20%)	Fine (< 5mm)	Prominent	FSL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
abutting stream

Stream reach name (if known):
WW-T01-002

Approximate distance to water body/reach:
0'

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☑ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM sample point of PEM/PFO wetland complex, abutting waterway WW-T01-002. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Scott McDonnell, Michael Levinson
Applicant/owner: Williams Transco	Date: 8/16/2016 8:30:09 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T01-003C-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Slope; Field Cowardin classification: PFO; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer rubrum	60%	FAC	V	Smilax rotundifolia	5%	FAC
T	Nyssa sylvatica	20%	FAC				
S	Clethra alnifolia	40%	FACW				
S	Nyssa sylvatica	20%	FAC				
H	Symplocarpus foetidus	20%	OBL				
H	Osmundastrum cinnamomeum	15%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	20	x 1 =	20	
FACW species	55	x 2 =	110	
FAC species	105	x 3 =	315	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	180	(A)	445	(B)

Prevalence Index = B/A = 2.47

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☑ Ground Inundation
- ☑ Soil Saturation
- ☐ Oxidized Root Channels
- ☑ Water Marks
- ☑ Drift Lines
- ☐ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

- Depth of inundation: surface
- Depth to saturation: surface
- Depth to free water in pit: surface

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Sassafras loam, 2 to 5 percent slop
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No Poorly drained soils

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-5	A	10YR 2/1					L
5-12	A	10YR 2/1	10YR 6/1	Common (2% - 20%)	Fine (< 5mm)	Prominent	FSL
12-20	B	2.5Y 5/1	2.5YR 6/4	Common (2% - 20%)	Medium (5mm - 15mm)	Distinct	FSL
12-20	B		2.5Y 6/4	Common (2%-20%)	Medium (5mm - 15mm)	Prominent	FSL
20-30	B	2.5Y 6/3	10YR 5/8	Many (>20%)	Medium (5mm - 15mm)	Prominent	SIL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:

(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☑ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☑ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
abutting stream

Stream reach name (if known):
WW-T01-002

Approximate distance to water body/reach:
0'

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☑ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

PFO sample point of PEM/PFO wetland complex, abutting waterway WW-T01-002. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Scott McDonnell, Michael Levinson
Applicant/owner: Williams Transco	Date: 8/16/2016 10:44:22 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T01-003-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer saccharum	30%	FACU	V	Vitis labrusca	10%	FAC
T	Nyssa sylvatica	30%	FAC				
T	Acer rubrum	10%	FAC				
S	Nyssa sylvatica	10%	FAC				
H	Dennstaedtia punctilobula	20%	UPL				
V	Lonicera japonica	20%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	60	x 3 =	180	
FACU species	50	x 4 =	200	
UPL species	20	x 5 =	100	
Totals	130	(A)	480	(B)

Prevalence Index = B/A = 3.69

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

Does not meet vegetation indicators.

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale: Does not meet hydrology indicators.

SOILS

Soil Survey:
Map Unit (Series and Phase): Sassafras loam, 2 to 5 percent slop
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☑ Yes ☐ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4	A	2.5Y 4/4					SIL
4-12	A	10YR 4/6					SIL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: Rock refusal at 12 inches. Does not meet soil indicators.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Located adjacent to foot trail and 25 feet south of the PFO wetland sample point. Located 10 feet from the wetland edge. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 1.080 Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Forested Distance to nearest roadway or other development 150

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? medium

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-003

Latitude 40.44264092 Longitude -74.31324479

Prepared by: Scott McDonnell, Michael Levinson Date 8/16/2016 8:26:39 AM

Wetland Impact:
Type PEM/PFO Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y [✔] N [ ]

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	1,10,13,15	[ ]	
Floodflow Alteration	No	2,3,5,8,7,9	[ ]	
Fish and Shellfish Habitat	No	1,4	[ ]	
Sediment/Toxicant Retention	No	1,2,4,5,6,13,14,16	[ ]	
Nutrient Removal	No	4,3,5,7,8,12,14	[ ]	
Production Export	No	1,2,4,5,7	[ ]	
Sediment/Shoreline Stabilization	No	2,3,14	[ ]	
Wildlife Habitat	Yes	5,6,7,8,13,15,17,19,20	[✔]	
Recreation	No		[ ]	
Educational/Scientific Value	No		[ ]	
Uniqueness/Heritage	No	2	[ ]	
Visual Quality/Aesthetics	No		[ ]	
ES Endangered Species Habitat	No		[ ]	
Other	No		[ ]	

Notes: Slope wetland with shallow sub surface discharge red Tail hawk deer Final QA: Dutton 02/17* Refer to backup list of numbered considerations.

W-T01-003 Photo Log



ID:W-T01-003A-1 Date:08/16/2016 Direction:E Position:Wetland Overview



ID:W-T01-003A-1 Date:08/16/2016 Direction:W Position:Wetland Pit

W-T01-003 Photo Log



ID:W-T01-003C-1 Date:08/16/2016 Direction:E Position:Wetland Overview



ID:W-T01-003C-1 Date:08/16/2016 Direction:E Position:Wetland Pit

W-T01-003 Photo Log



ID:U-T01-003-1 Date:08/16/2016 Direction:W Position:Upland Overview



ID:U-T01-003-1 Date:08/16/2016 Direction:W Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Scott McDonnell, Daniel Laue Date: 8/17/2016 9:11:10 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T01-004A-1 Determination: ☐ Upland ☐ Wetland ☑ Isolated Wetland HGM Class: Depressional Field Cowardin classification: PEM NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Baccharis halimifolia	5%	FAC				
H	Juncus effusus	65%	OBL				
H	Lythrum salicaria	20%	OBL				
H	Persicaria pensylvanica	10%	FACW				
H	Artemisia vulgaris	5%	UPL				
H	Solidago canadensis	5%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	85	x 1 =	85	
FACW species	10	x 2 =	20	
FAC species	5	x 3 =	15	
FACU species	5	x 4 =	20	
UPL species	5	x 5 =	25	
Totals	110	(A)	165	(B)

Prevalence Index = B/A = 1.5

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

Dominated by hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Drift Lines
- ☐ Drainage Patterns
- ☐ Soil Saturation
- ☐ Sediment Deposits
- ☐ Morphological Plant Adaptations
- ☐ Oxidized Root Channels
- ☑ Water-stained Leaves
- ☑ Hydric Soils (only in the absence of other field indicators)
- ☐ Water Marks
- ☐ Surface scouring

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Flood data
- ☐ Site specific data
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: Depression collects surface water for sufficient duration to influence soils/plants.

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☑ Yes ☐ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-12	A	10YR 4/1					L
		10YR 4/3					
		10YR 5/8					

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: Soils are highly disturbed.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☐ Jurisdictional ☑ Isolated
What is this based on?
no outlet, no evidence of connection to WOTUS

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☑ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☑ No flow

Rationale/Remarks:

Area is isolated depression characterized by disturbed soils, periodically mowed vegetation, and a history of earthwork related to compressor site and easements. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Scott McDonnell, Daniel Laue Date: 8/17/2016 9:59:58 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: U-T01-004-1 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: UPL NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Gleditsia triacanthos	30%	FAC				
H	Artemisia vulgaris	80%	UPL				
H	Solidago canadensis	20%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	30	x 3 =	90	
FACU species	20	x 4 =	80	
UPL species	80	x 5 =	400	
Totals	130	(A)	570	(B)

Prevalence Index = B/A = 4.38

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:
Depth to saturation:
Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale: No evidence of hydrology present.

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4	A	7.5YR 4/3	7.5YR 5/8	Few (<2%)	Medium (5mm - 15mm)	Prominent	SIL
4-8	A	10YR 4/4					SIL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: Disturbed area with evidence of historic soil excavation. Rock refusal at 8 inches.

JURISDICTIONAL DETERMINATION

Wetland Determination
Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship
Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

disturbed area. soil appears to have been removed from wetland and deposited around the perimeter. Sample point on berm 13 feet north of the PEM wetland sample point. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.000 Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Industrial - Light Distance to nearest roadway or other development 50 ft

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present No

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-004

Latitude 40.44192450 Longitude -74.31647417

Prepared by: Scott McDonnell, Daniel Laue Date 8/17/2016 9:10:28 AM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y [✔] N [ ]

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	1,2,6	[ ]	
Floodflow Alteration	Yes	3,4,7,9,18	[✔]	
Fish and Shellfish Habitat	No		[ ]	
Sediment/Toxicant Retention	Yes	1,2,3,4,6	[✔]	
Nutrient Removal	Yes	3,4,7,8,9,10,11	[✔]	
Production Export	No	7	[ ]	
Sediment/Shoreline Stabilization	No	3,15	[ ]	
Wildlife Habitat	No	13,17	[ ]	
Recreation	No		[ ]	
Educational/Scientific Value	No		[ ]	
Uniqueness/Heritage	No	1,2	[ ]	
Visual Quality/Aesthetics	No		[ ]	
ES Endangered Species Habitat	No		[ ]	
Other	No		[ ]	

Notes: Phragmites dominated depression incidental to construction and grading activities on site. Primary functions are flood flow retention and nutrient/sediment retention/detention, but low overall functioning wetland. Final QA: Dutton 02/17 * Refer to backup list of numbered considerations.

W-T01-004 Photo Log



ID:W-T01-004A-1 Date:08/18/2016 Direction:SW Position:Wetland Overview



ID:W-T01-004A-1 Date:08/18/2016 Direction:N Position:Wetland Pit

W-T01-004 Photo Log



ID:U-T01-004-1 Date:08/18/2016 Direction:NE Position:Upland Overview



ID:U-T01-004-1 Date:08/18/2016 Direction:N Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Scott McDonnell, Daniel Laue
Applicant/owner: Williams Transco	Date: 8/17/2016 9:43:05 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T01-005A-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PEM; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Phragmites australis	70%	FACW				
H	Lythrum salicaria	20%	OBL				
H	Artemisia vulgaris	5%	UPL				
H	Erigeron annuus	2%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	20	x 1 =	20	
FACW species	70	x 2 =	140	
FAC species	0	x 3 =	0	
FACU species	2	x 4 =	8	
UPL species	5	x 5 =	25	
Totals	97	(A)	193	(B)

Prevalence Index = B/A = 1.99

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: some indicators present, seasonally dry conditions and disturbed soils appear to have masked the presence of some

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-7	A	10YR 4/2	7.5YR 5/6	Common (2% - 20%)	Fine (< 5mm)	Prominent	SIL
7-8	A	10YR 5/1	5YR 3/4	Common (2% - 20%)	Medium (5mm - 15mm)	Prominent	SL
7-8	A		2.5YR 4/2	Many (>20%)	Medium (5mm - 15mm)	Distinct	SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: evidence of historic soil disturbance

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
Unknown, connection likely outside corridor

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☑ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM wetland extending south beyond the study corridor. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Scott McDonnell, Daniel Laue
Applicant/owner: Williams Transco	Date: 8/17/2016 9:54:52 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T01-005-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Artemisia vulgaris	40%	UPL				
H	Eupatorium serotinum	20%	FAC				
H	Andropogon gerardii	10%	FAC				
H	Euthamia graminifolia	10%	FAC				
H	Bidens frondosa	5%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	5	x 2 =	10	
FAC species	40	x 3 =	120	
FACU species	0	x 4 =	0	
UPL species	40	x 5 =	200	
Totals	85	(A)	330	(B)

Prevalence Index = B/A = 3.88

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

Disturbed area with a dominance of upland vegetation.

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-3	A	10YR 5/6					SIL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: Disturbed soil consisting of fill material. Extremely compacted causing shallow refusal. rock refusal at 3 inches.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Disturbed upland in ROW. Located 20 feet NW of the PEM wetland sample point. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.031 Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Industrial - Light Distance to nearest roadway or other development 30 ft

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present No

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-005

Latitude 40.44202852 Longitude -74.31669294

Prepared by: Scott McDonnell, Daniel Laue Date 8/17/2016 9:42:42 AM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	2,1,6,10	☐	
Floodflow Alteration	Yes	3,4,9,18	☑	
Fish and Shellfish Habitat	No		☐	
Sediment/Toxicant Retention	Yes	1,2,3,4,5	☑	
Nutrient Removal	Yes	4,3,7,8,9,11	☑	
Production Export	No	2,4,7	☐	
Sediment/Shoreline Stabilization	No	3,15	☐	
Wildlife Habitat	No	13	☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No	1,2	☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: Phragmites dominated depression incidental to construction and grading activities on site. Primary functions are flood flow retention and nutrient/sediment retention/detention, but low overall functioning wetland. Final QA: Dutton 02/17 * Refer to backup list of numbered considerations.

W-T01-005 Photo Log



ID:W-T01-005A-1 Date:08/18/2016 Direction:E Position:Wetland Overview



ID:W-T01-005A-1 Date:08/18/2016 Direction:E Position:Wetland Pit

W-T01-005 Photo Log



ID:U-T01-005 Date:08/18/2016 Direction:W Position:Upland Overview



ID:U-T01-005 Date:08/18/2016 Direction:W Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Scott McDonnell, Daniel Laue
Applicant/owner: Williams Transco	Date: 8/17/2016 11:57:02 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T01-006A-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Slope; Field Cowardin classification: PEM; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Microstegium vimineum	40%	FAC				
H	Carex stricta	15%	OBL				
H	Persicaria pensylvanica	15%	FACW				
H	Juncus effusus	5%	OBL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	20	x 1 =	20	
FACW species	15	x 2 =	30	
FAC species	40	x 3 =	120	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	75	(A)	170	(B)

Prevalence Index = B/A = 2.27

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☑ Ground Inundation
- ☑ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☑ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☑ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☑ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☑ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

- Depth of inundation: Surface
- Depth to saturation: Surface
- Depth to free water in pit: Surface

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: ponding present.

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-3	A	10YR 4/2	10YR 5/6	Common (2% - 20%)	Medium (5mm - 15mm)	Prominent	SIL
			5YR 4/4	Few (<2%)	Medium (5mm - 15mm)	Distinct	SIL
3-6	A	10YR 5/1	5YR 4/4	Common (2% - 20%)	Medium (5mm - 15mm)	Distinct	SIL
6-20	A	10YR 5/1					SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☑ Organic soils (Histosols)
☐ Histic epipedons
☑ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☑ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: muck present within standings water.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
adjacent to stream via drainage

Stream reach name (if known):
WW-T01-002B

Approximate distance to water body/reach:
100'

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☑ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☑ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM wetland located along cleared access road containing ruts. feature drains to adjacent waterway via a drainage gully. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Scott McDonnell, Daniel Laue
Applicant/owner: Williams Transco	Date: 8/17/2016 11:57:46 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T01-006-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer rubrum	15%	FAC				
T	Populus deltoides	10%	FAC				
S	Acer rubrum	15%	FAC				
H	Artemisia vulgaris	30%	UPL				
H	Rubus flagellaris	10%	UPL				
V	Lonicera japonica	15%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	40	x 3 =	120	
FACU species	15	x 4 =	60	
UPL species	40	x 5 =	200	
Totals	95	(A)	380	(B)

Prevalence Index = B/A = 4

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale: Berm located up-gradient from wetland. No wetland hydrology present.

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☑ Yes ☐ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4	A	10YR 5/3					SIL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: Upland area is characterized by compacted fill material. Rock refusal at 4 inches.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Located 14 feet NE of the PEM wetland sample point. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.007 Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Forested Distance to nearest roadway or other development 215

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? medium

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-006

Latitude 40.44229878 Longitude -74.31397539

Prepared by: Scott McDonnell, Daniel Laue Date 8/17/2016 11:49:45 AM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Yes	1,2,6,7,10,13	☐	
Floodflow Alteration	No	3,5,7,9	☐	
Fish and Shellfish Habitat	No	1	☐	
Sediment/Toxicant Retention	Yes	1,2,4,3,6,14	☐	
Nutrient Removal	No	4,7,9	☐	
Production Export	No		☐	
Sediment/Shoreline Stabilization	No	3	☐	
Wildlife Habitat	Yes	4,5,6,7,8,17	☑	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No	2,19	☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: Small depression incidental to access road grading/construction at edge of ROW. Low functioning wetland due to small size. Final QA: Dutton 02/17 * Refer to backup list of numbered considerations.

W-T01-006 Photo Log



ID:W-T01-006A-1 Date:08/19/2016 Direction:SE Position:Wetland Overview



ID:W-T01-006A-1 Date:08/19/2016 Direction:SE Position:Wetland Pit

W-T01-006 Photo Log



ID:U-T01-006-1 Date:08/19/2016 Direction:E Position:Upland Overview



ID:U-T01-006-1 Date:08/19/2016 Direction:E Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Scott McDonnell, Daniel Laue
Applicant/owner: Williams Transco	Date: 8/17/2016 2:31:53 PM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T01-007A-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Riverine; Field Cowardin classification: PEM; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Liquidambar styraciflua	20%	FAC				
H	Phragmites australis	30%	FACW				
H	Microstegium vimineum	20%	FAC				
H	Osmundastrum cinnamomeum	10%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	40	x 2 =	80	
FAC species	40	x 3 =	120	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	80	(A)	200	(B)

Prevalence Index = B/A = 2.5

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

Dominance of hydrophytic vegetation

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☑ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation: 3

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: Wetland hydrology present

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-10	A	10YR 3/1	10YR 4/4	Common (2% - 20%)	Medium (5mm - 15mm)	Distinct	SL
10-14	A	10YR 4/4					SL
14-18	B	10YR 5/2	10Y 6/1	Common (2% - 20%)	Fine (< 5mm)	Faint	SL
14-18	B		N 3/0	Common (2% - 20%)	Fine (< 5mm)	Prominent	SL
14-18	B		10YR 6/6	Few (<2%)	Fine (< 5mm)	Prominent	SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☑ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☑ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: man-made drainage ditch through ROW.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
Abutting stream

Stream reach name (if known):
WW-T01-002B

Approximate distance to water body/reach:
0'

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☑ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM area abutting a forested man-made swale. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Scott McDonnell, Daniel Laue Date: 8/17/2016 2:59:22 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T01-007C-1 Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland HGM Class: Riverine Field Cowardin classification: PFO NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Liquidambar styraciflua	30%	FAC				
T	Betula populifolia	20%	FAC				
T	Acer rubrum	10%	FAC				
S	Vaccinium corymbosum	20%	FACW				
H	Osmundastrum cinnamomeum	10%	FACW				
H	Microstegium vimineum	5%	FAC				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	30	x 2 =	60	
FAC species	65	x 3 =	195	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	95	(A)	255	(B)

Prevalence Index = B/A = 2.68

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

Dominated by hydrophytic vegetation

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☑ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☑ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☑ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation: 14

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No Hydric soils present

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-8	A	7.5YR 4/3					SL
8-24	B	10YR 5/1	10YR 5/6	Common (2% - 20%)	Medium (5mm - 15mm)	Prominent	SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: Due to the drainage nature of this feature, sedimentary deposition appears to have altered the A horizon soil. The B horizon appears to be the representative soil for this wetland.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
abutting stream

Stream reach name (if known):
WW-T01-002B

Approximate distance to water body/reach:
0'

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☑ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Vegetated man-made drainage ditch meeting wetland indicators. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Scott McDonnell, Daniel Laue Date: 8/17/2016 2:59:22 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: U-T01-007-1 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: UPL NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Quercus rubra	30%	FACU				
T	Liquidambar styraciflua	20%	FAC				
T	Sassafras albidum	15%	FACU				
T	Acer rubrum	10%	FAC				
S	Quercus rubra	15%	FACU				
S	Vaccinium corymbosum	5%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	5	x 2 =	10	
FAC species	30	x 3 =	90	
FACU species	60	x 4 =	240	
UPL species	0	x 5 =	0	
Totals	95	(A)	340	(B)

Prevalence Index = B/A = 3.58

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale: Does not meet hydrology indicators.

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☑ Yes ☐ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-6	A	10YR 4/4					SL
7-18	B	10YR 7/1					FSL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: non-native soils present, likely due to previous industry in the area.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Sample point located on a man-made fill pile, 14 feet E of the PFO wetland sample point. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.204 Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Wetland - Forested Distance to nearest roadway or other development 75

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? medium

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-007

Latitude 40.44192515 Longitude -74.31527166

Prepared by: Scott McDonnell, Daniel Laue Date 8/17/2016 1:49:23 PM

Wetland Impact:
Type PEM/PFO Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	1,2,4,5,13,15	☐	
Floodflow Alteration	No	3,4,7,8,9,10,13	☐	
Fish and Shellfish Habitat	No	4,8,17	☐	
Sediment/Toxicant Retention	Yes	1,2,3	☐	some elements of this function occurring within pockets of the channel feature that is now being mapped as a wetland feature per PADEP's permitting approach
Nutrient Removal	No	3,4	☐	
Production Export	Yes	4,5,8,10,11,13	☑	
Sediment/Shoreline Stabilization	No	1,2,3,4,6,9,14	☐	
Wildlife Habitat	Yes	5,6,7,8,15,17,20	☑	
Recreation	No	5	☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No	1,2,7,19	☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: W-T01-007 has WW-T01-002B running through as centerline. "wetland" is steep confined channel feature with hydrophytic veg on edges of channel. Waterway portion of the wetland is 2-3ft wide with active flow indicators present. Final QA: Dutton

* Refer to backup list of numbered considerations.

W-T01-007 Photo Log



ID:W-T01-007A-1 Date:08/19/2016 Direction:W Position:Wetland Overview



ID:W-T01-007A-1 Date:08/19/2016 Direction:W Position:Wetland Pit

W-T01-007 Photo Log



ID:W-T01-007C-1 Date:08/19/2016 Direction:SW Position:Wetland Overview



ID:W-T01-007C-1 Date:08/19/2016 Direction:SW Position:Wetland Pit

W-T01-007 Photo Log



ID:U-T01-007-1 Date:08/19/2016 Direction:SE Position:Upland Overview



ID:U-T01-007-1 Date:08/19/2016 Direction:SE Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Scott McDonnell, Daniel Laue
Applicant/owner: Williams Transco	Date: 8/17/2016 4:12:32 PM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T01-008A-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PEM; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Juncus effusus	50%	OBL				
H	Bidens frondosa	20%	FACW				
H	Scirpus cyperinus	10%	OBL				
H	Juncus tenuis	10%	FAC				
H	Euthamia graminifolia	10%	FAC				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	60	x 1 =	60	
FACW species	20	x 2 =	40	
FAC species	20	x 3 =	60	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	100	(A)	160	(B)

Prevalence Index = B/A = 1.6

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

Dominated by hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Drift Lines
- ☐ Drainage Patterns
- ☐ Soil Saturation
- ☐ Sediment Deposits
- ☐ Morphological Plant Adaptations
- ☐ Oxidized Root Channels
- ☑ Water-stained Leaves
- ☑ Hydric Soils (only in the absence of other field indicators)
- ☐ Water Marks
- ☐ Surface scouring

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Flood data
- ☐ Site specific data
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: Obvious depression that holds water periodically during growing season.

SOILS

Soil Survey:
Map Unit (Series and Phase): Sassafras loam, 2 to 5 percent slop
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4	A	10YR 3/2	10YR 5/6	Common (2% - 20%)	Medium (5mm - 15mm)	Prominent	SIL
4-16	A	10YR 3/6					SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
adjacent to stream via overland sheetflow

Stream reach name (if known):
WW-T01-001

Approximate distance to water body/reach:
10'

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☑ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM depression in maintained gas ROW, adjacent to waterway WW-T01-001. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Scott McDonnell, Daniel Laue Date: 8/17/2016 4:13:26 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: U-T01-008-1 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: UPL NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Robinia pseudoacacia	12%	UPL				
H	Artemisia vulgaris	80%	UPL				
H	Lespedeza cuneata	10%	FACU				
H	Panicum virgatum	5%	FAC				
H	Ambrosia artemisiifolia	5%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	5	x 3 =	15	
FACU species	15	x 4 =	60	
UPL species	92	x 5 =	460	
Totals	112	(A)	535	(B)

Prevalence Index = B/A = 4.78

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

Dominated by upland vegetation.

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale: No evidence.

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☑ Yes ☐ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-16	A	10YR 3/4					SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: Soils disturbed. Rock refusal at 16 inches.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Upland pit 20 feet south of PEM wetland sample point. Soil pit is within an existing pipeline ROW, and significantly disturbed from past ROW maintenance activities. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.008 Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Herbaceous Distance to nearest roadway or other development 175

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? medium

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-008

Latitude 40.44235441 Longitude -74.31530430

Prepared by: Scott McDonnell, Daniel Laue Date 8/17/2016 4:12:04 PM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y [✔] N [ ]

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	4,6,8,9,10	[ ]	
Floodflow Alteration	No	3,4,5,6,7,9,12,13	[✔]	wetland does not perform this function on a high level due to small drainage area and size of wetland
Fish and Shellfish Habitat	No	1,17	[ ]	
Sediment/Toxicant Retention	No	1,2,3,4,13	[ ]	
Nutrient Removal	No	3,4,7,9,14	[ ]	
Production Export	No	12	[ ]	
Sediment/Shoreline Stabilization	No	3,4,6,9	[ ]	
Wildlife Habitat	No	5,7	[ ]	
Recreation	No		[ ]	
Educational/Scientific Value	No		[ ]	
Uniqueness/Heritage	No	2	[ ]	
Visual Quality/Aesthetics	No		[ ]	
ES Endangered Species Habitat	No		[ ]	
Other	No		[ ]	

Notes: In existing pipepline ROW. Final QA: Dutton 02/17

* Refer to backup list of numbered considerations.

W-T01-008 Photo Log



ID:W-T01-008A-1 Date:08/18/2016 Direction:N Position:Wetland Overview



ID:W-T01-008A-1 Date:08/18/2016 Direction:N Position:Wetland Pit

W-T01-008 Photo Log



ID:U-T01-008-1 Date:08/18/2016 Direction:N Position:Upland Overview



ID:U-T01-008-1 Date:08/18/2016 Direction:N Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Daniel Laue, Evan Sheppard Date: 8/18/2016 9:21:59 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T01-009A-1 Determination: ☐ Upland ☐ Wetland ☑ Isolated Wetland HGM Class: Depressional Field Cowardin classification: PEM NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Salix nigra	20%	OBL	H	Persicaria pensylvanica	10%	FACW
H	Scirpus cyperinus	30%	OBL				
H	Persicaria arifolia	20%	OBL				
H	Microstegium vimineum	15%	FAC				
H	Phragmites australis	15%	FACW				
H	Agrostis gigantea	10%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	70	x 1 =	70	
FACW species	35	x 2 =	70	
FAC species	15	x 3 =	45	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	120	(A)	185	(B)

Prevalence Index = B/A = 1.54

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

Dominated by hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☑ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: Presence of redoximorphic concentrations within the top 6" of the soil profile and other hydrologic indicators noted above.

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-8	A	10YR 5/3	10YR 6/8	Common (2% - 20%)	Fine (< 5mm)	Prominent	SL
			5YR 4/4	Common (2% - 20%)	Fine (< 5mm)	Distinct	SL
8-18	A	7.5YR 5/6					SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: Soil is not indicative of the hydrophytic nature of the feature due to the significant soil disturbance in the area.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☐ Jurisdictional ☑ Isolated
What is this based on?
No hydrologic connection to WOTUS

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM depression within existing pipeline ROW. ROW edges are significantly influenced by grading/excavation activities. Wetland is isolated and bordered to the north and south by high soil berms, east by an existing built up dirt road and west by ROW excavated activities. Two of the three parameters were met and the feature was supporting hydrophytic vegetation therefore meeting the definition of a wetland. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Daniel Laue, Evan Sheppard Date: 8/18/2016 10:07:38 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: U-T01-009-1 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: UPL NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Rhus copallinum	20%	UPL	H	Daucus carota	10%	UPL
S	Prunus serotina	10%	FACU	H	Centaurea stoebe	10%	NL
S	Quercus ilicifolia	5%	NL	H	Andropogon virginicus	5%	FAC
H	Euthamia graminifolia	35%	FAC	H	Comptonia peregrina	5%	NL
H	Rubus pensilvanicus	25%	FAC	H	Pycnanthemum verticillatum	5%	FAC
H	Artemisia vulgaris	20%	UPL	H	Dichanthelium clandestinum	5%	FACW

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	5	x 2 =	10	
FAC species	70	x 3 =	210	
FACU species	10	x 4 =	40	
UPL species	50	x 5 =	250	
Totals	135	(A)	510	(B)

Prevalence Index = B/A = 3.78

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale: No evidence.

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☑ Yes ☐ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-3	A	10YR 4/2					SL
3-15	A	10YR 5/4					SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: Disturbed sandy soils within pipeline ROW. Rock refusal at 15 inches.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Upland pipeline ROW. Significantly disturbed from ROW grading/construction activities. Located 50 feet west of the PEM wetland sample point and 20 feet from wetland edge. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.164 Human made? Yes Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Other (explain in Notes) Distance to nearest roadway or other development 325

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present Yes

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-009

Latitude 40.44284799 Longitude -74.31028335

Prepared by: Daniel Laue, Evan Sheppard Date 8/18/2016 9:03:12 AM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	4,5	☐	
Floodflow Alteration	Yes	5,6,9,18	☑	Potential to store water during high flow / run off events.
Fish and Shellfish Habitat	No	1	☐	
Sediment/Toxicant Retention	No	4,9	☐	
Nutrient Removal	No	9,8,11	☐	
Production Export	No	7,12	☐	
Sediment/Shoreline Stabilization	No	3	☐	
Wildlife Habitat	No	4,5,13	☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: Pipeline ROW land use condition. Final QA: Dutton 02/17

* Refer to backup list of numbered considerations.

W-T01-009 Photo Log



ID:W-T01-009A-1 Date:08/18/2016 Direction:N Position:Wetland Overview



ID:W-T01-009A-1 Date:08/18/2016 Direction:S Position:Wetland Pit

W-T01-009 Photo Log



ID:U-T01-009-1 Date:08/18/2016 Direction:W Position:Upland Overview



ID:U-T01-009-1 Date:08/18/2016 Direction:W Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Daniel Laue, Evan Sheppard
Applicant/owner: Williams Transco	Date: 8/18/2016 11:13:06 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T01-010C-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☐ Wetland ☑ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PFO; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer rubrum	45%	FAC	S	Vaccinium corymbosum	1%	FACW
T	Liquidambar styraciflua	30%	FAC	H	Microstegium vimineum	30%	FAC
T	Robinia pseudoacacia	10%	UPL	H	Scirpus cyperinus	10%	OBL
S	Acer rubrum	15%	FAC	H	Onoclea sensibilis	5%	FACW
S	Salix discolor	2%	FACW	V	Toxicodendron radicans	5%	FAC
S	Rosa multiflora	2%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	10	x 1 =	10	
FACW species	8	x 2 =	16	
FAC species	125	x 3 =	375	
FACU species	2	x 4 =	8	
UPL species	10	x 5 =	50	
Totals	155	(A)	459	(B)

Prevalence Index = B/A = 2.96

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

Dominated by hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☑ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4	A	10YR 4/6	5YR 4/6	Common (2% - 20%)	Fine (< 5mm)	Distinct	SL
4-18	A	10YR 4/1	10YR 4/4	Common (2% - 20%)	Medium (5mm - 15mm)	Distinct	SICL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☑ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: Top 4" of soil profile is derived from run-off/sediment deposits from surrounding disturbed uplands/woods trail.

JURISDICTIONAL DETERMINATION

Wetland Determination
Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☐ Jurisdictional ☑ Isolated
What is this based on?
No hydrologic connection to WOTUS

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship
Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Isolated depressional PFO wetland. Significant sandy sedimentation from storm events/sheet flow. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Daniel Laue, Evan Sheppard
Applicant/owner: Williams Transco	Date: 8/18/2016 12:13:43 PM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T01-010-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Panicum virgatum	30%	FAC	H	Solidago rugosa	5%	FAC
H	Solidago altissima	15%	FACU	H	Chamaecrista fasciculata	1%	FACU
H	Eupatorium perfoliatum	10%	FACW				
H	Diodia teres	10%	FACU				
H	Andropogon virginicus	5%	FAC				
H	Solidago rigida	5%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	40	x 3 =	120	
FACU species	31	x 4 =	124	
UPL species	0	x 5 =	0	
Totals	81	(A)	264	(B)

Prevalence Index = B/A = 3.26

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Drift Lines
- ☐ Drainage Patterns
- ☐ Soil Saturation
- ☐ Sediment Deposits
- ☐ Morphological Plant Adaptations
- ☐ Oxidized Root Channels
- ☐ Water-stained Leaves
- ☐ Hydric Soils (only in the absence of other field indicators)
- ☐ Water Marks
- ☐ Surface scouring

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Flood data
- ☐ Site specific data
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
18	A	10YR 5/6					SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Maintained ROW, sample point located 34 feet N of the PEM wetland sample point. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.029 Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Other (explain in Notes) Distance to nearest roadway or other development 90 ft

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present Yes

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-010

Latitude 40.44287095 Longitude -74.30914592

Prepared by: Daniel Laue, Evan Sheppard Date 8/18/2016 11:12:37 AM

Wetland Impact:
Type PFO Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Yes	3,4	☐	
Floodflow Alteration	Yes	5,6,9	☑	Wetland has potential to store and absorb water during high runoff and sheet flow events.
Fish and Shellfish Habitat	No	1,2	☐	
Sediment/Toxicant Retention	No	1	☐	
Nutrient Removal	No	3,9	☐	
Production Export	No	2	☐	
Sediment/Shoreline Stabilization	No	1,3	☐	
Wildlife Habitat	No	3,4,5	☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No	6	☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: Adjacent land use is an existing pipeline ROW and surrounding upland woods. Final QA: Dutton 02/17* Refer to backup list of numbered considerations.

W-T01-010 Photo Log



ID:W-T01-010C-1 Date:08/18/2016 Direction:S Position:Wetland Overview



ID:W-T01-010C-1 Date:08/18/2016 Direction:S Position:Wetland Pit

W-T01-010 Photo Log



ID:U-T01-010-1 Date:08/18/2016 Direction:N Position:Upland Overview



ID:U-T01-010-1 Date:08/18/2016 Direction:N Position:Upland Pit

WETLAND ID: W- T01-011

Wetland Jurisdictional Field Data Sheet

Is wetland hydrologically isolated?

- ☐ **yes**
- ☑ **no**
- ☐ **could not be determined because wetland extends beyond the ROW**

If no, explain hydrologic connection:

Outlets present. Wetland is large basin with culvert and stream at southwest corner. Partially within Upper Wetland Boundary.
Final QA: Dutton 01/17

Associated Stream:

- ☑ **yes**
- ☐ **no**

If yes, list ID: ² ² - T01-003

(Use separate datasheet for each associated stream)

Approximate distance of wetland to stream (straight aerial feet): 0.00000000

Wetland Association to Stream

Is the wetland:

- ☑ **directly abutting**
- ☐ **adjacent (not directly but hydrologically connected)**

Wetland adjacency determination (if not directly abutting):

- ☐ **Discrete wetland hydrologic connection**
- ☐ **Ecological connection**
- ☐ **Separated by berm/barrier**

Explain:

Surface flow type from wetland to associated stream:

- ☑ **intermittent surface**
- ☐ **ephemeral surface**
- ☐ **perennial surface**
- ☐ **no surface flow**

Surface flow characteristic from wetland to associated stream:

- ☐ **discrete**
- ☐ **overland sheet flow**
- ☑ **confined**
- ☐ **other, explain:**_____

Definitions

Abutting: Wetlands that provide a continuous surface connection to relatively permanent waters that flow directly or indirectly into TNWs are abutting. The wetland boundary must interface with the OHWM of the tributary. If the wetland boundary does not abut the OHWM of the tributary, the wetland is adjacent. Abutting wetlands are not separated from tributaries by uplands, berms, dikes, or similar features. It is important to note, a continuous surface connection does not require surface water to be continuously present between the wetland and tributary.

Adjacent: bordering, contiguous, or neighboring. Adjacent wetlands may have a continuous surface connection to TNWs, but may also be separated from these waters by man-made dikes or barriers, natural river berms, beach dunes, or similar features. By definition, a continuous surface water connection is not required to establish adjacency.

Hydrologically Isolated: no surface water connections to other aquatic features exist.

Perennial: has flowing water year-round during a typical year.

Intermittent: has flowing water during certain times of the year, when groundwater provides water for stream flow.

Ephemeral: has flowing water only during, and for a short duration after, precipitation events in a typical year.

Discrete: not defined bed and banks, slight depression where water runs.

Confined: defined bed and banks.

Overland Sheet Flow: no defined channel, comprised of runoff.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/20/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: W-T01-011A-1

Investigator(s): Daniel Laue, Thomas Auffenorde Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.452466 Long: -74.279835 Datum: D_North_American_1

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: Depressional Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation Y, Soil Y, or Hydrology Y 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 _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

Stormwater detention basin with disturbed soils supporting hydrophytes.
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-01

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5)			
1. Panicum virgatum	30	Y	FAC
2. Cyperus strigosus	10	Y	FACW
3. Eleocharis obtusa	2	N	OBL
4. Juncus effusus	2	N	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	44 = Total Cover		
50% of total cover: 22	20% of total cover: 8.8		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	4	x 1 =	4
FACW species	10	x 2 =	20
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	44 (A)		114 (B)

Prevalence Index = B/A = 2.59

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 Five 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, and 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 __

Remarks: (If observed, list morphological adaptations below).

SOIL Sampling Point: W-T01-01

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
0-3	10YR 2/2	100					SiL	
3-18	10YR 4/2	100					SL	

[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:

Reducing conditions in stormwater detention basin. Soils meet criteria for 1989 manual, but are borderline for AGCP regional supplement. Based on landscape position, BPJ, and disturbance of soils during construction of detention basin, soils are assumed to be hydric.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/20/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: U-T01-011-1

Investigator(s): Daniel Laue, Thomas Auffenorde Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Convex Slope (%): 2

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.452768 Long: -74.279849 Datum: D_North_American_1

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

On maintained ROW adjacent to man-made stormwater detention basin. Located 107 feet north of the PEM wetland sample point and 43 feet NE of the wetland edge.
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T01-011

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Herb Stratum (Plot size: 5)			
1. Panicum virgatum	25	Y	FAC
2. Andropogon virginicus	20	Y	FAC
3. Plantago lanceolata	20	Y	FACU
4. Diodia teres	15	N	FACU
5. Artemisia vulgaris	15	N	UPL
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		

50% of total cover: 47.5 20% of total cover: 19

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

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: 67 (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	35	x 4 =	140
UPL species	15	x 5 =	75
Column Totals:	95 (A)		350 (B)

Prevalence Index = B/A = 3.68

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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T01-011

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
0-10	10YR4/4	100					SL	

[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:

Soil is gravelly below 10", refusal at 10".

Wetland Function-Value Evaluation Form

Total area of wetland 1.990 Human made? Yes Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Wetland - tidal/estuarine Distance to nearest roadway or other development 85 ft

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present Yes

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-011

Latitude 40.45245755 Longitude -74.27981824

Prepared by: Daniel Laue, Thomas Auffenorde Date 8/20/2016 9:17:37 AM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Yes	3,4,5,8,15	☐	
Floodflow Alteration	Yes	3,4,5,6,7,8,9,16,15,17	☑	Stormwater detention basin.
Fish and Shellfish Habitat	No		☐	
Sediment/Toxicant Retention	Yes	1,2,3,5	☑	Stormwater detention basin.
Nutrient Removal	Yes	3,4,9,10,11	☑	Stormwater detention basin.
Production Export	Yes	1,2,10	☐	
Sediment/Shoreline Stabilization	No	1,3	☐	
Wildlife Habitat	Yes	3,7,8,17	☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No	2	☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	Yes	1	☐	
Other	No		☐	

Notes: Stormwater detention basin that outflows to tidal wetland outside survey area. Partially within existing ROW. Final QA: Dutton 02/17* Refer to backup list of numbered considerations.

W-T01-011 Photo Log



ID:W-T01-011A-1 Date:08/20/2016 Direction:W Position:Wetland Overview



ID:W-T01-011A-1 Date:08/20/2016 Direction:W Position:Wetland Pit

W-T01-011 Photo Log



ID:U-T01-011-1 Date:08/20/2016 Direction:W Position:Upland Overview



ID:U-T01-011-1 Date:08/20/2016 Direction:W Position:Upland Pit

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/20/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: U-T01-012-1

Investigator(s): Daniel Laue, Thomas Auffenorde Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.451447 Long: -74.280795 Datum: D_North_American_1

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Upland ROW, adjacent to stormwater basin, grading activities in the past.
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

No hydrologic indicators observed.

Remarks:

No

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T01-012

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 15)			
1. Robinia pseudoacacia	35	Y	UPL
2.			
3.			
4.			
5.			
6.			
	35 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7		
Shrub Stratum (Plot size: 15)			
1. Rhus copallinum	10	Y	UPL
2. Clethra alnifolia	10	Y	FACW
3.			
4.			
5.			
6.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size: 5)			
1. Eupatorium hyssopifolium	40	Y	UPL
2. Euthamia graminifolia	20	Y	FAC
3. Plantago lanceolata	20	Y	FACU
4. Solidago altissima	20	Y	FACU
5. Panicum virgatum	15	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	115 = Total Cover		
50% of total cover: 57.5	20% of total cover: 23		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	35	x 3 =	105
FACU species	40	x 4 =	160
UPL species	85	x 5 =	425
Column Totals:	170 (A)		710 (B)

Prevalence Index = B/A = 4.18

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 Five 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, and 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 ✓

Remarks: (If observed, list morphological adaptations below).

Upland vegetation is dominant.

SOIL

Sampling Point: U-T01-012

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
0-18	10YR 5/4	100		0			LS	

[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:

Upland ROW.

WETLAND ID: W- T01-012

Wetland Jurisdictional Field Data Sheet

Is wetland hydrologically isolated?

☐ **yes**
☑ **no**
☐ **could not be determined because wetland extends beyond the ROW**

If no, explain hydrologic connection:

tidal wetland fringe. Within Upper Wetland Boundary.
Final QA: Dutton 01/17

Associated Stream:

☑ **yes**
☐ **no**

If yes, list ID: ² ² -_____
(Use separate datasheet for each associated stream)

Approximate distance of wetland to stream (straight aerial feet): 0.00000000

Wetland Association to Stream

Is the wetland:

☑ **directly abutting**
☐ **adjacent (not directly but hydrologically connected)**

Wetland adjacency determination (if not directly abutting):

☐ **Discrete wetland hydrologic connection**
☐ **Ecological connection**
☐ **Separated by berm/barrier**

Explain:

Surface flow type from wetland to associated stream:

☐ **intermittent surface** ☑ **ephemeral surface**
☐ **perennial surface** ☐ **no surface flow**

Surface flow characteristic from wetland to associated stream:

☐ **discrete** ☑ **overland sheet flow**
☐ **confined**
☐ **other, explain:**_____

Definitions

Abutting: Wetlands that provide a continuous surface connection to relatively permanent waters that flow directly or indirectly into TNWs are abutting. The wetland boundary must interface with the OHWM of the tributary. If the wetland boundary does not abut the OHWM of the tributary, the wetland is adjacent. Abutting wetlands are not separated from tributaries by uplands, berms, dikes, or similar features. It is important to note, a continuous surface connection does not require surface water to be continuously present between the wetland and tributary.

Adjacent: bordering, contiguous, or neighboring. Adjacent wetlands may have a continuous surface connection to TNWs, but may also be separated from these waters by man-made dikes or barriers, natural river berms, beach dunes, or similar features. By definition, a continuous surface water connection is not required to establish adjacency.

Hydrologically Isolated: no surface water connections to other aquatic features exist.

Perennial: has flowing water year-round during a typical year.

Intermittent: has flowing water during certain times of the year, when groundwater provides water for stream flow.

Ephemeral: has flowing water only during, and for a short duration after, precipitation events in a typical year.

Discrete: not defined bed and banks, slight depression where water runs.

Confined: defined bed and banks.

Overland Sheet Flow: no defined channel, comprised of runoff.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/20/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: W-T01-012D-1

Investigator(s): Daniel Laue, Thomas Auffenorde Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Estuarine Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.451389 Long: -74.280608 Datum: D_North_American_1

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: Estuarine fringe Field Cowardin Classification: E2EM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔ No _____	
Wetland Hydrology Present?	Yes ✔ No _____	

Remarks:

Edge of estuarine marsh associated with Cheesequake Creek.
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes ✔	No _____	Depth (inches): 2
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-012

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5)			
1. Schoenoplectus americanus	50	Y	OBL
2. Phragmites australis	30	Y	FACW
3. Panicum virgatum	15	N	FAC
4. Euthamia graminifolia	5	N	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	50	x 1 =	50
FACW species	30	x 2 =	60
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		170 (B)

Prevalence Index = B/A = 1.7

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 Five 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, and 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 __

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-01

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
0-4	10YR 3/4	100		0			Fibric	
4-18	10YR 5/1	80	10YR 4/6	20	C	M	SL	

[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 Function-Value Evaluation Form

Total area of wetland 0.282 Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested Distance to nearest roadway or other development 185 ft

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present Yes

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

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-012

Latitude 40.45105059 Longitude -74.28050690

Prepared by: Daniel Laue, Thomas Auffenorde Date 8/20/2016 12:48:15 PM

Wetland Impact:
Type E2EM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☐ N ☑

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Yes	4,5,7,15	☐	
Floodflow Alteration	Yes	1,3,4,5,6,7,8,9,10,13,14,18	☑	Edge of estuarine marsh.
Fish and Shellfish Habitat	No		☐	
Sediment/Toxicant Retention	Yes	1,2,3,4,8,10,14,15,16	☑	Edge of estuarine marsh.
Nutrient Removal	Yes	1,3,4,5,6,7,8,9,10,11,12,14	☑	Edge of estuarine marsh.
Production Export	Yes	1,2,5,6,7,8,10,11	☑	Edge of estuarine marsh.
Sediment/Shoreline Stabilization	Yes	3,4,9,15,12	☐	
Wildlife Habitat	Yes	3,5,6,8,9,11,12,13,14,21,22	☑	Edge of estuarine marsh.
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No	2,3,5,6,7,13	☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	Yes	1	☐	
Other	No		☐	

Notes: Final QA: Dutton 02/17

* Refer to backup list of numbered considerations.

W-T01-012 Photo Log



ID:W-T01-012D-1 Date:08/20/2016 Direction:S Position:Wetland Overview



ID:W-T01-012D-1 Date:08/20/2016 Direction:S Position:Wetland Pit

W-T01-012 Photo Log



ID:U-T01-012-1 Date:08/20/2016 Direction:W Position:Upland Overview



ID:U-T01-012-1 Date:08/20/2016 Direction:W Position:Upland Pit

WETLAND ID: W- T01-013

Wetland Jurisdictional Field Data Sheet

Is wetland hydrologically isolated?

- ☐ **yes**
- ☑ **no**
- ☐ **could not be determined because wetland extends beyond the ROW**

If no, explain hydrologic connection:

outlet of W-T01-011 to coastal wetlands. Within 1000 ft buffer of Upper Wetland Boundary. Final QA: Dutton 01/17

Associated Stream:

- ☑ **yes**
- ☐ **no**

If yes, list ID: ² ² - T01-003

(Use separate datasheet for each associated stream)

Approximate distance of wetland to stream (straight aerial feet): 0.00000000

Wetland Association to Stream

Is the wetland:

- ☑ **directly abutting**
- ☐ **adjacent (not directly but hydrologically connected)**

Wetland adjacency determination (if not directly abutting):

- ☐ **Discrete wetland hydrologic connection**
- ☐ **Ecological connection**
- ☐ **Separated by berm/barrier**

Explain:

Surface flow type from wetland to associated stream:

- ☐ **intermittent surface**
- ☑ **ephemeral surface**
- ☐ **perennial surface**
- ☐ **no surface flow**

Surface flow characteristic from wetland to associated stream:

- ☑ **discrete**
- ☐ **overland sheet flow**
- ☐ **confined**
- ☐ **other, explain:**_____

Definitions

Abutting: Wetlands that provide a continuous surface connection to relatively permanent waters that flow directly or indirectly into TNWs are abutting. The wetland boundary must interface with the OHWM of the tributary. If the wetland boundary does not abut the OHWM of the tributary, the wetland is adjacent. Abutting wetlands are not separated from tributaries by uplands, berms, dikes, or similar features. It is important to note, a continuous surface connection does not require surface water to be continuously present between the wetland and tributary.

Adjacent: bordering, contiguous, or neighboring. Adjacent wetlands may have a continuous surface connection to TNWs, but may also be separated from these waters by man-made dikes or barriers, natural river berms, beach dunes, or similar features. By definition, a continuous surface water connection is not required to establish adjacency.

Hydrologically Isolated: no surface water connections to other aquatic features exist.

Perennial: has flowing water year-round during a typical year.

Intermittent: has flowing water during certain times of the year, when groundwater provides water for stream flow.

Ephemeral: has flowing water only during, and for a short duration after, precipitation events in a typical year.

Discrete: not defined bed and banks, slight depression where water runs.

Confined: defined bed and banks.

Overland Sheet Flow: no defined channel, comprised of runoff.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayerville / Middlesex Sampling Date: 09/27/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: W-T01-013C-1

Investigator(s): Daniel Laue, Thomas Auffenorde Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Drainageway Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.451664 Long: -74.280051 Datum: D_North_American_1

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: Depressional Field Cowardin Classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔ No _____	
Wetland Hydrology Present?	Yes ✔ No _____	

Remarks:

Wetland associated with culverted stream. Area is underlain by riprap from construction of the culvert.
Final QA: Dutton 01/17

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 _____	Depth (inches): 16
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-01

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Betula nigra	90	Y	FACW
2.			
3.			
4.			
5.			
6.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Sapling Stratum (Plot size: 15)			
1. Betula nigra	10	Y	FACW
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	30	Y	FACW
2. Microstegium vimineum	15	Y	FAC
3. Carex lurida	5	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50 = Total Cover		
50% of total cover: 25	20% of total cover: 10		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	130	x 2 =	260
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	150 (A)		310 (B)

Prevalence Index = B/A = 2.07

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 Five 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, and 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 __

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-01

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
0-2	10YR 3/2	100		0			SIL	
2-7	10YR 3/3	80	10YR 4/6	20	C	PL	SL	
7-9	10YR 4/2	70	7.5YR 4/4	30	C	PL	SCL	
9+		0		0				Rock/refusal.

[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:

Rock/refusal at 9". Soils are disturbed from geofabrix lining/grading activities during the construction of the detention basin.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 09/27/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: U-T01-013-1

Investigator(s): Daniel Laue, Thomas Auffenorde Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Convex Slope (%): 4

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.451651 Long: -74.280148 Datum: D_North_American_1

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Upland adjacent to detention basin, downslope of riprap basin edge. See photos.
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T01-013

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5)			
1. Artemisia vulgaris	40	Y	UPL
2. Panicum virgatum	40	Y	FAC
3. Eupatorium perfoliatum	20	N	FACW
4. Dactylis glomerata	20	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	120 = Total Cover		
50% of total cover: 60	20% of total cover: 24		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	40	x 3 =	120
FACU species	20	x 4 =	80
UPL species	40	x 5 =	200
Column Totals:	120 (A)		440 (B)

Prevalence Index = B/A = 3.67

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 Five 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, and 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 ✓

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T01-013

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
0-8	10YR 3/4	100		0			SIL	
8+		0		0				Rock/refusal.

[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:

Rock/refusal 8".

Wetland Function-Value Evaluation Form

Total area of wetland 0.002 Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Wetland - tidal/estuarine Distance to nearest roadway or other development ~1000 feet

Dominant wetland systems present Yes Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Low

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-013

Latitude 40.45161681 Longitude -74.28006182

Prepared by: Daniel Laue, Thomas Auffenorde Date 8/20/2016 3:18:03 PM

Wetland Impact:
Type PFO Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Yes	4,5,7,9,15	✔	Wetland may provide groudwater recharge/discharge due to its association with a watercourse and the gravel/sandy composition of the wetland/adjecent areas.
Floodflow Alteration	Yes	4,5,6,7,8,9	✔	Wetland may provide significant floodflow alteration as it contains an intermittent outflow and contains hydric soils.
Fish and Shellfish Habitat	Yes	2,4,8,17		
Sediment/Toxicant Retention	Yes	3,10,16		
Nutrient Removal	Yes	3,4,10		
Production Export	No	10		
Sediment/Shoreline Stabilization	Yes	1,2,3,4,14	✔	Wetland may provide sediment/shoreline stabilization services as it is forested and potential sources of sediment are present upslope and upstream.
Wildlife Habitat	Yes	5,6,7,8		
Recreation	No			
Educational/Scientific Value	No			
Uniqueness/Heritage	No			
Visual Quality/Aesthetics	No			
ES Endangered Species Habitat	No			
Other	No			

Notes: Wetland is hydraulically fed by a man-made PEM basin with a culverted inflow from basin. Poor water quality. Final QA: Dutton 02/17* Refer to backup list of numbered considerations.

W-T01-013 Photo Log



ID:W-T01-013C-1 Date:10/31/2016 Direction:SW Position:Wetland Overview



ID:W-T01-013C-1 Date:10/31/2016 Direction:SW Position:Wetland Pit

W-T01-013 Photo Log



ID:U-T01-013-1 Date:10/31/2016 Direction:NW Position:Upland Overview



ID:U-T01-013-1 Date:10/31/2016 Direction:NW Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Michael Levinson, Scott McDonnell
Applicant/owner: Williams Transco	Date: 8/22/2016 5:35:34 PM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T01-014A-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PEM; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Phragmites australis	50%	FACW	H	Juncus effusus	5%	OBL
H	Schoenoplectus pungens	30%	OBL	H	Pycnanthemum tenuifolium	5%	FACW
H	Arthraxon hispidus	25%	FAC				
H	Solidago rugosa	5%	FAC				
H	Equisetum arvense	5%	FAC				
H	Scirpus atrovirens	5%	OBL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	30	x 1 =	30	
FACW species	50	x 2 =	100	
FAC species	25	x 3 =	75	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	105	(A)	205	(B)

Prevalence Index = B/A = 1.95

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☑ Drift Lines
- ☑ Drainage Patterns
- ☐ Soil Saturation
- ☐ Sediment Deposits
- ☐ Morphological Plant Adaptations
- ☐ Oxidized Root Channels
- ☐ Water-stained Leaves
- ☐ Hydric Soils (only in the absence of other field indicators)
- ☐ Water Marks
- ☐ Surface scouring

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Flood data
- ☐ Site specific data
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Evesboro sand, 10 to 15 percent sl
Subgroup: Typic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4		10YR 4/2	10YR 3/6	Common (2% - 20%)	Medium (5mm - 15mm)	Prominent	LCOS
4-20		10YR 3/2	10YR 3/6	Common (2% - 20%)	Medium (5mm - 15mm)	Prominent	LS
20-24		2.5Y 4/2	/				S

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: Crushed stone present in second layer.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:
0

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☑ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM sample point within a large PEM/PFO/PSS complex extending outside the study area. Final QA: Dutton 1/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Michael Levinson, Scott McDonnell
Applicant/owner: Williams Transco	Date: 8/22/2016 5:48:46 PM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T01-014B-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PSS; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Salix discolor	50%	FACW	S	Spiraea alba	2%	FACW
S	Acer rubrum	5%	FAC	H	Phragmites australis	100%	FACW
S	Betula populifolia	5%	FAC	H	Onoclea sensibilis	15%	FACW
S	Rhus copallinum	5%	UPL	H	Equisetum arvense	5%	FAC
S	Morella pensylvanica	5%	FAC	H	Solidago rugosa	2%	FAC
S	Vaccinium corymbosum	5%	FACW	H	Rubus allegheniensis	2%	UPL

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	172	x 2 =	344	
FAC species	24	x 3 =	72	
FACU species	0	x 4 =	0	
UPL species	7	x 5 =	35	
Totals	203	(A)	451	(B)

Prevalence Index = B/A = 2.22

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☑ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation: 5

Depth to free water in pit: 5

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Evesboro sand, 10 to 15 percent sl
Subgroup: Typic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-1		10YR 2/2	/				MM
1-5		10YR 4/1	/				SIL
5-24		2.5Y 4/3	/				S

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☑ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination
Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:
0

Watershed Relationship
Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☑ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

PSS sample point within large PEM/PSS/PFO complex extending beyond the study corridor. Final QA: Dutton 1/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Michael Levinson, Scott McDonnell Date: 8/22/2016 11:12:10 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T01-014C-1 Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland HGM Class: Depressional Field Cowardin classification: PFO NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Nyssa sylvatica	60%	FAC				
T	Acer rubrum	20%	FAC				
S	Vaccinium corymbosum	10%	FACW				
S	Nyssa sylvatica	5%	FAC				
H	Carex lurida	15%	OBL				
H	Scirpus cyperinus	5%	OBL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	15	x 1 =	15	
FACW species	10	x 2 =	20	
FAC species	85	x 3 =	255	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	110	(A)	290	(B)

Prevalence Index = B/A = 2.64

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☑ Soil Saturation
- ☐ Oxidized Root Channels
- ☑ Water Marks
- ☑ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:
Depth to saturation: 5
Depth to free water in pit: 5

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Evesboro sand, 10 to 15 percent sl
Subgroup: Typic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-5		10YR 2/2	10YR 5/6	Many (>20%)	Medium (5mm - 15mm)	Prominent	L
5-18		2.5Y 5/2	10YR 5/6	Common (2% - 20%)	Medium (5mm - 15mm)	Prominent	LS
18-26		2.5Y 6/2	10YR 4/6	Many (>20%)	Medium (5mm - 15mm)	Prominent	LS

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination
Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:
0

Watershed Relationship
Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☑ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

Wetland is located at the bottom of a large depression. Final QA: Dutton 1/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Jeff Mason, Rebecca Dutton Date: 12/11/2016 12:53:53 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T15-004C-1 Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland HGM Class: Riverine Field Cowardin classification: PFO NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Salix nigra	75%	OBL				
T	Populus deltoides	10%	FAC				
T	Acer rubrum	10%	FAC				
H	Symphyotrichum prenanthoides	5%	FAC				
V	Lonicera japonica	5%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	75	x 1 =	75	
FACW species	0	x 2 =	0	
FAC species	25	x 3 =	75	
FACU species	5	x 4 =	20	
UPL species	0	x 5 =	0	
Totals	105	(A)	170	(B)

Prevalence Index = B/A = 1.62

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☑ Soil Saturation
- ☑ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation: 7

Depth to free water in pit: 8

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Psamments, 0 to 3 percent slopes
Subgroup: Typic Alaquods
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-2		10YR 3/1	7.5YR 4/4	Many (>20%)	Medium (5mm - 15mm)	Prominent	S
2-4		10YR 2/1	/				S
4-9		2.5Y 6/2	2.5Y 5/6	Common (2% - 20%)	Medium (5mm - 15mm)	Prominent	S

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:
0

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☑ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

PFO in valley along stream. Inflow for overland sheet flow and groundwater. Outflow to stream and groundwater recharge. Final QA: Dutton 1/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Michael Levinson, Scott McDonnell
Applicant/owner: Williams Transco	Date: 8/22/2016 11:07:04 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T01-014-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer rubrum	30%	FAC	V	Parthenocissus quinquefolia	20%	FACU
T	Robinia pseudoacacia	10%	UPL	V	Lonicera japonica	15%	FACU
T	Quercus montana	10%	UPL	V	Vitis labrusca	10%	FAC
S	Acer rubrum	15%	FAC				
H	Rubus allegheniensis	10%	UPL				
H	Solidago canadensis	10%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	55	x 3 =	165	
FACU species	45	x 4 =	180	
UPL species	30	x 5 =	150	
Totals	130	(A)	495	(B)

Prevalence Index = B/A = 3.81

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Evesboro sand, 10 to 15 percent sl
Subgroup: Typic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-5		2.5Y 6/6	/				SL
5-20		2.5Y 6/6	10YR 6/6	Common (2% - 20%)	Medium (5mm - 15mm)	Prominent	SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Final QA: Dutton 1/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Jeff Mason, Rebecca Dutton Date: 12/11/2016 12:53:12 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: U-T15-004-1 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: UPL NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Prunus serotina	15%	FACU				
T	Robinia pseudoacacia	15%	UPL				
H	Reynoutria japonica	25%	UPL				
V	Lonicera japonica	15%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:					
	OBL species	0	x 1 =	0	
	FACW species	0	x 2 =	0	
	FAC species	0	x 3 =	0	
	FACU species	30	x 4 =	120	
	UPL species	40	x 5 =	200	
	Totals	70	(A)	320	(B)

Prevalence Index = B/A = 4.57

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Psamments, 0 to 3 percent slopes
Subgroup: Typic Alaquods
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-0.5		10YR 2/2	/				L
0.5-5		5YR 3/3	/				SIL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: Dense gravel and riprap at five inches. Multiple pits attempted. Full on top of ten inches aggregate rip rap.

JURISDICTIONAL DETERMINATION

Wetland Determination
Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship
Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Upland sample point located 18 feet south of the PFO wetland sample point. Final QA: Dutton 1/17

Wetland Function-Value Evaluation Form

Total area of wetland 3.183 Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Other (explain in Notes) Distance to nearest roadway or other development 0

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Medium

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-014

Latitude 40.44779859 Longitude -74.28888167

Prepared by: Michael Levinson, Scott McDonnell Date 8/22/2016 9:43:47 AM

Wetland Impact:
Type PEM/PSS/PFO Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Yes	4,15	☐	
Floodflow Alteration	Yes	3,5,18	☐	
Fish and Shellfish Habitat	No	1	☐	
Sediment/Toxicant Retention	Yes	4	☐	
Nutrient Removal	Yes	9,11	☐	
Production Export	Yes	1,8	☐	
Sediment/Shoreline Stabilization	No		☐	
Wildlife Habitat	Yes	4,5,7,8,15	✔	diversity of Cowardin classes, proximity to areas of uplands and other wetlands provide habitats for common wildlife species.
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: adjacent to/includes UG gas row, disturbed borrow areas, adjacent to landfill. Final QA: Dutton 02/17* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.011 Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested Distance to nearest roadway or other development 250 ft

Dominant wetland systems present Yes Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Medium

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T15-004

Latitude 40.44683352 Longitude -74.28999522

Prepared by: Jeff Mason, Rebecca Dutton Date 12/11/2016 12:38:18 PM

Wetland Impact:
Type PFO Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y [✔] N [ ]

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	2,4,7	[ ]	
Floodflow Alteration	Yes	3,5,6,8,10,9,13	[✔]	
Fish and Shellfish Habitat	No	1,4,8,17	[ ]	
Sediment/Toxicant Retention	No	1,2,10	[ ]	
Nutrient Removal	No	3,4	[ ]	
Production Export	No	12	[ ]	
Sediment/Shoreline Stabilization	No	2,3,4,14,15	[ ]	
Wildlife Habitat	No	3,6,7,8	[ ]	
Recreation	No		[ ]	private property
Educational/Scientific Value	No		[ ]	private property
Uniqueness/Heritage	No		[ ]	private property
Visual Quality/Aesthetics	No		[ ]	private property
ES Endangered Species Habitat	No		[ ]	
Other	No		[ ]	

Notes: PFO abutting stream in forest. large culvert from apartment complex upslope feeds stream 30 ft upstream of wetland. Part of W-T01-014 complex. Final QA: Dutton 02/17 * Refer to backup list of numbered considerations.

W-T01-014 Photo Log



ID:W-T01-014A-1 Date:08/22/2016 Direction:E Position:Wetland Overview



ID:W-T01-014A-1 Date:08/22/2016 Direction:N Position:Wetland Pit

W-T01-014 Photo Log



ID:W-T01-014B-1 Date:08/22/2016 Direction:W Position:Wetland Overview



ID:W-T01-014B-1 Date:08/22/2016 Direction:E Position:Wetland Pit

W-T01-014 Photo Log



ID:W-T01-014C-1 Date:08/22/2016 Direction:E Position:Wetland Overview



ID:W-T01-014C-1 Date:08/22/2016 Direction:E Position:Wetland Pit

W-T01-014 Photo Log



ID:U-T01-014-1 Date:08/22/2016 Direction:W Position:Upland Overview



ID:U-T01-014-1 Date:08/22/2016 Direction:W Position:Upland Pit

W-T15-004 Photo Log



ID:W-T15-004C-1 Date:12/11/2016 Direction:E Position:Wetland Overview



ID:W-T15-004C-1 Date:12/11/2016 Direction:N Position:Wetland Pit

W-T15-004 Photo Log



ID:U-T15-004-1 Date:12/11/2016 Direction:SW Position:Upland Overview



ID:U-T15-004-1 Date:12/11/2016 Direction:S Position:Upland Pit

WETLAND ID: W- T01-015

Wetland Jurisdictional Field Data Sheet

Is wetland hydrologically isolated?

☐ **yes**
☑ **no**
☐ **could not be determined because wetland extends beyond the ROW**

If no, explain hydrologic connection:

connects to drainage features offsite by overland sheetflow. Connects to system within 1000 ft of Upper Wetland Boundary.
Final QA: Dutton 01/17

Associated Stream:

☐ **yes**
☑ **no**

If yes, list ID: ² ² -_____
(Use separate datasheet for each associated stream)

Approximate distance of wetland to stream (straight aerial feet):_____

Wetland Association to Stream

Is the wetland:

☐ **directly abutting**
☐ **adjacent (not directly but hydrologically connected)**

Wetland adjacency determination (if not directly abutting):

☐ **Discrete wetland hydrologic connection**
☐ **Ecological connection**
☐ **Separated by berm/barrier**

Explain:

Surface flow type from wetland to associated stream:

☐ **intermittent surface** ☐ **ephemeral surface**
☐ **perennial surface** ☐ **no surface flow**

Surface flow characteristic from wetland to associated stream:

☐ **discrete** ☐ **overland sheet flow**
☐ **confined**
☐ **other, explain:**_____

Definitions

Abutting: Wetlands that provide a continuous surface connection to relatively permanent waters that flow directly or indirectly into TNWs are abutting. The wetland boundary must interface with the OHWM of the tributary. If the wetland boundary does not abut the OHWM of the tributary, the wetland is adjacent. Abutting wetlands are not separated from tributaries by uplands, berms, dikes, or similar features. It is important to note, a continuous surface connection does not require surface water to be continuously present between the wetland and tributary.

Adjacent: bordering, contiguous, or neighboring. Adjacent wetlands may have a continuous surface connection to TNWs, but may also be separated from these waters by man-made dikes or barriers, natural river berms, beach dunes, or similar features. By definition, a continuous surface water connection is not required to establish adjacency.

Hydrologically Isolated: no surface water connections to other aquatic features exist.

Perennial: has flowing water year-round during a typical year.

Intermittent: has flowing water during certain times of the year, when groundwater provides water for stream flow.

Ephemeral: has flowing water only during, and for a short duration after, precipitation events in a typical year.

Discrete: not defined bed and banks, slight depression where water runs.

Confined: defined bed and banks.

Overland Sheet Flow: no defined channel, comprised of runoff.

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Michael Levinson, Scott McDonnell
Applicant/owner: Williams Transco	Date: 8/22/2016 11:07:04 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T01-015-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: PEM; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Sassafras albidum	70%	FACU	V	Lonicera japonoca	40%	FACU
T	Quercus velutina	30%	UPL	V	Celastrus orbiculatus	20%	FACU
S	Sassafras albidum	30%	FACU				
S	Prunus serotina	20%	FACU				
S	Betula populifolia	10%	FAC				
H	Reynoutria japonica	5%	UPL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	10	x 3 =	30	
FACU species	180	x 4 =	720	
UPL species	35	x 5 =	175	
Totals	225	(A)	925	(B)

Prevalence Index = B/A = 4.11

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Drift Lines
- ☐ Drainage Patterns
- ☐ Soil Saturation
- ☐ Sediment Deposits
- ☐ Morphological Plant Adaptations
- ☐ Oxidized Root Channels
- ☐ Water-stained Leaves
- ☐ Hydric Soils (only in the absence of other field indicators)
- ☐ Water Marks
- ☐ Surface scouring

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Flood data
- ☐ Site specific data
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Psamments, 0 to 3 percent slopes
Subgroup: Typic Alaquods
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-24		10YR 5/8	/				LS

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Michael Levinson, Scott McDonnell Date: 8/22/2016 11:07:04 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: U-T01-015-1 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: UPL NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Sassafras albidum	70%	FACU	V	Lonicera japonoca	40%	FACU
T	Quercus velutina	30%	UPL	V	Celastrus orbiculatus	20%	FACU
S	Sassafras albidum	30%	FACU				
S	Prunus serotina	20%	FACU				
S	Betula populifolia	10%	FAC				
H	Reynoutria japonica	5%	UPL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	10	x 3 =	30	
FACU species	180	x 4 =	720	
UPL species	35	x 5 =	175	
Totals	225	(A)	925	(B)

Prevalence Index = B/A = 4.11

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Drift Lines
- ☐ Drainage Patterns
- ☐ Soil Saturation
- ☐ Sediment Deposits
- ☐ Morphological Plant Adaptations
- ☐ Oxidized Root Channels
- ☐ Water-stained Leaves
- ☐ Hydric Soils (only in the absence of other field indicators)
- ☐ Water Marks
- ☐ Surface scouring

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Flood data
- ☐ Site specific data
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Psamments, 0 to 3 percent slopes
Subgroup: Typic Alaquods
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-24		10YR 5/8	/				LS

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.019 Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Other (explain in Notes) Distance to nearest roadway or other development 0

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present No

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-015

Latitude 40.44845676 Longitude -74.28824884

Prepared by: Michael Levinson, Scott McDonnell Date 8/22/2016 12:45:03 PM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y [☑] N [☐]

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Yes	4	☐	
Floodflow Alteration	Yes	5,9	☐	
Fish and Shellfish Habitat	No	1	☐	
Sediment/Toxicant Retention	Yes	4	☑	surrounded by eroding slopes. vegetated wetland slows erosion and captures sediments.
Nutrient Removal	Yes	7,9	☐	
Production Export	No		☐	
Sediment/Shoreline Stabilization	No	1,2,3	☐	
Wildlife Habitat	Yes	5,8	☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: adjacent to borrow pit, trail, and UG mat gas ROW. Final QA: Dutton 02/17

* Refer to backup list of numbered considerations.

W-T01-015 Photo Log



ID:W-T01-015A-1 Date:08/22/2016 Direction:E Position:Wetland Overview



ID:W-T01-015A-1 Date:08/22/2016 Direction:E Position:Wetland Pit

W-T01-015 Photo Log



ID:U-T01-015-1 Date:08/22/2016 Direction:N Position:Upland Overview



ID:U-T01-015-1 Date:08/22/2016 Direction:E Position:Upland Pit

WETLAND ID: W- T01-016

Wetland Jurisdictional Field Data Sheet

Is wetland hydrologically isolated?

☐ **yes**
☑ **no**
☐ **could not be determined because wetland extends beyond the ROW**

If no, explain hydrologic connection:

part of mapped NWI E2SS/EM1Pd. Part of larger wetland within Upper Wetland Boundary. Mapped Melvins Creek is outside survey area. Final QA: Dutton 01/17

Associated Stream:

☑ **yes**
☐ **no**

If yes, list ID: ² ²-_____
(Use separate datasheet for each associated stream)

Approximate distance of wetland to stream (straight aerial feet): 850.00000000

Wetland Association to Stream

Is the wetland:

☑ **directly abutting**
☐ **adjacent (not directly but hydrologically connected)**

Wetland adjacency determination (if not directly abutting):

☐ **Discrete wetland hydrologic connection**
☐ **Ecological connection**
☐ **Separated by berm/barrier**

Explain:

Surface flow type from wetland to associated stream:

☑ **intermittent surface** ☐ **ephemeral surface**
☐ **perennial surface** ☐ **no surface flow**

Surface flow characteristic from wetland to associated stream:

☐ **discrete** ☑ **overland sheet flow**
☐ **confined**
☐ **other, explain:**_____

Definitions

Abutting: Wetlands that provide a continuous surface connection to relatively permanent waters that flow directly or indirectly into TNWs are abutting. The wetland boundary must interface with the OHWM of the tributary. If the wetland boundary does not abut the OHWM of the tributary, the wetland is adjacent. Abutting wetlands are not separated from tributaries by uplands, berms, dikes, or similar features. It is important to note, a continuous surface connection does not require surface water to be continuously present between the wetland and tributary.

Adjacent: bordering, contiguous, or neighboring. Adjacent wetlands may have a continuous surface connection to TNWs, but may also be separated from these waters by man-made dikes or barriers, natural river berms, beach dunes, or similar features. By definition, a continuous surface water connection is not required to establish adjacency.

Hydrologically Isolated: no surface water connections to other aquatic features exist.

Perennial: has flowing water year-round during a typical year.

Intermittent: has flowing water during certain times of the year, when groundwater provides water for stream flow.

Ephemeral: has flowing water only during, and for a short duration after, precipitation events in a typical year.

Discrete: not defined bed and banks, slight depression where water runs.

Confined: defined bed and banks.

Overland Sheet Flow: no defined channel, comprised of runoff.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/23/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: W-T01-016D-1

Investigator(s): Thomas Auffenorde, Michael Levinson Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.448318 Long: -74.282903 Datum: D_North_American_1

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: Slope Field Cowardin Classification: E2EM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: E2SS/EM1Pd

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

Remarks:

E2EM point in mapped NWI E2SS/EM1Pd.
Final QA: Dutton 01/17

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 ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-01(

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	5	Y	OBL
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		

50% of total cover: 2.5 20% of total cover: 1

Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Herb Stratum (Plot size: 5)			
1. Phragmites australis	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size: 30)			
1. Parthenocissus quinquefolia	2	Y	FACU
2.			
3.			
4.			
5.			
	2 = Total Cover		

50% of total cover: 1 20% of total cover: 0.4

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	5	x 1 =	5
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column Totals:	107 (A)		213 (B)

Prevalence Index = B/A = 1.99

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 Five 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, and 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 __

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-01(

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	10YR 3/2	95	10YR 3/4	5	C	M	SIL	
6-18	10YR 4/2	80	7.5YR 4/6	20	C	M	SIL	

[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:

soil is moist.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/23/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: U-T01-016-1

Investigator(s): Thomas Auffenorde, Michael Levinson Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.448384 Long: -74.283242 Datum: D_North_American_1

Soil Map Unit Name: Psamments, waste substratum, 0 to 8 percent slopes HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T01-016

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Robinia pseudoacacia	30	Y	UPL
2.			
3.			
4.			
5.			
6.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	30	Y	FACW
2. Artemisia vulgaris	20	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50 = Total Cover		
50% of total cover: 25	20% of total cover: 10		
Woody Vine Stratum (Plot size: 30)			
1. Celastrus orbiculatus	40	Y	FACU
2. Lonicera japonica	10	Y	FACU
3.			
4.			
5.			
	50 = Total Cover		
50% of total cover: 25	20% of total cover: 10		

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	0	x 3 =	0
FACU species	50	x 4 =	200
UPL species	50	x 5 =	250
Column Totals:	130 (A)		510 (B)

Prevalence Index = B/A = 3.92

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 Five 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, and 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 ✓

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T01-016

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
0-2	10YR 3/2	100		0			SL	
2-18	10YR 3/4	100		0			SL	

[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 Function-Value Evaluation Form

Total area of wetland 0.122 Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested Distance to nearest roadway or other development 0

Dominant wetland systems present E2SS/EM1Pd Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Low

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-016

Latitude 40.44832694 Longitude -74.28257794

Prepared by: Thomas Auffenorde, Michael Levinson Date 8/23/2016 9:53:43 AM

Wetland Impact:
Type E2EM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☐ N ☑

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	4,5,15	☐	
Floodflow Alteration	Yes	3,4,5,6,7,8,18	☑	
Fish and Shellfish Habitat	No		☐	
Sediment/Toxicant Retention	Yes	1,2,3,4,8	☑	
Nutrient Removal	Yes	3,4,7,8,9,10,11	☑	
Production Export	No	11,14	☐	
Sediment/Shoreline Stabilization	No	3,15	☐	
Wildlife Habitat	No	5,6,7,13	☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: Final QA: Dutton 02/17

* Refer to backup list of numbered considerations.

W-T01-016 Photo Log



ID:W-T01-016D-1 Date:08/23/2016 Direction:SW Position:Wetland Overview



ID:W-T01-016D-1 Date:08/23/2016 Direction:SW Position:Wetland Pit

W-T01-016 Photo Log



ID:U-T01-016-1 Date:08/23/2016 Direction:SE Position:Upland Overview



ID:U-T01-016-1 Date:08/23/2016 Direction:SE Position:Upland Pit

WETLAND ID: W- T01-017

Wetland Jurisdictional Field Data Sheet

Is wetland hydrologically isolated?

- ☐ **yes**
- ☑ **no**
- ☐ **could not be determined because wetland extends beyond the ROW**

If no, explain hydrologic connection:

abuts marina/Cheesequake Creek tributary.
Within Upper Wetland Boundary.
Final QA: Dutton 01/17

Associated Stream:

- ☑ **yes**
- ☐ **no**

If yes, list ID: ² ² -_____
(Use separate datasheet for each associated stream)

Approximate distance of wetland to stream (straight aerial feet): 0.00000000

Wetland Association to Stream

Is the wetland:

- ☑ **directly abutting**
- ☐ **adjacent (not directly but hydrologically connected)**

Wetland adjacency determination (if not directly abutting):

- ☐ **Discrete wetland hydrologic connection**
- ☐ **Ecological connection**
- ☐ **Separated by berm/barrier**

Explain:

Surface flow type from wetland to associated stream:

- ☑ **intermittent surface** ☐ **ephemeral surface**
- ☐ **perennial surface** ☐ **no surface flow**

Surface flow characteristic from wetland to associated stream:

- ☐ **discrete** ☑ **overland sheet flow**
- ☐ **confined**
- ☐ **other, explain:**_____

Definitions

Abutting: Wetlands that provide a continuous surface connection to relatively permanent waters that flow directly or indirectly into TNWs are abutting. The wetland boundary must interface with the OHWM of the tributary. If the wetland boundary does not abut the OHWM of the tributary, the wetland is adjacent. Abutting wetlands are not separated from tributaries by uplands, berms, dikes, or similar features. It is important to note, a continuous surface connection does not require surface water to be continuously present between the wetland and tributary.

Adjacent: bordering, contiguous, or neighboring. Adjacent wetlands may have a continuous surface connection to TNWs, but may also be separated from these waters by man-made dikes or barriers, natural river berms, beach dunes, or similar features. By definition, a continuous surface water connection is not required to establish adjacency.

Hydrologically Isolated: no surface water connections to other aquatic features exist.

Perennial: has flowing water year-round during a typical year.

Intermittent: has flowing water during certain times of the year, when groundwater provides water for stream flow.

Ephemeral: has flowing water only during, and for a short duration after, precipitation events in a typical year.

Discrete: not defined bed and banks, slight depression where water runs.

Confined: defined bed and banks.

Overland Sheet Flow: no defined channel, comprised of runoff.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/25/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: W-T01-017A-1

Investigator(s): Thomas Auffenorde, Daniel Laue Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.462413 Long: -74.267965 Datum: D_North_American_1

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: Estuarine fringe Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔ No _____	
Wetland Hydrology Present?	Yes ✔ No _____	

Remarks:

Disturbed area adjacent to ROW. Stormwater from upslope residential development discharges into this wetland.
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 4

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-01

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 15)			
1. Cephalanthus occidentalis	2	Y	OBL
2.			
3.			
4.			
5.			
6.			
	2 = Total Cover		
50% of total cover: 1	20% of total cover: 0.4		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	50	Y	FACW
2. Eleocharis tenuis	25	Y	FACW
3. Juncus canadensis	10	N	OBL
4. Juncus effusus	10	N	OBL
5. Scirpus cyperinus	5	N	OBL
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	27	x 1 =	27
FACW species	75	x 2 =	150
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	102 (A)		177 (B)

Prevalence Index = B/A = 1.74

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 Five 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, and 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 __

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-01

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
0-2	10YR 2/1	100		0			SIL	
2-20	10YR 5/1	85	7.5YR 4/6	15	C	M	SICL	

[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: Clay Layers

Depth (inches): 4, 20

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/25/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: W-T01-017D-1

Investigator(s): Thomas Auffenorde, Daniel Laue Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Estuarine Fringe Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.462244 Long: -74.268014 Datum: D_North_American_1

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: Estuarine fringe Field Cowardin Classification: E2EM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔ No _____	
Wetland Hydrology Present?	Yes ✔ No _____	

Remarks:

Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes ✔	No _____	Depth (inches): 2
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-01

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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 (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

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 Five 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, and 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 __

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-01

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
0-2	5Y 3/1	60	2.5Y 4/3	40	RM	PL	MM	
2-20	7.5YR 2.5/1	90	2.5Y 4/3	10	C	M	SICL	
20-24	N 5/1	95	N 3/1	5	C	M	SIC	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/25/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: U-T01-017-1

Investigator(s): Thomas Auffenorde, Daniel Laue Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Convex Slope (%): 8

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.462592 Long: -74.26782 Datum: D_North_American_1

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Maintained ROW
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T01-017

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Robinia pseudoacacia	30	Y	UPL
2.			
3.			
4.			
5.			
6.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Sapling Stratum (Plot size: 15)			
1. Robinia pseudoacacia	15	Y	UPL
2. Prunus serotina	2	N	FACU
3.			
4.			
5.			
6.			
	17 = Total Cover		
50% of total cover: 8.5	20% of total cover: 3.4		
Shrub Stratum (Plot size: 15)			
1. Rhus copallinum	10	Y	UPL
2. Baccharis halimifolia	10	Y	FAC
3.			
4.			
5.			
6.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size: 5)			
1. Danthonia sericea	50	Y	FACU
2. Euthamia graminifolia	20	Y	FAC
3. Eupatorium hyssopifolium	20	Y	UPL
4. Panicum virgatum	15	N	FAC
5. Andropogon virginicus	15	N	FAC
6. Solidago rugosa	2	N	FAC
7. Solidago sempervirens	1	N	FACW
8.			
9.			
10.			
11.			
	123 = Total Cover		
50% of total cover: 61.5	20% of total cover: 24.6		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	62	x 3 =	246
FACU species	52	x 4 =	208
UPL species	75	x 5 =	275
Column Totals:	190 (A)		731 (B)

Prevalence Index = B/A = 3.85

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 Five 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, and 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 ✓

Remarks: (If observed, list morphological adaptations below).

E. hyssopifolium is assumed UPL, as it has no indicator.

SOIL

Sampling Point: U-T01-017

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
0-2	10YR 4/1	100		0			SL	
2-12	10YR 6/3	100		0			SL	gravel present

[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:

dense gravel below 12"

Wetland Function-Value Evaluation Form

Total area of wetland 1.105 Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use marina/residential Distance to nearest roadway or other development 0

Dominant wetland systems present PEM/E2EM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? low

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T01-017

Latitude 40.46124957 Longitude -74.27002252

Prepared by: Thomas Auffenorde, Daniel Laue Date 8/25/2016 9:02:48 AM

Wetland Impact:
Type PEM/E2EM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y [✔] N [ ]

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	4, 7, 9, 15	[ ]	
Floodflow Alteration	Yes	1, 3, 5, 6, 7, 8, 9, 13	[✔]	
Fish and Shellfish Habitat	No	2, 4, 7, 10	[ ]	
Sediment/Toxicant Retention	No	1, 2, 3, 10, 16	[ ]	
Nutrient Removal	Yes	3, 4, 5, 9	[ ]	
Production Export	No	1, 2, 4, 5, 6, 7, 12	[ ]	
Sediment/Shoreline Stabilization	No	2, 3, 12, 15	[ ]	
Wildlife Habitat	No	6, 7, 8, 11, 13, 17, 18, 19, 21	[ ]	
Recreation	No	2, 5, 8, 9	[ ]	located along marina
Educational/Scientific Value	No		[ ]	
Uniqueness/Heritage	No		[ ]	
Visual Quality/Aesthetics	No		[ ]	
ES Endangered Species Habitat	No		[ ]	
Other	No		[ ]	

Notes: Partially tidally influenced wetland around marina. Final QA: Dutton 02/17

* Refer to backup list of numbered considerations.

W-T01-017 Photo Log

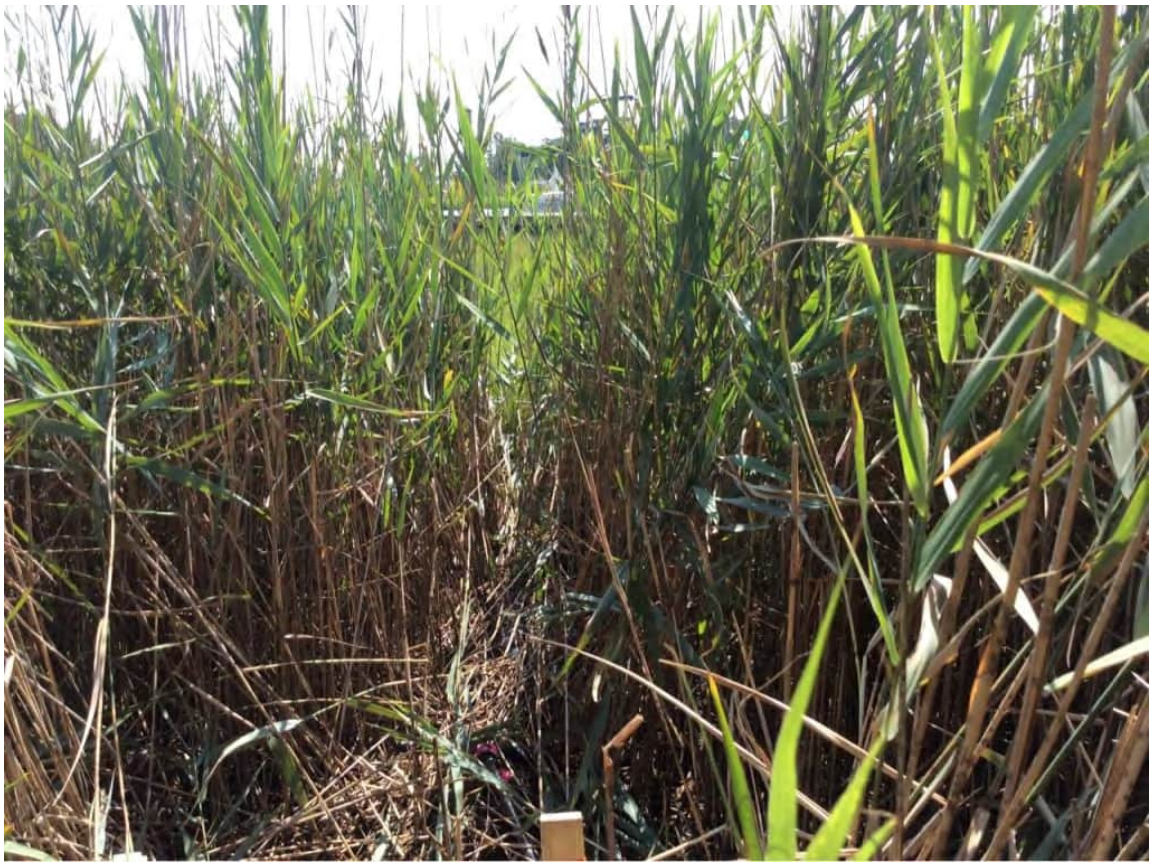


ID:W-T01-017A-1 Date:08/25/2016 Direction:E Position:Wetland Overview



ID:W-T01-017A-1 Date:08/25/2016 Direction:E Position:Wetland Pit

W-T01-017 Photo Log



ID:W-T01-017D-1 Date:08/25/2016 Direction:SW Position:Wetland Overview



ID:W-T01-017D-1 Date:08/25/2016 Direction:SW Position:Wetland Pit

W-T01-017 Photo Log



ID:U-T01-017-1 Date:08/25/2016 Direction:NE Position:Upland Overview



ID:U-T01-017-1 Date:08/25/2016 Direction:NE Position:Upland Pit

WETLAND ID: W- T07-001

Wetland Jurisdictional Field Data Sheet

Is wetland hydrologically isolated?

- ☐ **yes**
- ☑ **no**
- ☐ **could not be determined because wetland extends beyond the ROW**

If no, explain hydrologic connection:

abutting Cheesequake Creek tributary outside survey area. Within 1000 ft of Upper Wetland Boundary. Wetland continues outside survey area to creek.
Final QA: Dutton 01/17

Associated Stream:

- ☑ **yes**
- ☐ **no**

If yes, list ID: ² ² -_____
(Use separate datasheet for each associated stream)

Approximate distance of wetland to stream (straight aerial feet): 0.00000000

Wetland Association to Stream

Is the wetland:

- ☑ **directly abutting**
- ☐ **adjacent (not directly but hydrologically connected)**

Wetland adjacency determination (if not directly abutting):

- ☐ **Discrete wetland hydrologic connection**
- ☐ **Ecological connection**
- ☐ **Separated by berm/barrier**

Explain:

Surface flow type from wetland to associated stream:

- ☑ **intermittent surface** ☐ **ephemeral surface**
- ☐ **perennial surface** ☐ **no surface flow**

Surface flow characteristic from wetland to associated stream:

- ☐ **discrete** ☑ **overland sheet flow**
- ☐ **confined**
- ☐ **other, explain:**_____

Definitions

Abutting: Wetlands that provide a continuous surface connection to relatively permanent waters that flow directly or indirectly into TNWs are abutting. The wetland boundary must interface with the OHWM of the tributary. If the wetland boundary does not abut the OHWM of the tributary, the wetland is adjacent. Abutting wetlands are not separated from tributaries by uplands, berms, dikes, or similar features. It is important to note, a continuous surface connection does not require surface water to be continuously present between the wetland and tributary.

Adjacent: bordering, contiguous, or neighboring. Adjacent wetlands may have a continuous surface connection to TNWs, but may also be separated from these waters by man-made dikes or barriers, natural river berms, beach dunes, or similar features. By definition, a continuous surface water connection is not required to establish adjacency.

Hydrologically Isolated: no surface water connections to other aquatic features exist.

Perennial: has flowing water year-round during a typical year.

Intermittent: has flowing water during certain times of the year, when groundwater provides water for stream flow.

Ephemeral: has flowing water only during, and for a short duration after, precipitation events in a typical year.

Discrete: not defined bed and banks, slight depression where water runs.

Confined: defined bed and banks.

Overland Sheet Flow: no defined channel, comprised of runoff.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/23/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: W-T07-001C-1

Investigator(s): Michael Levinson, Evan Sheppard Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.453424 Long: -74.278809 Datum: D_North_American_1

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: Estuarine fringe Field Cowardin Classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Located at the toe of a large hill.
Final QA: Dutton 01/17

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 ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 3

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T07-001

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Nyssa sylvatica	30	Y	FAC
2. Acer rubrum	20	Y	FAC
3. Quercus montana	5	N	UPL
4.			
5.			
6.			
	55 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11		
Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 15)			
1. Vaccinium corymbosum	30	Y	FACW
2.			
3.			
4.			
5.			
6.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Herb Stratum (Plot size: 5)			
1. Osmundastrum cinnamomeum	15	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	45	x 2 =	90
FAC species	50	x 3 =	150
FACU species	0	x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	100 (A)		265 (B)

Prevalence Index = B/A = 2.65

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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T07-00

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
0-3	5YR 3/2	100		0			SIL	
3-24	10YR 7/1	65	5Y 7/3	20	D	M	SL	
3-24		0	10YR 6/6	10	C	M	SL	
3-24			5YR 4/4	5	C	M	SL	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/23/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: W-T07-001D-1

Investigator(s): Michael Levinson, Evan Sheppard Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Estuarine Fringe Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.454499 Long: -74.278252 Datum: D_North_American_1

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: Estuarine fringe Field Cowardin Classification: E2EM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔ No _____	
Wetland Hydrology Present?	Yes ✔ No _____	

Remarks:

E2EM sample point part of a large complex extending outside the study area.
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T07-001

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	100	Y	FACW
2. Clethra alnifolia	20	N	FACW
3. Panicum virgatum	15	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	135 = Total Cover		
50% of total cover: 67.5	20% of total cover: 27		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	120	x 2 =	240
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	135 (A)		285 (B)

Prevalence Index = B/A = 2.11

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 Five 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, and 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 __

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T07-00

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
0-8	10YR 4/2	75	10YR 4/6	10	C	M	SIL	
0-8		0	10YR 5/2	15	D	M	SL	
8-12	2.5Y 5/3	80	10YR 4/6	20	C	M	SL	
12-24	10YR 6/6	75	10YR 6/8	25	C	M	LS	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/23/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: U-T07-001-1

Investigator(s): Michael Levinson, Evan Sheppard Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Concave Slope (%): 30

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.453384 Long: -74.278985 Datum: D_North_American_1

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Steep hillside.
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T07-001

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus montana	30	Y	UPL
2. Quercus alba	20	Y	FACU
3. Nyssa sylvatica	20	Y	FAC
4. Sassafras albidum	10	N	FACU
5.			
6.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		
Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	30	x 4 =	120
UPL species	30	x 5 =	150
Column Totals:	80 (A)		330 (B)

Prevalence Index = B/A = 4.13

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 Five 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, and 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 ✓

Remarks: (If observed, list morphological adaptations below).

no understory present

SOIL

Sampling Point: U-T07-001

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
0-2	10YR 5/1	100		0			SIL	
2-12	2.5Y 6/6	100		0			SIL	

[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:

Root refusal at 12". Top layer color due to runoff from upslope. Layer is not indicative of wetland conditions.

Wetland Function-Value Evaluation Form

Total area of wetland 0.594 Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use existing ROW Distance to nearest roadway or other development 420 ft

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Low

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T07-001

Latitude 40.45341237 Longitude -74.27880126

Prepared by: Michael Levinson, Evan Sheppard Date 8/23/2016 5:30:03 AM

Wetland Impact:
Type PFO/E2EM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☐ N ☑

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Yes	4,15	☐	
Floodflow Alteration	Yes	5,9,10,8,18	☑	
Fish and Shellfish Habitat	No		☐	
Sediment/Toxicant Retention	No		☐	
Nutrient Removal	Yes	3,9,8	☐	
Production Export	No	2	☐	
Sediment/Shoreline Stabilization	Yes	1,2,3	☐	
Wildlife Habitat	No	7	☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No	2	☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: Final QA: Dutton 02/17

* Refer to backup list of numbered considerations.

W-T07-001 Photo Log



ID:W-T07-001C-1 Date:08/23/2016 Direction:E Position:Wetland Overview



ID:W-T07-001C-1 Date:08/23/2016 Direction:E Position:Wetland Pit

W-T07-001 Photo Log



ID:W-T07-001D-1 Date:08/23/2016 Direction:S Position:Wetland Overview



ID:W-T07-001D-1 Date:08/23/2016 Direction:S Position:Wetland Pit

W-T07-001 Photo Log



ID:U-T07-001-1 Date:08/23/2016 Direction:W Position:Upland Overview



ID:U-T07-001-1 Date:08/23/2016 Direction:W Position:Upland Pit

WETLAND ID: W- T07-002

Wetland Jurisdictional Field Data Sheet

Is wetland hydrologically isolated?

☑ **yes**

☐ **no**

☐ **could not be determined because wetland extends beyond the ROW**

If no, explain hydrologic connection:

Final QA: Dutton 01/17

Associated Stream:

☐ **yes**

☑ **no**

If yes, list ID: ² ² -_____

(Use separate datasheet for each associated stream)

Approximate distance of wetland to stream (straight aerial feet):_____

Wetland Association to Stream

Is the wetland:

☐ **directly abutting**

☐ **adjacent (not directly but hydrologically connected)**

Wetland adjacency determination (if not directly abutting):

☐ **Discrete wetland hydrologic connection**

☐ **Ecological connection**

☐ **Separated by berm/barrier**

Explain:

Surface flow type from wetland to associated stream:

☐ **intermittent surface** ☐ **ephemeral surface**

☐ **perennial surface** ☐ **no surface flow**

Surface flow characteristic from wetland to associated stream:

☐ **discrete** ☐ **overland sheet flow**

☐ **confined**

☐ **other, explain:**_____

Definitions

Abutting: Wetlands that provide a continuous surface connection to relatively permanent waters that flow directly or indirectly into TNWs are abutting. The wetland boundary must interface with the OHWM of the tributary. If the wetland boundary does not abut the OHWM of the tributary, the wetland is adjacent. Abutting wetlands are not separated from tributaries by uplands, berms, dikes, or similar features. It is important to note, a continuous surface connection does not require surface water to be continuously present between the wetland and tributary.

Adjacent: bordering, contiguous, or neighboring. Adjacent wetlands may have a continuous surface connection to TNWs, but may also be separated from these waters by man-made dikes or barriers, natural river berms, beach dunes, or similar features. By definition, a continuous surface water connection is not required to establish adjacency.

Hydrologically Isolated: no surface water connections to other aquatic features exist.

Perennial: has flowing water year-round during a typical year.

Intermittent: has flowing water during certain times of the year, when groundwater provides water for stream flow.

Ephemeral: has flowing water only during, and for a short duration after, precipitation events in a typical year.

Discrete: not defined bed and banks, slight depression where water runs.

Confined: defined bed and banks.

Overland Sheet Flow: no defined channel, comprised of runoff.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/23/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: W-T07-002A-1

Investigator(s): Michael Levinson, Evan Sheppard Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.454681 Long: -74.278418 Datum: D_North_American_1

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: Depressional Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil Y, or Hydrology Y significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ✔

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

Remarks:

Sample point obtained from disturbed area located in ROW. Sedimentation deposited in this low lying area due to construction activity upslope.
Final QA: Dutton 01/17

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 ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T07-002

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Herb Stratum (Plot size: 5)			
1. Bidens frondosa	20	Y	FACW
2. Echinochloa crus-galli	15	Y	FACW
3. Juncus effusus	10	N	OBL
4. Eupatorium serotinum	10	N	FAC
5. Carex lurida	5	N	OBL
6. Phragmites australis	5	N	FACW
7.			
8.			
9.			
10.			
11.			
	65 = Total Cover		

50% of total cover: 32.5 20% of total cover: 13

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

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	15	x 1 =	15
FACW species	40	x 2 =	80
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	65 (A)		125 (B)

Prevalence Index = B/A = 1.92

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 Five 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, and 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 __

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T07-00

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
0-5	10YR 5/2	100		0			SI	
5-11	10YR 5/1	65	7.5YR 5/6	10	C		SIL	
5-11			5YR 4/4	25	C	M		

[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): 11

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

Rock refusal at 11"

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/23/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: U-T07-002-1

Investigator(s): Michael Levinson, Evan Sheppard Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Convex Slope (%): 2

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.454651 Long: -74.27837 Datum: D_North_American_1

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Bermed fill separating two wetlands.
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T07-002

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 15)			
1. Robinia pseudoacacia	15	Y	UPL
2.			
3.			
4.			
5.			
6.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		
Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5)			
1. Artemisia vulgaris	60	Y	UPL
2. Panicum virgatum	15	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75 = Total Cover		
50% of total cover: 37.5	20% of total cover: 15		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	75	x 5 =	375
Column Totals:	90 (A)		420 (B)

Prevalence Index = B/A = 4.67

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 Five 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, and 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 ✓

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T07-002

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
0-8	10YR 5/4	100		0			SIL	
8+							Rock Ref	

[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 Function-Value Evaluation Form

Total area of wetland 0.012 Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Herbaceous Distance to nearest roadway or other development 400

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present No

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T07-002

Latitude 40.45461140 Longitude -74.27843732

Prepared by: Michael Levinson, Evan Sheppard Date 8/23/2016 6:24:14 AM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y [☑] N [☐]

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	4	☐	
Floodflow Alteration	Yes	3, 5, 6, 9	☑	
Fish and Shellfish Habitat	No		☐	
Sediment/Toxicant Retention	No	1, 2	☐	
Nutrient Removal	No	3, 4	☐	
Production Export	No		☐	
Sediment/Shoreline Stabilization	No	3	☐	
Wildlife Habitat	No	7, 8	☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: Within existing pipeline ROW. Final QA: Dutton 02/17

* Refer to backup list of numbered considerations.

W-T07-002 Photo Log



ID:W-T07-002A-1 Date:08/23/2016 Direction:SW Position:Wetland Overview



ID:W-T07-002A-1 Date:08/23/2016 Direction:SW Position:Wetland Pit

W-T07-002 Photo Log



ID:U-T07-002-1 Date:08/23/2016 Direction:E Position:Upland Overview



ID:U-T07-002-1 Date:08/23/2016 Direction:E Position:Upland Pit

WETLAND ID: W- T07-003

Wetland Jurisdictional Field Data Sheet

Is wetland hydrologically isolated?

- ☐ **yes**
- ☑ **no**
- ☐ **could not be determined because wetland extends beyond the ROW**

If no, explain hydrologic connection:

abutting stream. Connected to tidal system by WW-T07-001. Within 1000 ft of Upper Wetland Boundary.
Final QA: Dutton 01/17

Associated Stream:

- ☑ **yes**
- ☐ **no**

If yes, list ID: ² ² - T07-001

(Use separate datasheet for each associated stream)

Approximate distance of wetland to stream (straight aerial feet): 0.00000000

Wetland Association to Stream

Is the wetland:

- ☑ **directly abutting**
- ☐ **adjacent (not directly but hydrologically connected)**

Wetland adjacency determination (if not directly abutting):

- ☐ **Discrete wetland hydrologic connection**
- ☐ **Ecological connection**
- ☐ **Separated by berm/barrier**

Explain:

Surface flow type from wetland to associated stream:

- ☑ **intermittent surface**
- ☐ **ephemeral surface**
- ☐ **perennial surface**
- ☐ **no surface flow**

Surface flow characteristic from wetland to associated stream:

- ☐ **discrete**
- ☑ **overland sheet flow**
- ☐ **confined**
- ☐ **other, explain:**_____

Definitions

Abutting: Wetlands that provide a continuous surface connection to relatively permanent waters that flow directly or indirectly into TNWs are abutting. The wetland boundary must interface with the OHWM of the tributary. If the wetland boundary does not abut the OHWM of the tributary, the wetland is adjacent. Abutting wetlands are not separated from tributaries by uplands, berms, dikes, or similar features. It is important to note, a continuous surface connection does not require surface water to be continuously present between the wetland and tributary.

Adjacent: bordering, contiguous, or neighboring. Adjacent wetlands may have a continuous surface connection to TNWs, but may also be separated from these waters by man-made dikes or barriers, natural river berms, beach dunes, or similar features. By definition, a continuous surface water connection is not required to establish adjacency.

Hydrologically Isolated: no surface water connections to other aquatic features exist.

Perennial: has flowing water year-round during a typical year.

Intermittent: has flowing water during certain times of the year, when groundwater provides water for stream flow.

Ephemeral: has flowing water only during, and for a short duration after, precipitation events in a typical year.

Discrete: not defined bed and banks, slight depression where water runs.

Confined: defined bed and banks.

Overland Sheet Flow: no defined channel, comprised of runoff.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop | City/County: Sayreville / Middlesex | Sampling Date: 08/24/2016

Applicant/Owner: Williams Transco | State: NJ | Sampling Point: W-T07-003A-1

Investigator(s): Daniel Laue, Evan Sheppard | Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Drainageway | Local relief (concave, convex, none): Concave | Slope (%): 2

Subregion (LRR or MLRA): LRR S, MLRA 149A | Lat: 40.458658 | Long: -74.275481 | Datum: D_North_American_1

Soil Map Unit Name: Pits, sand and gravel | HGM Class: Riverine | Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks) | NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? | Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔ No _____	
Wetland Hydrology Present?	Yes ✔ No _____	

Remarks:

Excavated ditch.
Final QA: Dutton 01/17

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 _____	Depth (inches): 4
Water Table Present?	Yes ✔	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T07-00

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1. Betula populifolia	15	Y	FAC
2.			
3.			
4.			
5.			
6.			
	15 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3		
Sapling Stratum (Plot size: 15)			
1. Betula populifolia	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	90	Y	FACW
2. Arthraxon hispidus	10	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		270 (B)

Prevalence Index = B/A = 2.25

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 Five 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, and 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 __

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T07-00

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
0-3	10YR 2/1	100		0			M	muck
3-18	2.5YR 4/2	100		0			SL	10% muck inclusions

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/24/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: W-T07-003B-1

Investigator(s): Daniel Laue, Evan Sheppard Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.459783 Long: -74.274719 Datum: D_North_American_1

Soil Map Unit Name: Pits, sand and gravel HGM Class: Riverine Field Cowardin Classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks:

Within an existing pipeline ROW, near a public road and residential development.
Final QA: Dutton 01/17

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 ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T07-00

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 15)			
1. Cephalanthus occidentalis	45	Y	OBL
2. Cornus racemosa	20	Y	FAC
3.			
4.			
5.			
6.			
	65 = Total Cover		
50% of total cover: 32.5	20% of total cover: 13		
Herb Stratum (Plot size: 5)			
1. Carex lurida	35	Y	OBL
2. Juncus effusus	20	Y	OBL
3. Apocynum cannabinum	5	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	125 (A)		180 (B)

Prevalence Index = B/A = 1.44

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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T07-00

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
0-4	10YR 3/2	100		0			SIL	
4-7	10YR 4/2	80	7.5YR 5/6	20	C	M	SIL	
7-18	10YR 5/1	70	10YR 6/8	15	C	M	CL	
7-18			7.5YR 5/6	15	C	M	CL	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/24/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: U-T07-003-1

Investigator(s): Daniel Laue, Evan Sheppard Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Convex Slope (%): 2

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.458707 Long: -74.275533 Datum: D_North_American_1

Soil Map Unit Name: Downer loamy sand, 0 to 5 percent slopes HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Berm adjacent and upgradient from wetland sample point.
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T07-003

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer Rubrum	75	Y	FAC
2. Liquidambar styraciflua	30	Y	FAC
3.			
4.			
5.			
6.			
	105 = Total Cover		
50% of total cover: 52.5	20% of total cover: 21		
Sapling Stratum (Plot size: 15)			
1. Rhus copallinum	7	Y	UPL
2.			
3.			
4.			
5.			
6.			
	7 = Total Cover		
50% of total cover: 3.5	20% of total cover: 1.4		
Shrub Stratum (Plot size: 15)			
1. Clethra alnifolia	30	Y	FACW
2.			
3.			
4.			
5.			
6.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Herb Stratum (Plot size: 5)			
1. Euthamia graminifolia	15	Y	FAC
2. Panicum virgatum	10	Y	FAC
3. Clethra alnifolia	10	Y	FACW
4. Rubus idaeus	5	N	FACU
5. Quercus velutina	2	N	UPL
6.			
7.			
8.			
9.			
10.			
11.			
	42 = Total Cover		
50% of total cover: 21	20% of total cover: 8.4		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	130	x 3 =	390
FACU species	5	x 4 =	20
UPL species	9	x 5 =	45
Column Totals:	184 (A)		535 (B)

Prevalence Index = B/A = 2.91

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 Five 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, and 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 __

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T07-003

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
0-3	10YR 3/3	100		0			SIL	
3-18	10YR 5/6	100		0			SL	

[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 Function-Value Evaluation Form

Total area of wetland 1.248 Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Residential - High Density Distance to nearest roadway or other development 0

Dominant wetland systems present UPL Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Low

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T07-003

Latitude 40.45994772 Longitude -74.27380630

Prepared by: Michael Levinson, Evan Sheppard Date 8/23/2016 9:20:40 AM

Wetland Impact:
Type PEM/PSS Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	4,7,9	☐	
Floodflow Alteration	Yes	3,4,5,7,6,9,11,13,14,15,18	☑	
Fish and Shellfish Habitat	No	1	☐	
Sediment/Toxicant Retention	Yes	3,4,10,14,16	☐	
Nutrient Removal	Yes	3,5,8,9,11,12,14	☑	
Production Export	Yes	2,7,10,11	☐	
Sediment/Shoreline Stabilization	Yes	1,2,3,4,5,7,9,12,15	☑	
Wildlife Habitat	Yes	5,6,8,13,20	☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	Yes	2	☐	mapped in NJDEP landscape project as Bald Eagle foraging habitat
Other	No		☐	

Notes: Final QA: Dutton 02/17

* Refer to backup list of numbered considerations.

W-T07-003 Photo Log



ID:W-T07-003A-1 Date:08/24/2016 Direction:S Position:Wetland Overview



ID:W-T07-003A-1 Date:08/24/2016 Direction:S Position:Wetland Pit

W-T07-003 Photo Log



ID:W-T07-003B-1 Date:08/24/2016 Direction:S Position:Wetland Overview



ID:W-T07-003B-1 Date:08/24/2016 Direction:S Position:Wetland Pit

W-T07-003 Photo Log



ID:U-T07-003-1 Date:08/24/2016 Direction:N Position:Upland Overview



ID:U-T07-003-1 Date:08/24/2016 Direction:N Position:Upland Pit

WETLAND ID: W- T07-004

Wetland Jurisdictional Field Data Sheet

Is wetland hydrologically isolated?

- ☐ **yes**
- ☑ **no**
- ☐ **could not be determined because wetland extends beyond the ROW**

If no, explain hydrologic connection:

abutting stream and Cheesequake Creek tributaries. Tidal system. Within Upper Wetland Boundary.
Final QA: Dutton 01/17

Associated Stream:

- ☑ **yes**
- ☐ **no**

If yes, list ID: ² ² - T07-001
(Use separate datasheet for each associated stream)

Approximate distance of wetland to stream (straight aerial feet): 0.00000000

Wetland Association to Stream

Is the wetland:

- ☑ **directly abutting**
- ☐ **adjacent (not directly but hydrologically connected)**

Wetland adjacency determination (if not directly abutting):

- ☐ **Discrete wetland hydrologic connection**
- ☐ **Ecological connection**
- ☐ **Separated by berm/barrier**

Explain:

Surface flow type from wetland to associated stream:

- ☑ **intermittent surface**
- ☐ **ephemeral surface**
- ☐ **perennial surface**
- ☐ **no surface flow**

Surface flow characteristic from wetland to associated stream:

- ☐ **discrete**
- ☑ **overland sheet flow**
- ☐ **confined**
- ☐ **other, explain:**_____

Definitions

Abutting: Wetlands that provide a continuous surface connection to relatively permanent waters that flow directly or indirectly into TNWs are abutting. The wetland boundary must interface with the OHWM of the tributary. If the wetland boundary does not abut the OHWM of the tributary, the wetland is adjacent. Abutting wetlands are not separated from tributaries by uplands, berms, dikes, or similar features. It is important to note, a continuous surface connection does not require surface water to be continuously present between the wetland and tributary.

Adjacent: bordering, contiguous, or neighboring. Adjacent wetlands may have a continuous surface connection to TNWs, but may also be separated from these waters by man-made dikes or barriers, natural river berms, beach dunes, or similar features. By definition, a continuous surface water connection is not required to establish adjacency.

Hydrologically Isolated: no surface water connections to other aquatic features exist.

Perennial: has flowing water year-round during a typical year.

Intermittent: has flowing water during certain times of the year, when groundwater provides water for stream flow.

Ephemeral: has flowing water only during, and for a short duration after, precipitation events in a typical year.

Discrete: not defined bed and banks, slight depression where water runs.

Confined: defined bed and banks.

Overland Sheet Flow: no defined channel, comprised of runoff.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/25/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: W-T07-004D-1

Investigator(s): Daniel Laue, Evan Sheppard Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Estuarine Fringe Local relief (concave, convex, none): Concave Slope (%): 8

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.461398 Long: -74.270833 Datum: D_North_American_1

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: Estuarine fringe Field Cowardin Classification: E2EM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: PSS1R

Are Vegetation Y, Soil Y, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔ No _____	
Wetland Hydrology Present?	Yes ✔ No _____	

Remarks:

Recent grading activities between marina property and larger estuarine wetland complex. Soil berm constructed between estuary and marina property. * Fill material added to wetland subsequent to August 2016 delineation. Data reflects conditions during delineations. Photo point taken December 2016 to show fill in wetland.
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T07-004

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5)			
1. Phragmites australis	85	Y	FACW
2. Persicaria maculosa	10	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	95 (A)		190 (B)

Prevalence Index = B/A = 2

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 Five 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, and 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 __

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T07-00

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
0-3	10YR 3/2	92	5Y 6/4	8	C	M	CL	
3-13	10YR 4/1	70	7.5YR 4/4	23	C	M	CL	
3-13			5YR 3/4	7	C	PL		

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: NESE - Madison Loop City/County: Sayreville / Middlesex Sampling Date: 08/25/2016

Applicant/Owner: Williams Transco State: NJ Sampling Point: U-T07-004-1

Investigator(s): Daniel Laue, Evan Sheppard Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Convex Slope (%): 4

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.46143 Long: -74.270736 Datum: D_North_American_1

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: PSS1R

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Maintained upland berm between marina parking lot and wetland.
Final QA: Dutton 01/17

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T07-004

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 5)			
1. Lotus corniculatus	50	Y	FACU
2. Apocynum cannabinum	15	N	FACU
3. Plantago lanceolata	15	N	FACU
4. Phragmites australis	5	N	FACW
5. Plantago major	3	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	88 = Total Cover		
50% of total cover: 44	20% of total cover: 17.6		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	3	x 3 =	9
FACU species	80	x 4 =	320
UPL species	0	x 5 =	0
Column Totals:	88 (A)		339 (B)

Prevalence Index = B/A = 3.85

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 Five 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, and 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 ✓

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T07-004

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
0-3	10YR 4/3	100		0			SIL	

[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:

Rock refusal at 3".

Wetland Function-Value Evaluation Form

Total area of wetland 5.603 Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use wetland/residential Distance to nearest roadway or other development 0

Dominant wetland systems present E2EM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Low

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T07-004

Latitude 40.46009775 Longitude -74.27296234

Prepared by: Daniel Laue, Evan Sheppard Date 8/24/2016 9:28:17 AM

Wetland Impact:
Type E2EM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	4, 7, 15	☐	tidal
Floodflow Alteration	Yes	1, 3, 5, 6, 7, 8, 9, 13, 18	☑	
Fish and Shellfish Habitat	No		☐	
Sediment/Toxicant Retention	No	1, 2, 3, 4, 10, 16	☐	
Nutrient Removal	Yes	1, 2, 3, 4, 5, 7, 8, 9	☑	
Production Export	No	2, 4, 5, 6, 7	☐	
Sediment/Shoreline Stabilization	No	3, 4, 12, 13, 15	☐	
Wildlife Habitat	Yes	6, 7, 8, 11, 13, 17, 18, 19, 21	☑	
Recreation	No	2, 5, 8, 9	☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: Tidal area between road and marina. Dominated by Phragmites australis. Final QA: Dutton 02/17* Refer to backup list of numbered considerations.

W-T07-004 Photo Log



ID:W-T07-004D-1 Date:08/25/2016 Direction:N Position:Wetland Overview



ID:W-T07-004D-1 Date:08/25/2016 Direction:NW Position:Wetland Pit

W-T07-004 Photo Log



ID:U-T07-004-1 Date:08/25/2016 Direction:E Position:Upland Overview



ID:U-T07-004-1 Date:08/25/2016 Direction:E Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206 Applicant/owner: Williams Transco State: NJ County: Somerset	Investigator(s): Evan Sheppard, Paticia Sharpe Date: 11/7/2016 11:06:01 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T08-001A-1 Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland HGM Class: Slope Field Cowardin classification: PEM NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Juncus effusus	45%	OBL				
H	Microstegium vimineum	30%	FAC				
H	Solidago rugosa	15%	FAC				
H	Apocynum cannabinum	5%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	45	x 1 =	45	
FACW species	0	x 2 =	0	
FAC species	45	x 3 =	135	
FACU species	5	x 4 =	20	
UPL species	0	x 5 =	0	
Totals	95	(A)	200	(B)

Prevalence Index = B/A = 2.11

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

meets dominance test.

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☑ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: meets indicator C3

SOILS

Soil Survey:
Map Unit (Series and Phase): Elkton silt loam, 0 to 2 percent slop
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☑ Yes ☐ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-2		10YR 3/2	5YR 4/3	Few (<2%)	Fine (< 5mm)	Prominent	CL
2-16		10YR 6/1	7.5YR 6/8	Many (>20%)	Coarse (>15mm)	Prominent	C

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: meets hydric soil indicators.

JURISDICTIONAL DETERMINATION

Wetland Determination
Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
Connection likely outside study corridor

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship
Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

depressional PEM wetland within in an existing ROW. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Evan Sheppard, Paticia Sharpe
Applicant/owner: Williams Transco	Date: 11/7/2016 11:26:54 AM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T08-001-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Poa pratensis	60%	FACU				
H	Dactylis glomerata	35%	FACU				
H	Artemisia vulgaris	20%	UPL				
H	Plantago lanceolata	10%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	105	x 4 =	420	
UPL species	20	x 5 =	100	
Totals	125	(A)	520	(B)

Prevalence Index = B/A = 4.16

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

does not meet indicators

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Drift Lines
- ☐ Drainage Patterns
- ☐ Soil Saturation
- ☐ Sediment Deposits
- ☐ Morphological Plant Adaptations
- ☐ Oxidized Root Channels
- ☐ Water-stained Leaves
- ☐ Hydric Soils (only in the absence of other field indicators)
- ☐ Water Marks
- ☐ Surface scouring

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Flood data
- ☐ Site specific data
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale: does not meet indicators

SOILS

Soil Survey:
Map Unit (Series and Phase): Elkton silt loam, 0 to 2 percent slop
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-14		10YR 3/3					SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:

(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: 20% gravel throughout. Rock refusal at 14". does not meet indicators.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Associated with wetland sample point W-T08-001A-1. located in an adjacent 2-track road, 10 feet west of the wetland sample point. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.23 Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use forested Distance to nearest roadway or other development 1700 ft

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? medium

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T08-001

Latitude 40.40116782 Longitude -74.59472491

Prepared by: Evan Sheppard, Paticia Sharpe Date 11/7/2016 11:05:08 AM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	2	☐	
Floodflow Alteration	No	5, 6, 9	☑	
Fish and Shellfish Habitat	No	1	☐	
Sediment/Toxicant Retention	No	4	☐	
Nutrient Removal	No	3, 7, 9	☐	
Production Export	No	12	☐	
Sediment/Shoreline Stabilization	No		☐	
Wildlife Habitat	No	4, 5, 7, 8, 17	☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: Partially within existing ROW. Final QA: Dutton 02/17

* Refer to backup list of numbered considerations.

W-T08-001 Photo Log



ID:W-T08-001A-1 Date:11/07/2016 Direction:NE Position:Wetland Overview



ID:W-T08-001A-1 Date:11/07/2016 Direction:N Position:Wetland Pit

W-T08-001 Photo Log



ID:U-T08-001-1 Date:11/07/2016 Direction:E Position:Upland Overview



ID:U-T08-001-1 Date:11/07/2016 Direction:N Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Michael Levinson , Dan Laue
Applicant/owner: Williams Transco	Date: 10/6/2016 9:52:29 PM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T09-001A-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Slope; Field Cowardin classification: PEM; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Liquidambar styraciflua	5%	FAC	H	Onoclea sensibilis	5%	FACW
H	Scirpus cyperinus	20%	OBL				
H	Microstegium vimineum	20%	FAC				
H	Carex aquatilis	15%	OBL				
H	Juncus effusus	15%	OBL				
H	Typha latifolia	10%	OBL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	60	x 1 =	60	
FACW species	5	x 2 =	10	
FAC species	25	x 3 =	75	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	90	(A)	145	(B)

Prevalence Index = B/A = 1.61

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☑ Ground Inundation
- ☑ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☑ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

- Depth of inundation: 4
- Depth to saturation: 1
- Depth to free water in pit: 4

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: Positive hydrologic indicators observed.

SOILS

Soil Survey:
Map Unit (Series and Phase): Neshaminy silt loam, 2 to 6 percen
Subgroup: Ultic Hapludalfs
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4	A	10YR 3/1					SICL
4-20	A	10YR 4/1	10YR 4/6	Many (>20%)	Coarse (>15mm)	Prominent	SICL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination
Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
Abutting stream

Stream reach name (if known):
WW-T09-001

Approximate distance to water body/reach:
0'

Watershed Relationship
Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM sample point within large PEM/PFO wetland complex extending beyond study boundary. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Michael Levinson , Dan Laue
Applicant/owner: Williams Transco	Date: 10/6/2016 9:50:08 PM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T09-001C-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Slope; Field Cowardin classification: PFO; NWI Cowardin classification: PFO1Bd

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer saccharum	20%	FACU	H	Microstegium vimineum	20%	FAC
T	Acer rubrum	20%	FAC	H	Onoclea sensibilis	10%	FACW
T	Carya ovata	20%	FACU	H	Osmundastrum cinnamomeum	10%	FACW
T	Fraxinus pennsylvanica	10%	FACW	H	Symplocarpus foetidus	10%	OBL
S	Lindera benzoin	10%	FACW	H	Juncus effusus	5%	OBL
S	Liquidambar styraciflua	10%	FAC	H	Impatiens capensis	5%	FACW

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	15	x 1 =	15	
FACW species	45	x 2 =	90	
FAC species	65	x 3 =	195	
FACU species	40	x 4 =	160	
UPL species	0	x 5 =	0	
Totals	165	(A)	460	(B)

Prevalence Index = B/A = 2.79

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☑ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☑ Surface scouring
- ☑ Drainage Patterns
- ☑ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: Positive hydrologic indicators observed.

SOILS

Soil Survey:
Map Unit (Series and Phase): Neshaminy silt loam, 2 to 6 percen
Subgroup: Ultic Hapludalfs
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-10	A	10YR 3/1	7.5YR 3/4	Common (2% - 20%)	Medium (5mm - 15mm)	Distinct	SICL
10-21	B	10YR 4/1	7.5YR 4/6	Many (>20%)	Medium (5mm - 15mm)	Prominent	SIL
			10YR 2/2	Common (2% - 20%)	Medium (5mm - 15mm)	Distinct	SIL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☑ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination
Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
abutting stream

Stream reach name (if known):
WW-T09-001

Approximate distance to water body/reach:
0'

Watershed Relationship
Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

PFO sample point within large PEM/PFO wetland complex extending beyond study boundary. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Michael Levinson , Dan Laue
Applicant/owner: Williams Transco	Date: 10/6/2016 9:50:45 PM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T09-001-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A
	Field Cowardin classification: UPL
	NWI Cowardin classification: PFO1Bd

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Liriodendron tulipifera	15%	FACU	V	Lonicera japonica	20%	FACU
T	Carya ovata	10%	FACU	V	Smilax rotundifolia	10%	FAC
T	Acer rubrum	10%	FAC				
T	Quercus rubra	10%	FACU				
S	Viburnum prunifolium	20%	FACU				
H	Rosa multiflora	10%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	20	x 3 =	60	
FACU species	85	x 4 =	340	
UPL species	0	x 5 =	0	
Totals	105	(A)	400	(B)

Prevalence Index = B/A = 3.81

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Neshaminy silt loam, 2 to 6 percen
Subgroup: Ultic Hapludalfs
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-8	A	10YR 3/4	/				SIL
8-18	A	10YR 3/6	/				SIL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Upland sample point within moist forest. Located 67 feet west of the wetland sample point and 21 feet NW of the wetland edge. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 19.882 Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested Uplands/Pipeline ROW Distance to nearest roadway or other development ~.5 miles

Dominant wetland systems present Yes Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Medium

How many tributaries contribute to the wetland? 2 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T09-001

Latitude 0.00000091 Longitude -79.48874249

Prepared by: Michael Levinson, Dan Laue Date 9/28/2016 1:41:28 PM

Wetland Impact:
Type PEM/PFO Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	7,15	☐	
Floodflow Alteration	Yes	1,5,18	☐	
Fish and Shellfish Habitat	No	1,2	☐	
Sediment/Toxicant Retention	Yes	2,3,4,7,8	☑	Wetland has fine grained/organic soils present and slow moving water through the landscape provide potential for sediment retention.
Nutrient Removal	Yes	1,3,8,9,10,11	☑	The prsence of dense vegetation within the forested and emergent communities within this wetland provides sources of nutrient attenuation as well as nutrient transformation.
Production Export	Yes	1,2,4,5,7,8,12,14	☑	The wetlands forested and emergent communities provide wildlife food sources, dense vegetation and the potential for higher trophic level consumers to utilize the area.
Sediment/Shoreline Stabilization	Yes	1,2,3	☐	
Wildlife Habitat	Yes	1,4,5,6,7,8	☑	This wetland is large, contains multiple wetland communities and is primarily surrounded by upland woods providing good wildlife habitat.
Recreation	No	5,7	☐	
Educational/Scientific Value	No	2	☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No	4	☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: Primarily forested wetland complex with a PEM feature associated with an existing pipeline ROW. Final QA: Dutton 02/17* Refer to backup list of numbered considerations.

W-T09-001 Photo Log



ID:W-T09-001A-1 Date:10/06/2016 Direction:S Position:Wetland Overview



ID:W-T09-001A-1 Date:10/06/2016 Direction:S Position:Wetland Pit

W-T09-001 Photo Log



ID:W-T09-001C-1 Date:10/11/2016 Direction:W Position:Wetland Overview



ID:W-T09-001C-1 Date:10/11/2016 Direction:E Position:Wetland Pit

W-T09-001 Photo Log



ID:U-T09-001-1 Date:10/11/2016 Direction:E Position:Upland Overview



ID:U-T09-001-1 Date:10/11/2016 Direction:W Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Michael Levinson , Dan Laue
Applicant/owner: Williams Transco	Date: 10/18/2016 9:46:29 AM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T09-002A-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PEM; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Liquidambar styraciflua	30%	FAC	H	Carex crinita	10%	FACW
S	Lyonia ligustrina	15%	FACW	H	Microstegium vimineum	10%	FAC
S	Rosa multiflora	5%	FACU	H	Scirpus atrovirens	5%	OBL
H	Juncus effusus	30%	OBL	H	Apocynum cannabinum	5%	FACU
H	Pycnanthemum virginianum	20%	FAC				
H	Dichanthelium clandestinum	20%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	35	x 1 =	35	
FACW species	45	x 2 =	90	
FAC species	60	x 3 =	180	
FACU species	10	x 4 =	40	
UPL species	0	x 5 =	0	
Totals	150	(A)	345	(B)

Prevalence Index = B/A = 2.3

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☑ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Water-stained Leaves
- ☑ Surface scouring
- ☑ Drainage Patterns
- ☑ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Typic Endoaquults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-6	A	10YR 5/2	10YR 5/8	Common (2% - 20%)	Fine (< 5mm)	Faint	SICL
6-18	A	10YR 5/1	7.5YR 5/6	Many (>20%)	Medium (5mm - 15mm)	Distinct	SIC

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☑ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination
Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
abutting stream

Stream reach name (if known):
WW-T13-002, W-T13-001

Approximate distance to water body/reach:
0'

Watershed Relationship
Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM sample point part of PEM/PSS/PFO wetland complex. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206 Applicant/owner: Williams Transco State: NJ County: Somerset	Investigator(s): Michael Levinson , Dan Laue Date: 11/14/2016 11:40:12 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T09-002B-1 Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland HGM Class: Depressional Field Cowardin classification: PSS NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Lyonia ligustrina	30%	FACW				
S	Liquidambar styraciflua	20%	FAC				
S	Betula nigra	10%	FACW				
S	Spiraea tomentosa	10%	FACW				
H	Microstegium vimineum	40%	FAC				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	50	x 2 =	100	
FAC species	60	x 3 =	180	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	110	(A)	280	(B)

Prevalence Index = B/A = 2.55

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☑ Oxidized Root Channels
- ☑ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Typic Endoaquults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-6	A	10YR 4/3	10YR 4/6	Common (2% - 20%)	Medium (5mm - 15mm)	Faint	SIL
6-20	B	10YR 6/1	10YR 6/8	Many (>20%)	Medium (5mm - 15mm)	Prominent	SICL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☑ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
abutting stream/ adjacent to off survey corridor

Stream reach name (if known):
WW-T13-002, W-T13-001

Approximate distance to water body/reach:
1470'

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☑ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

PSS sample point, part of wetland complex. adjacent to cleared fields and maintained farm land. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Michael Levinson , Dan Laue
Applicant/owner: Williams Transco	Date: 11/4/2016 2:45:46 PM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T09-002C-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination:
	☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Depressional
	Field Cowardin classification: PFO
	NWI Cowardin classification: PFO1B

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer rubrum	20%	FAC	H	Pilea pumila	15%	FACW
T	Ulmus americana	15%	FAC	H	Sagittaria latifolia	10%	OBL
T	Liquidambar styraciflua	15%	FAC	H	polygon pensylanicum	10%	FACW
T	Fraxinus pennsylvanica	10%	FACW	H	Juncus effusus	5%	OBL
S	Liquidambar styraciflua	10%	FAC	V	Smilax rotundifolia	10%	FAC
H	Microstegium vimineum	20%	FAC				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	15	x 1 =	15	
FACW species	35	x 2 =	70	
FAC species	90	x 3 =	270	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	140	(A)	355	(B)

Prevalence Index = B/A = 2.54

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☑ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☑ Surface scouring
- ☑ Drainage Patterns
- ☑ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Watchung silt loam, 0 to 2 percent
Subgroup: Ultic Hapludalfs
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-9	A	10YR 2/2	10YR 4/1	Common (2% - 20%)	Fine (< 5mm)	Faint	SIL
9-20	A	10YR 5/1	10YR 4/6	Many (>20%)	Coarse (>15mm)	Prominent	SICL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
abutting stream

Stream reach name (if known):
WW-T13-002

Approximate distance to water body/reach:
0'

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

PFO sample point part of PEM/PSS/PFO wetland complex. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 2.696 Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested Distance to nearest roadway or other development ~500 feet

Dominant wetland systems present Yes Contiguous undeveloped buffer zone present Yes

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? High

How many tributaries contribute to the wetland? 2 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T09-002

Latitude 40.40428498 Longitude -74.60860450

Prepared by: Michael Levinson, Dan Laue Date 11/4/2016 2:48:51 PM

Wetland Impact:
Type PEM/PSS/PFO Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	3	☐	
Floodflow Alteration	No	1,5,6,8,9	☐	
Fish and Shellfish Habitat	No	1,2	☐	
Sediment/Toxicant Retention	No	1,2,4,7,9	☐	
Nutrient Removal	No	3,7,8,11	☐	
Production Export	No	1,2,4,5,8,12	☑	Wetland provides sources of wildlife food and exhibits a high degree of plant community structure. Evidence of wildlife observed (Deer/fox/bear) during delineations.
Sediment/Shoreline Stabilization	No	1,2,3,14	☐	
Wildlife Habitat	No	1,5,6,8,7,10,15,18,17,19,20,21	☑	Wetland is contiguous with various wildlife habitat requirements and may serve as a refuge for certain species during winter months or during other months of the year for species th
Recreation	No	5	☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No	4	☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: Wetland lies adjacent to a superfund site and an active granite quarry. Final QA: Dutton 02/17 * Refer to backup list of numbered considerations.

W-T09-002 Photo Log



ID:W-T09-002A-1 Date:10/17/2016 Direction:SW Position:Wetland Overview



ID:W-T09-002A-1 Date:10/17/2016 Direction:SW Position:Wetland Pit

W-T09-002 Photo Log



ID:W-T09-002B-1 Date:11/07/2016 Direction:W Position:Wetland Overview



ID:W-T09-002B-1 Date:11/07/2016 Direction:W Position:Wetland Pit

W-T09-002 Photo Log



ID:W-T09-002C-1 Date:10/17/2016 Direction:E Position:Wetland Overview



ID:W-T09-002C-1 Date:10/17/2016 Direction:N Position:Wetland Pit

W-T09-002 Photo Log



ID:U-T09-002-1 Date:11/07/2016 Direction:E Position:Upland Overview



ID:U-T09-002-1 Date:11/07/2016 Direction:E Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Michael Levinson , Dan Laue
Applicant/owner: Williams Transco	Date: 10/18/2016 10:00:02 AM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☑ Yes ☐ No	Feature ID: W-T09-003A-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☐ Wetland ☑ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PEM; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Microstegium vimineum	30%	FAC				
H	Persicaria sagittata	20%	OBL				
H	Juncus effusus	15%	OBL				
H	Carex crinita	10%	FACW				
H	Scirpus cyperinus	5%	OBL				
H	Bidens frondosa	5%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	40	x 1 =	40	
FACW species	15	x 2 =	30	
FAC species	30	x 3 =	90	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	85	(A)	160	(B)

Prevalence Index = B/A = 1.88

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☑ Drift Lines
- ☐ Drainage Patterns
- ☐ Soil Saturation
- ☐ Sediment Deposits
- ☐ Morphological Plant Adaptations
- ☐ Oxidized Root Channels
- ☐ Water-stained Leaves
- ☐ Hydric Soils (only in the absence of other field indicators)
- ☐ Water Marks
- ☑ Surface scouring

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Flood data
- ☐ Site specific data
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: Positive hydrologic indicators observed.

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Typic Endoaquults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-10	A	10YR 4/2	7.5YR 3/4	Common (2% - 20%)	Medium (5mm - 15mm)	Faint	SICL
10-20	A	10YR 4/1	7.5YR 4/4	Common (2% - 20%)	Medium (5mm - 15mm)	Distinct	SICL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☐ Jurisdictional ☑ Isolated
What is this based on?
No hydrologic connection to WOTUS

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Isolated depressional wetland bordered to the east by soil berms created from historic grading activities/the construction and maintenance of a woods road, which borders the wetland to the west. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Michael Levinson , Dan Laue
Applicant/owner: Williams Transco	Date: 10/18/2016 9:59:02 AM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☑ Yes ☐ No	Feature ID: W-T09-003C-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☐ Wetland ☑ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PFO; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Liquidambar styraciflua	15%	FAC	H	Carex lurida	15%	OBL
T	Salix nigra	10%	OBL	H	Juncus effusus	15%	OBL
T	Acer rubrum	5%	FAC	H	Persicaria sagittata	10%	OBL
S	Lindera benzoin	10%	FACW	H	Carex crinita	5%	FACW
S	Rosa multiflora	5%	FACU				
H	Onoclea sensibilis	20%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	50	x 1 =	50	
FACW species	35	x 2 =	70	
FAC species	20	x 3 =	60	
FACU species	5	x 4 =	20	
UPL species	0	x 5 =	0	
Totals	110	(A)	200	(B)

Prevalence Index = B/A = 1.82

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☑ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☑ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☑ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Typic Endoaquults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-7	A	10YR 4/1	7.5YR 4/6	Few (<2%)	Medium (5mm - 15mm)	Distinct	SIL
7-20	A	10YR 6/1	10YR 5/8	Common (>20%)	Medium (5mm - 15mm)	Prominent	SICL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:

(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☐ Jurisdictional ☑ Isolated
What is this based on?
No hydrologic connection to other features.

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Isolated depressional wetland bordered to the east by soil berms created from historic grading activities/the construction and maintenance of a woods road, which borders the wetland to the west. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Michael Levinson , Dan Laue
Applicant/owner: Williams Transco	Date: 10/18/2016 9:59:37 AM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T09-003-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A
	Field Cowardin classification: UPL
	NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer rubrum	30%	FAC				
T	Juniperus virginiana	10%	FACU				
S	Rosa multiflora	10%	FACU				
H	Fraxinus americana	10%	FACU				
V	Celastrus orbiculatus	16%	FACU				
V	Toxicodendron radicans	5%	FAC				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
	OBL species	0	x 1 =	0
	FACW species	0	x 2 =	0
	FAC species	35	x 3 =	105
	FACU species	46	x 4 =	184
	UPL species	0	x 5 =	0
	Totals	81 (A)		289 (B)

Prevalence Index = B/A = 3.57

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Typic Endoaquults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-18	A	10YR 3/4	/				SIL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:

(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Upland area adjacent to soil berms and maintained forest roads. Located 74 feet west of the PFO wetland sample point. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.189 Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Forested Distance to nearest roadway or other development ~.5 miles

Dominant wetland systems present Yes Contiguous undeveloped buffer zone present Yes

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

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T09-003

Latitude 40.40303905 Longitude -74.59933447

Prepared by: Michael Levinson, Dan Laue Date 11/4/2016 2:53:28 PM

Wetland Impact:
Type PEM/PFO Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	3,4	☐	
Floodflow Alteration	No	5	☐	
Fish and Shellfish Habitat	No	1	☐	
Sediment/Toxicant Retention	No	2,9	☐	
Nutrient Removal	Yes	3,8,9,10,11	☑	Vegetation abundence/diversity and dominence of emergent and dense woody stems are sufficent enough to utilize nutrients and provide nutrient attenuation.
Production Export	No	7,8	☐	
Sediment/Shoreline Stabilization	No	1,3	☐	
Wildlife Habitat	No		☐	
Recreation	No		☐	
Educational/Scientific Value	No		☐	
Uniqueness/Heritage	No		☐	
Visual Quality/Aesthetics	No		☐	
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: Isolated depressional wetland created by grading activities conducted to maintain/construct a woods road. Final QA: Dutton 02/17* Refer to backup list of numbered considerations.

W-T09-003 Photo Log



ID:W-T09-003A-1 Date:10/17/2016 Direction:W Position:Wetland Overview



ID:W-T09-003A-1 Date:10/17/2016 Direction:W Position:Wetland Pit

W-T09-003 Photo Log



ID:W-T09-003C-1 Date:10/17/2016 Direction:N Position:Wetland Overview



ID:W-T09-003C-1 Date:10/17/2016 Direction:N Position:Wetland Pit

W-T09-003 Photo Log



ID:U-T09-003-1 Date:10/17/2016 Direction:E Position:Upland Overview



ID:U-T09-003-1 Date:10/17/2016 Direction:E Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Rebecca Dutton, Jordan Skrzynski Date: 12/7/2016 2:27:30 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☑ Yes ☐ No	Community: Feature ID: W-T15-001A-1 Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland HGM Class: Depressional Field Cowardin classification: PEM NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Populus deltoides	10%	FAC				
H	Phalaris arundinacea	35%	OBL				
H	Agrostis stolonifera	20%	FACW				
H	Solidago altissima	15%	FACU				
H	Lotus corniculatus	15%	FACU				
H	Phragmites australis	10%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	35	x 1 =	35	
FACW species	30	x 2 =	60	
FAC species	10	x 3 =	30	
FACU species	30	x 4 =	120	
UPL species	0	x 5 =	0	
Totals	105	(A)	245	(B)

Prevalence Index = B/A = 2.33

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

☑ Ground Inundation	☐ Drift Lines	☑ Drainage Patterns
☐ Soil Saturation	☐ Sediment Deposits	☐ Morphological Plant Adaptations
☐ Oxidized Root Channels	☑ Water-stained Leaves	☐ Hydric Soils (only in the absence of other field indicators)
☐ Water Marks	☐ Surface scouring	

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation: 4

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Woodstown sandy loam, clayey su
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-8		10YR 3/2					LCOS

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:

(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: gravel present throughout . very dense gravel at 8". multiple pits attempted. Soil assumed to be hydric based on presence of hydrology and hydrophytic vegetation.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
adjacent to stream via flow down drainage in dirt

Stream reach name (if known):
WW-T01-002

Approximate distance to water body/reach:
25

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☑ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☑ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☑ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM in disturbed area. in depression between spoil piles and forest, discharging SE to stream. the area was previously disturbed and soils are significantly disturbed. rain (1/4") in previous 24 hours. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Rebecca Dutton, Jordan Skrzynski Date: 12/7/2016 2:27:30 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☑ Yes ☐ No	Community: Feature ID: U-T15-001-1 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: PEM NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Populus deltoides	15%	FAC				
H	Artemisia vulgaris	15%	UPL				
H	Setaria italica	10%	FACU				
H	Stachys byzantina	5%	NO				
H	Fallopia japonica	5%	UPL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	15	x 3 =	45	
FACU species	10	x 4 =	40	
UPL species	20	x 5 =	100	
Totals	45	(A)	185	(B)

Prevalence Index = B/A = 4.11

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Woodstown sandy loam, clayey su
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4		10YR 3/3					LCOS

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:

(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: gravel throughout. dense gravel at 4". multiple pits attempted.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

upland point on top of spoil pile, located 27 feet NW of the PEM wetland sample point. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.360 Human made? Yes Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use Industrial - Light Distance to nearest roadway or other development 30 ft

Dominant wetland systems present Yes Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Medium

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T15-001

Latitude 40.44124231 Longitude -74.31291054

Prepared by: Rebecca Dutton, Jordan Skrzynski Date 12/7/2016 1:39:23 PM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y [✔] N [ ]

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Yes	2,4,7,9,10	[ ]	
Floodflow Alteration	Yes	3,5,6,9,13,15	[ ]	
Fish and Shellfish Habitat	No		[ ]	none
Sediment/Toxicant Retention	Yes	1,2,3,9,10,14	[✔]	in flat area of below construction area
Nutrient Removal	No	3,4,12,14	[ ]	
Production Export	No	12	[ ]	
Sediment/Shoreline Stabilization	No	2,3,4	[ ]	
Wildlife Habitat	No	6,7,8	[ ]	
Recreation	No		[ ]	private property
Educational/Scientific Value	No		[ ]	private property
Uniqueness/Heritage	No		[ ]	private property
Visual Quality/Aesthetics	No		[ ]	private property
ES Endangered Species Habitat	No		[ ]	
Other	No		[ ]	

Notes: PEM in flat area below construction zone. drains down dirt road to intermittent stream. Final QA: Dutton 02/17* Refer to backup list of numbered considerations.

W-T15-001 Photo Log



ID:W-T15-001A-1 Date:12/07/2016 Direction:SE Position:Wetland Overview



ID:W-T15-001A-1 Date:12/07/2016 Direction:N Position:Wetland Pit

W-T15-001 Photo Log



ID:U-T15-001-1 Date:12/07/2016 Direction:SE Position:Upland Overview



ID:U-T15-001-1 Date:12/07/2016 Direction:N Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Rebecca Dutton, Jordan Skrzynski Date: 12/9/2016 11:37:07 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☑ Yes ☐ No	Community: Feature ID: W-T15-002A-1 Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland HGM Class: Depressional Field Cowardin classification: PEM NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Scirpus Cyperinus	45%	OBL				
H	Panicum virgatum	30%	FAC				
H	Epilobium coloratum	15%	OBL				
H	Juncus effusus	10%	OBL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	70	x 1 =	70	
FACW species	0	x 2 =	0	
FAC species	30	x 3 =	90	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	100	(A)	160	(B)

Prevalence Index = B/A = 1.6

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation: 6

Depth to free water in pit: 11

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale: meets two indicators

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-6		10YR 4/2	7.5YR 5/6	Common (2% - 20%)	Fine (< 5mm)	Prominent	SICL
6-12		10YR 5/2	10YR 5/6	Many (>20%)	Fine (< 5mm)	Prominent	SCL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: Rock refusal at 12 inches. soils previously disturbed by ROW construction.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
Adjacent to larger wetland complex downslope

Stream reach name (if known):
WW-T15-005

Approximate distance to water body/reach:
100ft

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☑ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☑ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

wetland is in an existing ROW that has historically been heavily impacted. inflow from overland sheet flow and ground water recharge. outflow to overland sheet flow and ground water recharge. ROW was constructed 10ft below below surrounding uplands. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Rebecca Dutton, Jordan Skrzynski Date: 12/9/2016 11:38:20 AM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☑ Yes ☐ No	Community: Feature ID: U-T15-002-1 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: UPL NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Artemisia vulgaris	30%	UPL				
H	Festuca rubra	3%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	3	x 4 =	12	
UPL species	30	x 5 =	150	
Totals	33	(A)	162	(B)

Prevalence Index = B/A = 4.91

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-7		10YR 4/3					COSL
7-13		7.5YR 5/8					SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: soils historically disturbed during ROW construction

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☑ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☑ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☑ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

upland sample point located 28 ft S of wetland sample point, and 1/2 foot higher in elevation. soils in area were historically disturbed during ROW construction. ROW was constructed 10ft below surrounding uplands. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.030 Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Other (explain in Notes) Distance to nearest roadway or other development 800 ft

Dominant wetland systems present Yes Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Medium

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T15-002

Latitude 40.44514803 Longitude -74.30308683

Prepared by: Rebecca Dutton, Jordan Skrzynski Date 12/9/2016 11:36:13 AM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	4	☐	
Floodflow Alteration	Yes	3,5,6,9	☐	
Fish and Shellfish Habitat	No		☐	none
Sediment/Toxicant Retention	No		☐	none
Nutrient Removal	No	3,9	☐	
Production Export	No		☐	none
Sediment/Shoreline Stabilization	No	2	☐	
Wildlife Habitat	Yes	5,6,7,8	☐	
Recreation	No		☐	private property
Educational/Scientific Value	No		☐	private property
Uniqueness/Heritage	No		☐	private property
Visual Quality/Aesthetics	No		☐	private property
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: small PEM in existing pipeline ROW. connected to larger system downslope by overland sheet flow. Final QA: Dutton 02/17* Refer to backup list of numbered considerations.

W-T15-002 Photo Log



ID:W-T15-002A-1 Date:12/09/2016 Direction:NW Position:Wetland Overview



ID:W-T15-002A-1 Date:12/09/2016 Direction:N Position:Wetland Pit

W-T15-002 Photo Log



ID:U-T15-002-1 Date:12/09/2016 Direction:SE Position:Upland Overview



ID:U-T15-002-1 Date:12/09/2016 Direction:N Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Jeff Mason, Jordan Skrzynski
Applicant/owner: Williams Transco	Date: 12/10/2016 4:00:18 PM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T15-003A-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Slope; Field Cowardin classification: PEM; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Betula populifolia	15%	FAC	H	Andropogon glomeratus	5%	FACW
H	Panicum virgatum	25%	FAC	H	Pinus rigida	2%	FACU
H	Agrostis stolonifera	15%	FACW	V	Rubus hispidus	15%	FACW
H	Solidago rugosa	15%	FAC	V	Parthenocissus quinquefolia	5%	FACU
H	Euthamia graminifolia	5%	FAC				
H	Schizachyrium scoparium	5%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	35	x 2 =	70	
FAC species	60	x 3 =	180	
FACU species	12	x 4 =	48	
UPL species	0	x 5 =	0	
Totals	107	(A)	298	(B)

Prevalence Index = B/A = 2.79

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☑ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-3		7.5YR 3/2					VFSL
3-6		10YR 3/1	7.5YR 5/8	Common (2% - 20%)	Fine (< 5mm)	Prominent	FSL
			5YR 4/6	Common (2% - 20%)	Fine (< 5mm)	Prominent	
6-8		10YR 4/1	7.5YR 5/8	Common (2% - 20%)	Fine (< 5mm)	Prominent	FSL
			5YR 4/6	Common (2% - 20%)	Fine (< 5mm)	Prominent	

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☑ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: 10-16" 7.5 YR 4/4 100% coarse sand

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
abutting stream

Stream reach name (if known):
WW-T15-004

Approximate distance to water body/reach:
0

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☑ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☑ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM along stream. vegetation sparse in some areas. in flow from overland sheet flow. outflow to stream and groundwater recharge. in existing row in deep valley created when original pipeline went in. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Jeff Mason, Jordan Skrzynski Date: 12/10/2016 4:37:15 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T15-003A-2 Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland HGM Class: Slope Field Cowardin classification: PEM NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Microstegium vimineum	40%	FAC	H	Agrostis stolonifera	5%	FACW
H	Phragmites australis	20%	FACW				
H	Leersia oryzoides	20%	OBL				
H	Carex lurida	15%	OBL				
H	Juncus effusus	10%	OBL				
H	Persicaria sagittata	10%	OBL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	55	x 1 =	55	
FACW species	25	x 2 =	50	
FAC species	40	x 3 =	120	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	120	(A)	225	(B)

Prevalence Index = B/A = 1.88

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☑ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:
Depth to saturation: 0
Depth to free water in pit: 0

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
2-0							duff litter
0-6		10YR 3/2	7.5YR 4/6	Common (2% - 20%)	Fine (< 5mm)	Prominent	SIL
6-16		10YR 5/4	7.5YR 4/6	Common (2% - 20%)	Fine (< 5mm)	Distinct	COS

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
abutting stream

Stream reach name (if known):
WW-T15-004

Approximate distance to water body/reach:
0

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☑ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☑ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM. inflow from overland sheet flow and groundwater. outflow to stream and groundwater recharge. wetland in valley bottom along stream. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Jeff Mason, Rebecca Dutton
Applicant/owner: Williams Transco	Date: 12/11/2016 10:36:18 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T15-003A-3
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Slope; Field Cowardin classification: PEM; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Agrostis stolonifera	45%	FACW				
H	Osmundastrum cinnamomeum	25%	FACW				
H	Eleocharis acicularis	20%	OBL				
H	Juncus effusus	10%	OBL				
H	Andropogon glomeratus	5%	FACW				
H	Phragmites australis	5%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	30	x 1 =	30	
FACW species	80	x 2 =	160	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	110	(A)	190	(B)

Prevalence Index = B/A = 1.73

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☑ Soil Saturation
- ☑ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation: 6

Depth to free water in pit: 6

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-5		10YR 4/1	7.5YR 3/4	Common (2% - 20%)	Fine (< 5mm)	Prominent	VFSL
5-6		10YR 2/1					FSL
6-16		10YR 4/4	7.5YR 4/4	Many (>20%)	Medium (5mm - 15mm)		SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: previously disturbed during original pipe installation.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
abutting stream

Stream reach name (if known):
WW-T15-005

Approximate distance to water body/reach:
0

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☑ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

PEM along stream. different characteristics than previous pits. Sheppard final QA 1/2017.

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Jeff Mason, Jordan Skrzynski
Applicant/owner: Williams Transco	Date: 12/10/2016 4:44:01 PM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T15-003C-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Slope; Field Cowardin classification: PFO; NWI Cowardin classification: PFO1C

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Nyssa sylvatica	30%	FAC	S	Clethra alnifolia	5%	FACW
T	Acer rubrum	15%	FAC	H	Phragmites australis	5%	FACW
T	Quercus palustris	5%	FACW	H	Typha latifolia	5%	OBL
T	Betula populifolia	5%	FAC				
S	Acer rubrum	10%	FAC				
S	Alnus serrulata	10%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	5	x 1 =	5	
FACW species	25	x 2 =	50	
FAC species	60	x 3 =	180	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	90	(A)	235	(B)

Prevalence Index = B/A = 2.61

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☑ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☑ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation: 0

Depth to free water in pit: 3

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-1		10YR 4/3					COS
1-16		10YR 5/2	10YR 3/2	Many (>20%)	Coarse (>15mm)	Faint	S

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:

(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☑ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☑ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: buried layers of decomposing plant material present, likely due to change in stream channel sand movement during high flow events.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
abutting stream

Stream reach name (if known):
WW-T15-004B

Approximate distance to water body/reach:
0

Watershed Relationship

Wetland is:
☑ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☑ Yes ☐ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☑ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☑ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

PFO in valley within banks of stream. flow from groundwater and overland sheet flow. outflow to stream and groundwater recharge. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Jeff Mason, Jordan Skrzynski Date: 12/10/2016 4:01:36 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: U-T15-003-1 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: UPL NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Pinus rigida	15%	FACU				
S	Betula populifolia	15%	FAC				
S	Quercus rubra	10%	FACU				
H	Schizachyrium scoparium	25%	FACU				
H	Solidago altissima	10%	FACU				
H	Panicum virgatum	5%	FAC				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	20	x 3 =	60	
FACU species	60	x 4 =	240	
UPL species	0	x 5 =	0	
Totals	80	(A)	300	(B)

Prevalence Index = B/A = 3.75

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-16		7.5YR 4/6					COS

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

upland sample point located 15 ft SE, upslope of wetland sample point, in existing ROW. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Jeff Mason, Jordan Skrzynski
Applicant/owner: Williams Transco	Date: 12/10/2016 4:40:51 PM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T15-003-2
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer rubrum	15%	FAC	H	Solidago altissima	5%	FACU
S	Betula populifolia	25%	FAC	V	Smilax rotundifolia	15%	FAC
S	Prunus serotina	10%	FACU				
S	Quercus rubra	5%	FACU				
S	Pinus rigida	5%	FACU				
H	Schizachyrium scoparium	20%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	55	x 3 =	165	
FACU species	45	x 4 =	180	
UPL species	0	x 5 =	0	
Totals	100	(A)	345	(B)

Prevalence Index = B/A = 3.45

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-9		10YR 5/3					S
9-16		10YR 4/6	10YR 2/1	Many (>20%)	Coarse (>15mm)	Prominent	S

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: fill area. organic mottles in second profile layer due to area being filled and previously disturbed.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Upland sample point located 15 feet south of wetland sample point, located on a berm next to a road. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Jeff Mason, Jordan Skrzynski Date: 12/10/2016 4:44:58 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: U-T15-003-3 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: UPL NWI Cowardin classification: PFO1C

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Nyssa sylvatica	45%	FAC	V	Smilax rotundifolia	2%	FAC
T	Acer rubrum	20%	FAC				
T	Quercus rubra	10%	FACU				
S	Clethra alnifolia	10%	FACW				
S	Acer rubrum	10%	FAC				
S	Rhododendron periclymenoides	5%	FAC				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	82	x 3 =	246	
FACU species	10	x 4 =	40	
UPL species	0	x 5 =	0	
Totals	102	(A)	306	(B)

Prevalence Index = B/A = 3

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-15		10YR 2/1					L
15-16		10YR 4/4	7.5YR 4/6	Common (2% - 20%)	Fine (< 5mm)	Distinct	SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: soils friable. in forest 3-4 ft above wetland edge.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☑ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Upland sample point, located 22 ft N of wetland sample point, above the adjacent stream banks. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Jeff Mason, Rebecca Dutton
Applicant/owner: Williams Transco	Date: 12/11/2016 10:38:04 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T15-003-4
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Quercus rubra	25%	FACU	V	Smilax rotundifolia	5%	FAC
S	Quercus macrocarpa	5%	FACU	V	Rubus hispidus	5%	FACW
S	Rhus typhina	5%	UPL				
H	Agrostis stolonifera	5%	FACW				
H	Solidago altissima	5%	FACU				
H	Solidago rugosa	5%	FAC				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	10	x 3 =	30	
FACU species	35	x 4 =	140	
UPL species	5	x 5 =	25	
Totals	60	(A)	215	(B)

Prevalence Index = B/A = 3.58

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Drift Lines
- ☐ Drainage Patterns
- ☐ Soil Saturation
- ☐ Sediment Deposits
- ☐ Morphological Plant Adaptations
- ☐ Oxidized Root Channels
- ☐ Water-stained Leaves
- ☐ Hydric Soils (only in the absence of other field indicators)
- ☐ Water Marks
- ☐ Surface scouring

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Flood data
- ☐ Site specific data
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-1		10YR 4/3					SL
1-12		10YR 5/4					SL
12-16		10YR 5/4	7.5YR 4/6	Common (2% - 20%)	Fine (< 5mm)	Distinct	SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:

(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: Pipe backfill.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Upland sample point located 17 ft S and upslope of the wetland sample point. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.858 Human made? No Is wetland part of a wildlife corridor? Yes or a "habitat island"? No

Adjacent land use Other (explain in Notes) Distance to nearest roadway or other development 1000 ft

Dominant wetland systems present Yes Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? Medium

How many tributaries contribute to the wetland? 4 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T15-003

Latitude 40.44342189 Longitude -74.30692231

Prepared by: Jeff Mason, Jordan Skrzynski Date 12/10/2016 11:03:30 AM

Wetland Impact:
Type PEM/PFO Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y ☑ N ☐

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	2,4,7	☐	
Floodflow Alteration	Yes	3,5,6,8,9,10,13,14,18	✔	
Fish and Shellfish Habitat	No	1,4	☐	intermittent stream
Sediment/Toxicant Retention	Yes	1,2,3,9,10,11,14	✔	
Nutrient Removal	No	3,4,12,14	☐	
Production Export	No	1,12	☐	
Sediment/Shoreline Stabilization	No	3,4,15	☐	
Wildlife Habitat	Yes	5,6,7,8,17,19,20,21	✔	
Recreation	No		☐	private property
Educational/Scientific Value	No		☐	private property
Uniqueness/Heritage	No		☐	private property
Visual Quality/Aesthetics	No		☐	private property
ES Endangered Species Habitat	No		☐	
Other	No		☐	

Notes: large PEM/PFO complex in existing pipeline ROW that continues into forest outside ROW. abutting stream. Final QA: Dutton 02/17* Refer to backup list of numbered considerations.

W-T15-003 Photo Log



ID:W-T15-003A-1 Date:12/10/2016 Direction:NE Position:Wetland Overview



ID:W-T15-003A-1 Date:12/10/2016 Direction:N Position:Wetland Pit

W-T15-003 Photo Log



ID:W-T15-003A-2 Date:12/11/2016 Direction:NE Position:Wetland Overview



ID:W-T15-003A-2 Date:12/11/2016 Direction:N Position:Wetland Pit

W-T15-003 Photo Log



ID:W-T15-003A-3 Date:12/11/2016 Direction:SW Position:Wetland Overview



ID:W-T15-003A-3 Date:12/11/2016 Direction:N Position:Wetland Pit

W-T15-003 Photo Log



ID:W-T15-003C-1 Date:12/11/2016 Direction:S Position:Wetland Overview



ID:W-T15-003C-1 Date:12/11/2016 Direction:N Position:Wetland Pit

W-T15-003 Photo Log



ID:U-T15-003-1 Date:12/10/2016 Direction:NE Position:Upland Overview



ID:U-T15-003-1 Date:12/10/2016 Direction:N Position:Upland Pit

W-T15-003 Photo Log



ID:U-T15-003-2 Date:12/11/2016 Direction:S Position:Upland Overview



ID:U-T15-003-2 Date:12/11/2016 Direction:N Position:Upland Pit

W-T15-003 Photo Log



ID:U-T15-003-3 Date:12/11/2016 Direction:SE Position:Upland Overview



ID:U-T15-003-3 Date:12/11/2016 Direction:N Position:Upland Pit

W-T15-003 Photo Log



ID:U-T15-003-4 Date:12/11/2016 Direction:N Position:Wetland Overview



ID:U-T15-003-4 Date:12/11/2016 Direction:N Position:Wetland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Evan Sheppard, Rebecca Dutton
Applicant/owner: Williams Transco	Date: 1/12/2017 11:20:22 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T17-002A-3
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PEM; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Phragmites australis	100%	FACW				
H	Cyperus atrovirens	3%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
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	
Totals	100	(A)	200	(B)

Prevalence Index = B/A = 2

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☑ Ground Inundation
- ☑ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☑ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☑ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation: 0

Depth to saturation: 0

Depth to free water in pit: 0

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4		2.5Y 3/3	/				S
4-12		10YR 4/2	/				SCL
12-14		2.5Y 3/2	/				S

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: Fill material, high gravel throughout. Rock refusal at 14".

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
Overland sheetflow to open wetland

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☑ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☑ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

Highly disturbed series of PEM polygons, connected by overland sheetflow, draining overland to W-T15-001. Soil is full, landform is man made. There are three polygons to this wetland with the same characteristics. A datasheet was only completed for W-T17-002A-3. Final QA: Dutton 01/17

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Evan Sheppard, Rebecca Dutton
Applicant/owner: Williams Transco	Date: 1/12/2017 11:42:49 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T17-002-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Artemisia vulgaris	65%	UPL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	65	x 5 =	325	
Totals	65	(A)	325	(B)

Prevalence Index = B/A = 5

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Pits, sand and gravel
Subgroup:
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-14		10YR 4/6	10YR 3/3	Many (>20%)	Coarse (>15mm)	Distinct	SCL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: 30% gravel throughout.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Upland sample point 10 feet east of wetland sample point. Highly disturbed by previous land moving activity. Final QA: Dutton 01/17

Wetland Function-Value Evaluation Form

Total area of wetland 0.204 Human made? No Is wetland part of a wildlife corridor? No or a "habitat island"? No

Adjacent land use industrial Distance to nearest roadway or other development 25 ft

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? high

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-T17-002

Latitude 40.44121043 Longitude -74.31377682

Prepared by: Evan Sheppard, Rebecca Dutton Date 1/12/2017 10:21:34 AM

Wetland Impact:
Type PEM Area TBD

Evaluation based on:
Office No Field Yes

Corps manual wetland delineation completed? Y [✔] N [ ]

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	No	2, 3	[ ]	
Floodflow Alteration	No	2, 3, 5, 6, 9	[✔]	
Fish and Shellfish Habitat	No		[ ]	none
Sediment/Toxicant Retention	No	1, 2	[ ]	
Nutrient Removal	No	3, 8, 9	[ ]	
Production Export	No	7	[ ]	
Sediment/Shoreline Stabilization	No	2, 3, 15	[ ]	
Wildlife Habitat	No	7, 13	[ ]	
Recreation	No		[ ]	in industrial area
Educational/Scientific Value	No		[ ]	in industrial area
Uniqueness/Heritage	No		[ ]	in industrial area
Visual Quality/Aesthetics	No		[ ]	in industrial area
ES Endangered Species Habitat	No		[ ]	
Other	No		[ ]	

Notes: PEM in industrial area dominated by Phragmites. Three polygons due to impact from construction. Connected to other wetland system by overland sheet flow on north side. Final QA: Dutton 02/17 * Refer to backup list of numbered considerations.

W-T17-002 Photo Log



ID:W-T17-002A-3 Date:01/12/2017 Direction:NW Position:Wetland Overview



ID:W-T17-002A-3 Date:01/12/2017 Direction:N Position:Wetland Pit

W-T17-002 Photo Log



ID:U-T17-002-1 Date:01/12/2017 Direction:E Position:Upland Overview



ID:U-T17-002-1 Date:01/12/2017 Direction:N Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Jeff Mason, Rebecca Dutton
Applicant/owner: Williams Transco	Date: 6/13/2017 10:13:57 AM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T23-001A-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PEM; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Poa trivialis	80%	FACW				
H	Juncus tenuis	25%	FAC				
H	Carex vulpinoidea	5%	FACW				
H	Juncus effusus	5%	OBL				
H	Rumex crispus	1%	FAC				
H	Persicaria hydropiperoides	1%	OBL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	6	x 1 =	6	
FACW species	85	x 2 =	170	
FAC species	26	x 3 =	78	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	117	(A)	254	(B)

Prevalence Index = B/A = 2.17

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☑ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☑ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-9		10YR 4/2	10YR 4/1	common	medium	faint	FSL
9-20		7.5YR 5/6	5YR 4/6	few	fine	prominent	SiL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: Second layer is fill with gravel, perching water table above it.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
continues outside survey area

Stream reach name (if known):
unknown

Approximate distance to water body/reach:
unknown

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☑ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Jeff Mason, Rebecca Dutton
Applicant/owner: Williams Transco	Date: 6/13/2017 10:05:33 AM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T23-001C-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PFO; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer rubrum	20%	FAC	H	Juncus tenuis	5%	FAC
T	Juglans nigra	10%	UPL	H	Alopecurus pratensis	5%	FAC
S	Rosa multiflora	30%	FACU	V	Lonicera japonica	30%	FACU
S	Diospyros virginiana	30%	FAC	V	Parthenocissus quinquefolia	5%	FACU
S	Liquidambar styraciflua	15%	FAC	V	Vitis labrusca	5%	FAC
H	Poa trivialis	65%	FACW				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	65	x 2 =	130	
FAC species	75	x 3 =	225	
FACU species	65	x 4 =	260	
UPL species	10	x 5 =	50	
Totals	215	(A)	665	(B)

Prevalence Index = B/A = 3.09

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☑ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☑ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-10		10YR 4/2					SiL
10-20		10YR 5/6					FSL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: fill layer perching water table. Soils are marginal.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Jeff Mason, Rebecca Dutton
Applicant/owner: Williams Transco	Date: 6/13/2017 10:17:39 AM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T23-001-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Rosa multiflora	5%	FACU				
H	Festuca rubra	90%	FACU				
H	Holcus lanatus	10%	FAC				
H	Allium vineale	5%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	10	x 3 =	30	
FACU species	100	x 4 =	400	
UPL species	0	x 5 =	0	
Totals	110	(A)	430	(B)

Prevalence Index = B/A = 3.91

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-5		10YR 4/4					SiL
5-20		10YR 4/6	10YR 4/4				FSL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

W-T23-001 Photo Log



ID:W-T23-001A-1 Date:06/13/2017 Direction:SW Position:NA



ID:W-T23-001A-1 Date:06/13/2017 Direction:NE Position:NA

W-T23-001 Photo Log



ID:W-T23-001A-1 Date:06/13/2017 Direction:NA Position:NA



ID:W-T23-001C-1 Date:06/13/2017 Direction:SW Position:NA

W-T23-001 Photo Log



ID:W-T23-001C-1 Date:06/13/2017 Direction:NE Position:NA



ID:W-T23-001C-1 Date:06/13/2017 Direction:NA Position:NA

W-T23-001 Photo Log



ID:U-T23-001-01 Date:06/13/2017 Direction:NE Position:NA



ID:U-T23-001-01 Date:06/13/2017 Direction:SW Position:NA

W-T23-001 Photo Log



ID:U-T23-001-01 Date:06/13/2017 Direction:NA Position:NA

Routine Wetland Determination

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1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Jeff Mason, Rebecca Dutton
Applicant/owner: Williams Transco	Date: 6/13/2017 10:13:57 AM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T23-001A-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PEM; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Poa trivialis	80%	FACW				
H	Juncus tenuis	25%	FAC				
H	Carex vulpinoidea	5%	FACW				
H	Juncus effusus	5%	OBL				
H	Rumex crispus	1%	FAC				
H	Persicaria hydropiperoides	1%	OBL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	6	x 1 =	6	
FACW species	85	x 2 =	170	
FAC species	26	x 3 =	78	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Totals	117	(A)	254	(B)

Prevalence Index = B/A = 2.17

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☑ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☑ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-9		10YR 4/2	10YR 4/1	common	medium	faint	FSL
9-20		7.5YR 5/6	5YR 4/6	few	fine	prominent	SiL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: Second layer is fill with gravel, perching water table above it.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?
continues outside survey area

Stream reach name (if known):
unknown

Approximate distance to water body/reach:
unknown

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☑ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☑ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☑ Overland sheet flow
☐ No flow

Rationale/Remarks:

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Jeff Mason, Rebecca Dutton
Applicant/owner: Williams Transco	Date: 6/13/2017 4:30:00 PM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T23-002B-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PSS; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Ailanthus altissima	10%	FACU	H	Arthraxon hispidus	15%	FAC
S	Diospyros virginiana	25%	FAC	H	Persicaria maculosa	10%	FACW
S	Rosa multiflora	10%	FACU	H	Onoclea sensibilis	10%	FACW
H	Festuca rubra	30%	FACU	H	Carex vulpinoidea	10%	FACW
H	Rubus allegheniensis	20%	UPL	H	Juncus tenuis	5%	FAC
H	Microstegium vimineum	15%	FAC	H	Persicaria sagittata	5%	OBL

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	5	x 1 =	5	
FACW species	30	x 2 =	60	
FAC species	70	x 3 =	210	
FACU species	50	x 4 =	200	
UPL species	20	x 5 =	100	
Totals	175	(A)	575	(B)

Prevalence Index = B/A = 3.29

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☑ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-3		10YR 4/3					SiL
3-9		10YR 4/2	10YR 3/6	common	medium	prominent	SiL
9-20		10YR 5/6	10YR 4/2	common	medium	prominent	SiL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: fill layer perching water

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Jeff Mason, Rebecca Dutton
Applicant/owner: Williams Transco	Date: 6/13/2017 3:16:28 PM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: W-T23-002C-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☐ Upland ☑ Wetland ☐ Isolated Wetland
	HGM Class: Depressional; Field Cowardin classification: PFO; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer rubrum	75%	FAC	H	Dichanthelium dichotomum	5%	FAC
T	Diospyros virginiana	15%	FAC	H	Juncus effusus	5%	OBL
S	Rosa multiflora	5%	FACU	V	Lonicera japonica	5%	FACU
S	Cornus amomum	5%	FACW				
H	Poa trivialis	40%	FACW				
H	Microstegium vimineum	20%	FAC				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	5	x 1 =	5	
FACW species	45	x 2 =	90	
FAC species	115	x 3 =	345	
FACU species	10	x 4 =	40	
UPL species	0	x 5 =	0	
Totals	175	(A)	480	(B)

Prevalence Index = B/A = 2.74

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☑ Water Marks
- ☐ Drift Lines
- ☑ Sediment Deposits
- ☑ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-4		10YR 4/6					SiL
4-12		10YR 4/6	10YR 5/2	common	medium	prominent	SiL
12-20		10YR 4/6	7.5YR 5/6	few	fine	faint	SiL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:

(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: soils borderline

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☑ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206	Investigator(s): Jeff Mason, Rebecca Dutton
Applicant/owner: Williams Transco	Date: 6/13/2017 2:31:56 PM
State: NJ County: Somerset	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: U-T23-002-1
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
T	Acer rubrum	30%	FAC	H	Dichanthelium dichotomum	5%	FAC
H	Anthoxanthum odoratum	40%	FACU	H	Lotus corniculatus	5%	FACU
H	Trifolium campestre	40%	UPL	V	Toxicodendron radicans	2%	FAC
H	Plantago lanceolata	15%	FACU				
H	Trifolium repens	10%	FACU				
H	Leucanthemum vulgare	5%	UPL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	37	x 3 =	111	
FACU species	70	x 4 =	280	
UPL species	45	x 5 =	225	
Totals	152	(A)	616	(B)

Prevalence Index = B/A = 4.05

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-5		10YR 4/3	7.5YR 5/6	common	medium	prominent	SiL
5-9		10YR 4/2	7.5YR 5/6	few	fine	prominent	SiL
9-20		10YR 5/6					SiL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: Shallow subsurface perching. Plow layer ~1/4" thick between first and second layer 5YR 5/8.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

W-T23-002 Photo Log



ID:W-T23-002A-1 Date:06/13/2017 Direction:SW Position:NA



ID:W-T23-002A-1 Date:06/13/2017 Direction:NE Position:NA

W-T23-002 Photo Log



ID:W-T23-002A-1 Date:06/13/2017 Direction:NA Position:NA



ID:W-T23-002A-4 Date:06/14/2017 Direction:SW Position:NA

W-T23-002 Photo Log



ID:W-T23-002A-4 Date:06/14/2017 Direction:NE Position:NA



ID:W-T23-002A-4 Date:06/14/2017 Direction:NA Position:NA

W-T23-002 Photo Log



ID:W-T23-002B-01 Date:06/13/2017 Direction:SW Position:NA



ID:W-T23-002B-01 Date:06/13/2017 Direction:NE Position:NA

W-T23-002 Photo Log



ID:W-T23-002B-01 Date:06/13/2017 Direction:NA Position:NA



ID:W-T23-002C-1 Date:06/13/2017 Direction:SW Position:NA

W-T23-002 Photo Log



ID:W-T23-002C-1 Date:06/13/2017 Direction:NE Position:NA



ID:W-T23-002C-1 Date:06/13/2017 Direction:NA Position:NA

W-T23-002 Photo Log



ID:U-T23-002-01 Date:06/13/2017 Direction:SW Position:NA



ID:U-T23-002-01 Date:06/13/2017 Direction:NE Position:NA

W-T23-002 Photo Log



ID:U-T23-002-01 Date:06/13/2017 Direction:NA Position:NA

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206 Applicant/owner: Williams Transco State: NJ County: Somerset	Investigator(s): Jeff Mason, Evan Sheppard Date: 8/7/2017 4:25:43 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☑ Yes ☐ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: W-T23-003A-1 Determination: ☐ Upland ☐ Wetland ☑ Isolated Wetland HGM Class: Depressional Field Cowardin classification: PEM NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Calamagrostis canadensis	70%	OBL	H	Festuca rubra	1%	FACU
H	Agrostis stolonifera	7%	FACW	H	Setaria pumila	1%	FAC
H	Alopecurus carolinianus	7%	FACW	H	Salix sp.	1%	-
H	Juncus effusus	5%	OBL	H	Acer rubrum	0%	
H	Juncus tenuis	3%	FAC				
H	Achillea millefolium	1%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☑ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☑ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	75	x 1 =	75	
FACW species	14	x 2 =	28	
FAC species	5	x 3 =	15	
FACU species	2	x 4 =	8	
UPL species	1	x 5 =	5	
Totals	97	(A)	131	(B)

Prevalence Index = B/A = 1.35

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☑ Ground Inundation
- ☑ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography: ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation: 2

Depth to saturation: 4

Depth to free water in pit: 6

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-2		10YR 4/2	7.5YR 3/4	Common (2% - 20%)	Medium (5mm - 15mm)	Distinct	SIL
2-10		10YR 4/2	7.5YR 3/4	Common (2% - 20%)	Medium (5mm - 15mm)	Distinct	SIL
10-20		7.5YR 4/6	7.5YR 4/3	Common (2% - 20%)	Medium (5mm - 15mm)	Distinct	SICL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☑ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: Plow depth at 10 inches

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☑ Yes ☐ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☑ Yes ☐ No
If point is a wetland, ☐ Jurisdictional ☑ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Heavy cattle grazing causing significant vegetation disturbance. Hydrophytic vegetation assumed.

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - CS206 Applicant/owner: Williams Transco State: NJ County: Somerset	Investigator(s): Jeff Mason, Evan Sheppard Date: 8/7/2017 4:38:24 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: U-T23-003-1 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: UPL NWI Cowardin classification: N/A

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Poa annua	60%	FACU	H	Setaria pumila	1%	FAC
H	Schedonorus arundinaceus	30%	FACU				
H	Trifolium repens	5%	FACU				
H	Taraxacum officinale	3%	FACU				
H	Potentilla simplex	1%	FACU				
H	Trifolium campestre	1%	UPL				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	1	x 3 =	3	
FACU species	99	x 4 =	396	
UPL species	1	x 5 =	5	
Totals	101	(A)	404	(B)

Prevalence Index = B/A = 4

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Drift Lines
- ☐ Drainage Patterns
- ☑ Soil Saturation
- ☐ Sediment Deposits
- ☐ Morphological Plant Adaptations
- ☐ Oxidized Root Channels
- ☐ Water-stained Leaves
- ☐ Hydric Soils (only in the absence of other field indicators)
- ☐ Water Marks
- ☐ Surface scouring

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Flood data
- ☐ Site specific data
- ☐ Other –

Field Measurements:

Depth of inundation:
Depth to saturation: 8
Depth to free water in pit: 8

Wetland hydrology present? ☑ **Yes** ☐ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Keyport silt loam, 0 to 2 percent slo
Subgroup: Aquic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-2		10YR 4/3	/				SIL
2-8		10YR 4/4	/				FSL
8-20		7.5YR 4/6	/				SL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☑ Yes ☐ No

Rationale: Gravel 20 percent, fill side cast from road construction.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☑ Yes ☐ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Artificial roadside edge. Bermed, seeded, and mowed.

W-T23-003 Photo Log



ID:W-T23-003A-1 Date:08/07/2017 Direction:W Position:Wetland Overview



ID:U-T23-003-1 Date:08/07/2017 Direction:S Position:Upland Overview

W-T23-003 Photo Log



ID:U-T23-003-1 Date:08/07/2017 Direction:N/A Position:Upland Pit

UVP-T01-001 Photo Log



ID:UVP-T01-001 Date:08/15/2016 Direction:NE Position:Upland Overview

UVP-T01-002 Photo Log



ID:UVP-T01-002 Date:08/18/2016 Direction:E Position:Upland Overview



ID:UVP-T01-002 Date:08/18/2016 Direction:E Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop Applicant/owner: Williams Transco State: NJ County: Middlesex	Investigator(s): Daniel Laue, Evan Sheppard Date: 8/18/2016 2:31:30 PM Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No Has the site been significantly disturbed? ☐ Yes ☑ No Is the site a potential atypical or problem area? ☐ Yes ☑ No	Community: Feature ID: UVP-T01-003 Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland HGM Class: N/A Field Cowardin classification: UPL NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
H	Phragmites australis	40%	FACW	H	Ambrosia artemisiifolia	5%	FACU
H	Panicum virgatum	30%	FAC	H	Setaria faberi	2%	UPL
H	Lotus corniculatus	25%	FACU	H	Baccharis halimifolia	2%	FAC
H	Artemisia vulgaris	20%	UPL				
H	Solidago altissima	15%	FACU				
H	Melilotus officinalis	5%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☑ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	40	x 2 =	80	
FAC species	34	x 3 =	102	
FACU species	50	x 4 =	200	
UPL species	22	x 5 =	110	
Totals	146	(A)	492	(B)

Prevalence Index = B/A = 3.37

Hydrophytic vegetation present? ☑ Yes ☐ No

Rationale:

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale: No indicators/evidence.

SOILS

Soil Survey:
Map Unit (Series and Phase): Psamments, 0 to 3 percent slopes
Subgroup: Typic Alaquods
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-18	A	10YR 3/2					SIL

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale: Disturbed fill soils, lacking wetland indicators.

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☑ Yes ☐ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Man-made fandfill/filled area. Heavily disturbed. Does not meet hydrology or soil indicators. Final QA: Dutton 01/17

UVP-T01-003 Photo Log



ID:UVP-T01-003 Date:08/18/2016 Direction:N Position:Upland Pit

UVP-T01-004 Photo Log



ID:UVP-T01-004 Date:08/19/2016 Direction:S Position:Upland Overview



ID:UVP-T01-004 Date:08/19/2016 Direction:S Position:Upland Pit

UVP-T01-005 Photo Log



ID:UVP-T01-005 Date:08/22/2016 Direction:E Position:Upland Pit

UVP-T01-006 Photo Log



ID:UVP-T01-006 Date:08/22/2016 Direction:NW Position:Upland Overview



ID:UVP-T01-006 Date:08/22/2016 Direction:NE Position:Upland Pit

Routine Wetland Determination

DATA FORM

1989 Federal Manual for Delineating Wetlands

Project/Site: NESE - Madison Loop	Investigator(s): Thomas Auffenorde, Michael Levinsc
Applicant/owner: Williams Transco	Date: 8/23/2016 11:17:46 AM
State: NJ County: Middlesex	Photo:
Do normal circumstances exist on the site? ☑ Yes ☐ No	Community:
Has the site been significantly disturbed? ☐ Yes ☑ No	Feature ID: UVP-T01-007
Is the site a potential atypical or problem area? ☐ Yes ☑ No	Determination: ☑ Upland ☐ Wetland ☐ Isolated Wetland
	HGM Class: N/A; Field Cowardin classification: UPL; NWI Cowardin classification: UPL

VEGETATION

Stratum: Trees = T, Saplings/Shurbs = S, Herbs = H. Vines = V

Stratum	Dominant Species	% Cover	Status	Stratum	Dominant Species	% Cover	Status
S	Rosa multiflora	10%	FACU				
H	Artemisia vulgaris	40%	UPL				
H	Phragmites australis	30%	FACW				
H	Apocynum cannabinum	10%	FACU				
H	Solidago altissima	10%	FACU				

Hydrophytic Vegetation Field Indicators:

- ☐ All dominant species are OBL species
- ☐ > 50% of all dominants are OBL, FACW, or FAC
- ☐ % Cover of OBL/ FACW species > % Cover of FACU/ UPL
- ☐ Prevalence Index < 3
- ☐ < 50% of all dominants are OBL, FACW, or FAC **OR** Prevalence Index > 3, **AND** Hydric Soils and Hydrology are present

Prevalence Index Calculation:

% Cover:				
OBL species	0	x 1 =	0	
FACW species	30	x 2 =	60	
FAC species	0	x 3 =	0	
FACU species	30	x 4 =	120	
UPL species	40	x 5 =	200	
Totals	100	(A)	380	(B)

Prevalence Index = B/A = 3.8

Hydrophytic vegetation present? ☐ Yes ☑ No

Rationale:

Nonhydrophytes dominant.

HYDROLOGY

Wetland Hydrology Field Indicators:

- ☐ Ground Inundation
- ☐ Soil Saturation
- ☐ Oxidized Root Channels
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Water-stained Leaves
- ☐ Surface scouring
- ☐ Drainage Patterns
- ☐ Morphological Plant Adaptations
- ☐ Hydric Soils (only in the absence of other field indicators)

Other Indicators:

- ☐ Stream, lake, or tidal gauges
- ☐ Flood data
- ☐ Site specific data
- ☐ Aerial Photography:
  - ☐ Saturation ☐ Inundation
- ☐ Other –

Field Measurements:

Depth of inundation:

Depth to saturation:

Depth to free water in pit:

Wetland hydrology present? ☐ **Yes** ☑ **No**

Rationale:

SOILS

Soil Survey:
Map Unit (Series and Phase): Evesboro sand, 10 to 15 percent sl
Subgroup: Typic Hapludults
Drainage Class:

Hydric Soils List:
Hydric Class:
Field observations confirm mapped type?
☐ Yes ☑ No

Profile Description: (Profile should be characterized to a depth of at least 18 inches; Colors should be determined in a moist condition)

Depth (inches)	Horizon	Matrix Color	Mottle / Redox Features[1] Color	Abundance	Size	Contrast	Texture
0-18		10YR 3/3					

1 Abundance: Few = <2%, Common = between 2% and 20%, Many = >20%; Size: Fine = <5mm, Medium = between 5mm and 15mm, Coarse = >15mm
Contrast: Faint, Distinct, Prominent; Texture:

Hydric Soil Indicators:
(Depth to identify indicators: 18 inches for organic, and poorly and very poorly drained soils; 12 inches for coarse textured poorly and very poorly drained soils; 6 inches for somewhat poorly drained soils)

☐ Organic soils (Histosols)
☐ Histic epipedons
☐ Sulfidic material / Odor
☐ Aquic or peraquic moisture regime
☐ Reducing soil conditions
☐ Gleyed soils
☐ Low-chroma soils (chroma ≤ 1)
☐ Low-chroma/mottled soils (chroma ≤ 2 with mottles)
☐ Mg or Fe concretions

Coarse Textured or Sandy Soil Indicators:
☐ High organic content in surface horizon
☐ Organic streaking in subsurface horizons
☐ Wet spodosols

Wetland soils present? ☐ Yes ☑ No

Rationale:

JURISDICTIONAL DETERMINATION

Wetland Determination

Hydrophytic vegetation present? ☐ Yes ☑ No
Hydric soils present? ☐ Yes ☑ No
Wetland hydrology present? ☐ Yes ☑ No
Is the sampling point within a wetland? ☐ Yes ☑ No
If point is a wetland, ☐ Jurisdictional ☐ Isolated
What is this based on?

Stream reach name (if known):

Approximate distance to water body/reach:

Watershed Relationship

Wetland is:
☐ Abutting a water body/stream reach
☐ Adjacent with surface connection to a water body/reach
☐ Adjacent without surface connection to a water body/reach
Is the associated stream reach delineated? ☐ Yes ☑ No
The associated stream reach is a:
☐ TNW ☐ P-RPW ☐ S-RPW ☐ Non-RPW
Flow relationship to associated water body/reach:
☐ Intermittent surface ☐ Ephemeral surface
☐ Perennial surface ☐ No surface flow
Flow is:
☐ Discrete ☐ Discrete and confined
☐ Confined ☐ Overland sheet flow
☐ No flow

Rationale/Remarks:

Maintained ROW, does not meet wetland indicators. Final QA: Dutton 01/17

UVP-T01-007 Photo Log



ID:UVP-T01-007 Date:08/23/2016 Direction:NE Position:Upland Overview



ID:UVP-T01-007 Date:08/23/2016 Direction:NE Position:Upland Pit

UVP-T01-008 Photo Log



ID:UVP-T01-008 Date:08/24/2016 Direction:NE Position:Upland Overview

UVP-T01-009 Photo Log



ID:UVP-T01-009 Date:09/27/2016 Direction:SE Position:Upland Overview

UVP-T01-010 Photo Log



ID:UVP-T01-010 Date:09/27/2016 Direction:N Position:Upland Overview

9 Watercourse Data Package

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9A. Watercourse Tables

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Watercourses Delineated within the Madison Loop Study Area

Watercourse ID	Watercourse Name	Milepost	Latitude Longitude	Township County	USGS Quad	Type	Size[1]	Category 1	State Fishery Classification	Resource Value (feet)	Watercourse Descriptions
WW-T01-001	UNT to Tennent Brook	8.61	40.44294, -74.31516	Old Bridge/ Middlesex	South Amboy	Intermittent	Intermediate	No	FW2-NT (Non-Trout)	50	Relatively straight man-made ditch with some stream characteristics and a flat to moderate gradient in a forest. Some erosion present. Portion of channel filled (discovered in a subsequent field visit from the original delineation on 8/15/2017) with a culverted crossing bridge and a portion of the surrounding forest cleared for Transco's permitted NYBE project.
WW-T01-001A	UNT to Tennent Brook	8.62	40.44252, -74.31527	Old Bridge/ Middlesex	South Amboy	Ephemeral	Minor	No	FW2-NT (Non-Trout)	50	Tributary to WW-T01-001, short headwater man-made ditch with stream characteristics and a moderate gradient.
WW-T01-002B	UNT to Tennent Brook	8.69	40.44218, -74.31298	Old Bridge/ Middlesex	South Amboy	Ephemeral	Minor	No	FW2-NT (Non-Trout)	50	Small drainage pattern/channel within wetland W-T01-007. Documented as the conveyance of water throughout the wetland. Drains into WW-T01-002.
WW-T01-002A	UNT to Tennent Brook	8.75	40.44226, -74.31286	Old Bridge/ Middlesex	South Amboy	Ephemeral	Minor	No	FW2-NT (Non-Trout)	50	Small ephemeral stream draining into WW-T01-002. Active erosion occurring with minimal stabilizing vegetation.
WW-T01-002 / WW-T15-001	UNT to Tennent Brook	8.76	40.44282, -74.31268	Old Bridge/ Middlesex	South Amboy	Intermittent	Minor	No	FW2-NT (Non-Trout)	50	Meandering ephemeral stream with incised bed and actively eroding banks.
WW-T15-002	UNT to Tennent Brook	9.09	40.44393, -74.30693	Old Bridge/ Middlesex	South Amboy	Intermittent	Minor	No	FW2-NT (Non-Trout)	50	Meandering headwater stream with steep banks and deeply incised bed. Stream discharges into WW-T15-004.
WW-T15-002A	UNT to Tennent Brook	9.10	40.44387, -74.30677	Old Bridge/ Middlesex	South Amboy	Intermittent	Minor	No	FW2-NT (Non-Trout)	50	Small headwater tributary to stream WW-T15-002.
WW-T15-003	UNT to Tennent Brook	9.02	40.44304, -74.30807	Old Bridge/ Middlesex	South Amboy	Intermittent	Minor	No	FW2-NT (Non-Trout)	50	Meandering stream with flat to moderate gradient and steep banks in a forest and crosses the cleared ROW. Erosion is moderately severe. Stream is fed by stream WW-T15-004 and WW-T15-004A.
WW-T15-004 / WW-T15-004A	UNT to Tennent Brook	9.08	40.44302, -74.30804	Old Bridge/ Middlesex	South Amboy	Intermittent	Intermediate	No	FW2-NT (Non-Trout)	50	Meandering stream with flat gradient and steep banks in cleared ROW. Stream drains multiple wetlands and is fed by streams WW-T15-002 and WW-T15-002A. Stream delineated in two segments due to the change in characteristics from its upper reach to lower reach. Data collected at two data points.
WW-T15-004B	UNT to Tennent Brook	9.24	40.44491, -74.30454	Old Bridge/ Middlesex	South Amboy	Intermittent	Intermediate	No	FW2-NT (Non-Trout)	50	Wider stream/drainage pattern within vegetated wetland W-T15-003. Ends within wetland where flow becomes diffuse.
WW-T15-005	UNT to Tennent Brook	9.26	40.44489, -74.30414	Old Bridge/ Middlesex	South Amboy	Ephemeral	Minor	No	FW2-NT (Non-Trout)	50	Small stream/drainage pattern within wetland W-T15-003C-1. Stream begins at fill piles within wetland where flow becomes defined and ends within wetland where flow becomes diffuse into W-T15-003A-3.
WW-T01-004	UNT to Cheesequake Creek	10.05	40.44692, -74.28936	Old Bridge/ Middlesex	South Amboy	Intermittent	Minor	No	FW2-NT (Non-Trout)	50	A relatively straight stream that begins at a large storm water outlet structure. Evidence of erosion observed. Wetlands W-T01-014C-1 and W-T15-004C-1 abut and discharge into the stream.
WW-T01-003	UNT to Cheesequake Creek	10.72	40.45170, -74.28009	Sayreville/ Middlesex	South Amboy	Perennial	Minor	No	FW2-NT (Non-Trout)	0	A culvert outlet with minimal stream characteristics draining the retention basin/wetland W-T01-011A-1. Stream bed is overlain by geo-tech fabric and has riprap on banks.

Watercourses Delineated within the Madison Loop Study Area

Watercourse ID	Watercourse Name	Milepost	Latitude Longitude	Township County	USGS Quad	Type	Size[1]	Category 1	State Fishery Classification	Resource Value (feet)	Watercourse Descriptions
WW-T07-001	UNT to Cheesequake Creek	11.36	40.46009, -74.27357	Sayreville/ Middlesex	South Amboy	Perennial	Intermediate	No	SE-1	50 / 150	Excavated ditch with stream characteristics within palustrine wetland W-T07-003 and estuarine wetland W-T07-004. Ditch conveys water from west side of Garden State Parkway to culvert under Gondek Road to tidal wetland W-T07-004D-1. Stream is likely tidally influenced above culvert/Gondek road in extreme tidal events.
WW-RS-005	UNT to Cheesequake Creek	11.55	40.46098, -74.27185	Sayreville/ Middlesex	South Amboy	Perennial	Intermediate	No	SE-1	150	Remotely sensed and delineated open water within the estuarine wetland W-T07-004, conveying water through the wetland. Descriptive and photographic data is unavailable due to water depth within the wetland at the time of surveys.

[1] Federal Energy Regulatory Commission water body definitions (Federal Energy Regulatory Commission. 2013. Wetland and Waterbody Construction and Mitigation Procedures. Office of Energy Projects FERC, Washington, D.C. https://www.ferc.gov/industries/gas/enviro/procedures.pdf. Accessed on August 16, 2016.)
Minor: waterbodies less than or equal to 10 feet wide at water's edge at the time of crossing.
Intermediate: waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at water's edge at the time of crossing.
Major: waterbodies greater than 100 feet wide at water's edge at the time of crossing.

Waterbodies Delineated within the Madison Loop Study Area

Waterbody ID	Waterbody Name	Latitude Longitude	Township County	USGS Quad	Type	State Fishery Classification	Resource Value (feet)	Waterbody Descriptions
WB-T01-001	Tidal Reach of Cheesequake Creek	40.461709, -74.269188	Sayreville/ Middlesex	South Amboy	Estuary	SE-1	50	Excavated offshoot of the tidal estuarine reach of Cheesequake Creek for Marina, abutting wetland W-T01-017 and bounded by estuarine fringe wetland W-T01-007D-1.

Watercourse Delineated within the Compressor Station 206 Study Area

Watercourse ID	Watercourse Name	Latitude Longitude	Township County	USGS Quad	Type	Size[1]	Category 1	State Fishery Classification	Resource Value (feet)	Watercourse Descriptions
WW-T09-001	UNT to Carters Brook	40.40672, -74.59685	Franklin/ Somerset	Monmouth Junction	Ephemeral	Minor	No	FW2-NT (Non-Trout)	50	Small channel within forested wetland W-T09-001C-1, draining east into Carters Brook. Ephemeral flow regime. Low gradient channel with active erosion on both banks. Receives water from proximate slope wetland W-T09-001C-1
WW-T09-002	Carters Brook	40.40415, -74.59484	Franklin/ Somerset	Monmouth Junction	Perennial	Minor	No	FW2-NT (Non-Trout)	50	Reach of Carters Brook within forested wetland W-T09-001C-1. Perennial stream with active erosion on both banks. Aquatic organisms including frogs and crayfish observed. Receives water from proximate slope wetland W-T09-001C-1 and W-T09-001A-1
WW-T13-001	UNT to Delaware and Raritan Canal	40.40403, -74.60837	Franklin/ Somerset	Monmouth Junction	Intermittent	Minor	No	FW2-NT (Non-Trout)	50	Small channel (groundwater spring) within forested wetland W-T09-002. Small low gradient stream with no evidence of active erosion.
WW-T13-002	UNT to Delaware and Raritan Canal	40.40408, -74.60859	Franklin/ Somerset	Monmouth Junction	Ephemeral	Minor	No	FW2-NT (Non-Trout)	50	Small channel (groundwater spring) within forested wetland W-T09-002. Small low gradient stream with no evidence of active erosion.
WW-T19-001	UNT to Delaware and Raritan Canal	40.40415, -74.61008	Franklin/ Somerset	Monmouth Junction	Perennial	Minor	No	FW2-NT (Non-Trout)	50	Small channel within forested wetland W-T09-002. Incised channel with evidence of active erosion.

[1] Federal Energy Regulatory Commission water body definitions (Federal Energy Regulatory Commission. 2013. Wetland and Waterbody Construction and Mitigation Procedures. Office of Energy Projects FERC, Washington, D.C. https://www.ferc.gov/industries/gas/enviro/procedures.pdf. Accessed on August 16, 2016.)
Minor: waterbodies less than or equal to 10 feet wide at water's edge at the time of crossing.
Intermediate: waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at water's edge at the time of crossing.
Major: waterbodies greater than 100 feet wide at water's edge at the time of crossing.

9B. Watercourse Data Sheets and Photographs

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STREAM DATA SHEET

Date: 08/15/2016 11:06:22 AM	**Stream ID:** WW-T01-001	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.31516089	**y:** 40.44293727
Team No: 1	**Observers:** Scott McDonnell Matt Church	**Stream Name:** UNT to Tennent Brook	

Photos (direction)

Upstream: WW-T01-001-Upstream-N (N) Downstream: WW-T01-001-Downstream-S (S) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	HUC:	Stream Type
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area	0203010400	☐ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☐Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

Yes. No flow during inspection.

OHWM Width (ft)

☐1-5 ☑6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☐0-0.5 ☐0.5-1 ☐1-1.5 ☐1.5-2 ☑2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☐0-5 ☐6-10 ☑11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: S

Flow Type

☐TNW ☐P-RPW ☐S-RPW ☑non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☐2 ☐3 ☑3+

Gradient

☐Flat (0.5'/100') ☑Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☐1-3 ☑4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☑46-60° (2:1) ☐61-90° (1:1)

Right Bank

Height:

☐1-3 ☑4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☑46-60° (2:1) ☐61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☑ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☐26-50 ☑51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Erosion Types

☑ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☐Herbaceous ☐Sapling/Shrub ☑Tree

OHWM (Ordinary High Water Mark) Criteria

☐Clear, natural line impressed on bank	☐Changes in character of soil	☑Shelving
☐Vegetation matted down, bent, absent	☐Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☑Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate		Number of Pools, Runs, Riffles
0 % Bedrock	20 % Gravel	0 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
0 % Concrete	0 %Cobbles	0 runs (fast flowing, low turbulence water)
10 % Silt	70 % Sand	0 riffles (shallow, fast moving water broken by rocks/boulders)
0 % Clay	_____ % Other _____	

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 3

Linear feet of overhanging root masses along banks: 30 left bank; 75 right bank

Aquatic Vegetation

Type

- ☑ None
- ☐ Rooted Emergent
- ☐ Rooted Submerged
- ☐ Free Floating
- ☐ Rooted Floating
- ☐ Floating Algae
- ☐ Attached Algae
- 0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? ☐ Yes ☑ No

Explain:

Riparian Corridor

☑ None ☐ Sapling/Shrub ☐ Forested

Canopy Cover

☐ Open/full sun ☐ Partially Shaded ☐ Mostly Shaded ☑ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Riparian Species

Observed Riparian/Terrestrial/Aquatic Organisms

Anthropogenic Effects

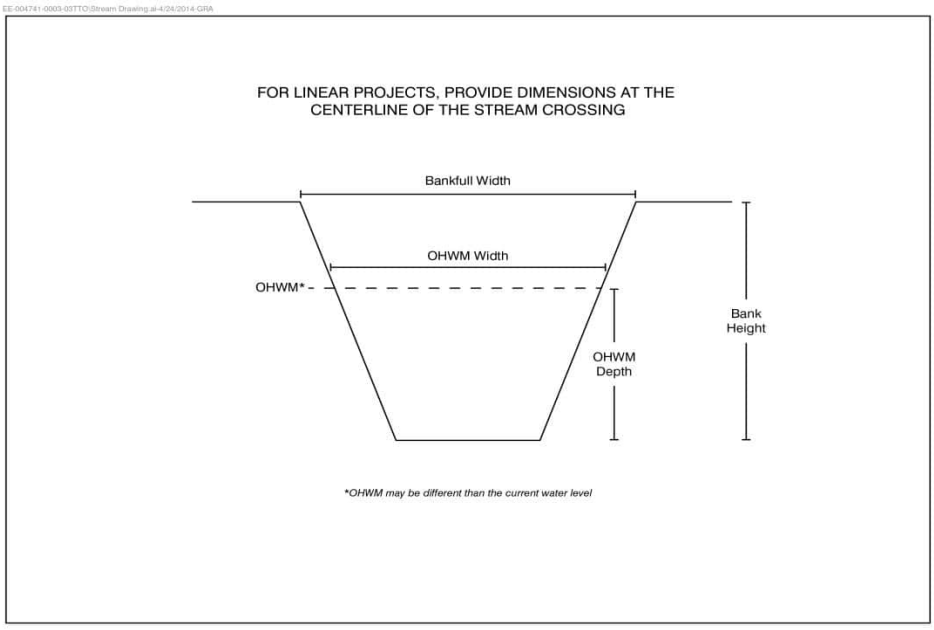
- ☐ Bridged
- ☐ Diverted
- ☐ Weir or Check Dam
- ☑ Culverts
- ☐ Drive-through/OHV crossing
- ☐ Other
- ☐ Riparian Corridor Cleared
- ☐ Damned

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 2	W-T01-002, W-T01-008
Other Streams: 2	WW-T01-001A, WW-T01-002B
Seeps/Springs:	
Drains:	

Comments

Manmade dug feature. Engineered channel crossing structure installed after wetland delineations completed in August 2016.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
Floodplain: The relatively flat valley-floor surface that has been constructed, during the present hydrologic regime, by the natural processes of point-bar deposition, lateral channel migration, and vertical accretion of sediments that have been transported beyond the active channel boundaries during periods of flooding.
Non-Relatively Permanent Waters (Non-RPW): A tributary that is not a TNW and does not flow year-round or seasonally. Non-RPWs are generally ephemeral streams.
Ordinary High Water Mark (OHWM): The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. At any given site, the OHWM will vary over time and according to external factors.
Perennial-Relatively Permanent Waters (P-RPW): A tributary that is not a TNW and flows year-round.
Seasonal-Relatively Permanent Waters (S-RPW): A tributary that is not a TNW and has continuous flow “seasonally” (typically 3 months). S-RPWs are generally considered to be intermittent.
Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T01-001 Photo Log



ID:WW-T01-001 Date:08/16/2016 Direction:N Type:Ephemeral Position:Upstream



ID:WW-T01-001 Date:08/16/2016 Direction:S Type:Ephemeral Position:Downstream

STREAM DATA SHEET

Date: 08/15/2016 12:03:25 PM	**Stream ID:** WW-T01-001A	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.31526543	**y:** 40.44251824
Team No: 1	**Observers:** Scott McDonnell Matt Church	**Stream Name:** UNT to Tennent Brook	

Photos (direction)

Upstream: WW-T01-001A-Upstream-E (E) Downstream: WW-T01-001A-Downstream-W (W) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	HUC:	Stream Type
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area	0203010400	☐ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No.

OHWM Width (ft)

☑1-5 ☐6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☐0-0.5 ☐0.5-1 ☑1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☑0-5 ☐6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: SW

Flow Type

☐TNW ☐P-RPW ☐S-RPW ☑non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☐2 ☐3 ☑3+

Gradient

☐Flat (0.5'/100') ☐Flat-Moderate ☑Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☑31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☑31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☑11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☐26-50 ☑51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☑11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☑Clear, natural line impressed on bank	☐Changes in character of soil	☑Shelving
☐Vegetation matted down, bent, absent	☐Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☑Presence of wrack line	☑Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate				Number of Pools, Runs, Riffles
0	% Bedrock	0	% Gravel	0 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
0	% Concrete	20	%Cobbles	0 runs (fast flowing, low turbulence water)
0	% Silt	80	% Sand	0 riffles (shallow, fast moving water broken by rocks/boulders)
0	% Clay		% Other	

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 30 left bank; 30 right bank

Aquatic Vegetation

Type

- ☐ None
- ☐ Rooted Emergent
- ☐ Rooted Submerged
- ☐ Free Floating
- ☐ Rooted Floating
- ☐ Floating Algae
- ☐ Attached Algae
- 0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? ☐ Yes ☑ No

Explain:

Riparian Corridor

☑ None ☐ Sapling/Shrub ☐ Forested

Canopy Cover

☐ Open/full sun ☐ Partially Shaded ☐ Mostly Shaded ☑ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Riparian Species

Observed Riparian/Terrestrial/Aquatic Organisms

Anthropogenic Effects

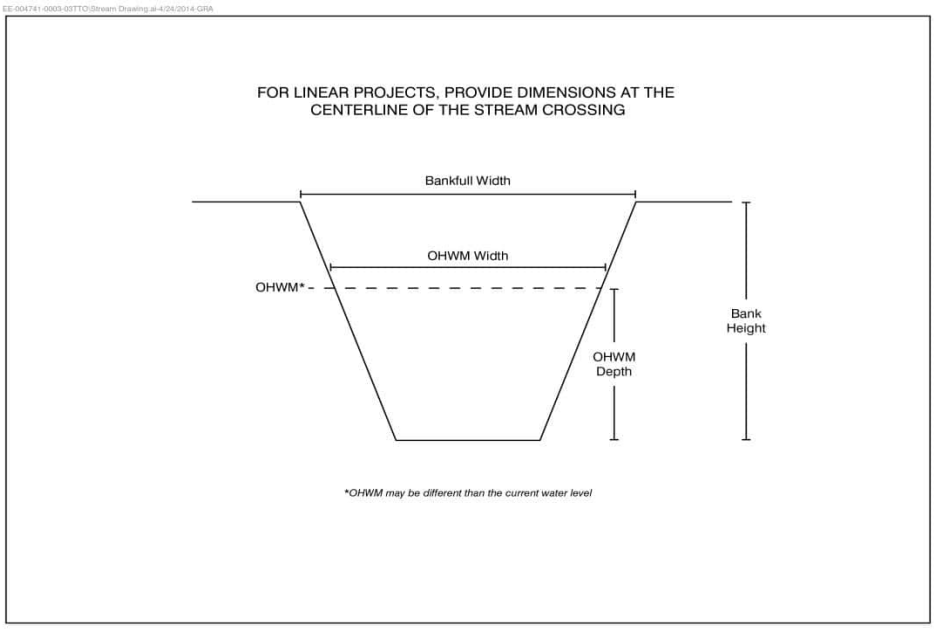
- ☐ Bridged
- ☐ Culverts
- ☐ Riparian Corridor Cleared
- ☐ Diverted
- ☐ Drive-through/OHV crossing
- ☐ Damned
- ☐ Weir or Check Dam
- ☐ Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands:	
Other Streams: 1	WW-T01-001
Seeps/Springs:	
Drains:	

Comments

Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
Floodplain: The relatively flat valley-floor surface that has been constructed, during the present hydrologic regime, by the natural processes of point-bar deposition, lateral channel migration, and vertical accretion of sediments that have been transported beyond the active channel boundaries during periods of flooding.
Non-Relatively Permanent Waters (Non-RPW): A tributary that is not a TNW and does not flow year-round or seasonally. Non-RPWs are generally ephemeral streams.
Ordinary High Water Mark (OHWM): The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. At any given site, the OHWM will vary over time and according to external factors.
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WW-T01-001A Photo Log



ID:WW-T01-001A Date:08/16/2016 Direction:E Type:Ephemeral Position:Upstream



ID:WW-T01-001A Date:08/16/2016 Direction:W Type:Ephemeral Position:Downstream

STREAM DATA SHEET

Date: 08/16/2016 10:10:17 AM	**Stream ID:** WW-T01-002	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.31267714	**y:** 40.44282201
Team No: 1	**Observers:** Scott McDonnell Michael Levinson	**Stream Name:** UNT to Tennent Brook	

Photos (direction)

Upstream: WW-T01-002-Upstream-SE (SE) Downstream: WW-T01-002-Downstream-SW (SW) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	**HUC:**	**Stream Type**
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area	0203010400	☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☐Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No. dry during inspection

OHWM Width (ft)

☐1-5 ☑6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☐0-0.5 ☐0.5-1 ☐1-1.5 ☐1.5-2 ☑2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☐0-5 ☐6-10 ☑11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: S

Flow Type

☐TNW ☐P-RPW ☐S-RPW ☑non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☐2 ☐3 ☑3+

Gradient

☑Flat (0.5'/100') ☐Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank

Height:

☐1-3 ☑4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☑31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Erosion Types

☑ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☐Herbaceous ☐Sapling/Shrub ☑Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☐26-50 ☑51-75 ☐76-100

Erosion Types

☑ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☐Herbaceous ☐Sapling/Shrub ☑Tree

OHWM (Ordinary High Water Mark) Criteria

☐Clear, natural line impressed on bank	☑Changes in character of soil	☑Shelving
☐Vegetation matted down, bent, absent	☑Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☑Presence of litter and debris	☐Destruction of terrestrial vegetation
☑Presence of wrack line	☑Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate

0 % Bedrock | 20 % Gravel
0 % Concrete | 30 %Cobbles
0 % Silt | 50 % Sand
0 % Clay | _____ % Other _____

Number of Pools, Runs, Riffles

0 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
0 runs (fast flowing, low turbulence water)
0 riffles (shallow, fast moving water broken by rocks/boulders)

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 150 left bank; 75 right bank

Aquatic Vegetation

Type

☑ None
☐ Rooted Emergent
☐ Rooted Submerged
☐ Free Floating
☐ Rooted Floating
☐ Floating Algae
☐ Attached Algae
0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? ☑ Yes ☐ No

Explain: dry most of year

Riparian Corridor

☐ None ☐ Sapling/Shrub ☑ Forested

Canopy Cover

☐ Open/full sun ☐ Partially Shaded ☑ Mostly Shaded ☐ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☑ 150+

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☑ 150+

Riparian Species

northern catalpa, black locust, cottonwood

Observed Riparian/Terrestrial/Aquatic Organisms

green frogs observed in channel. spring peeper observed in riparian area. box turtle shell located nearby

Anthropogenic Effects

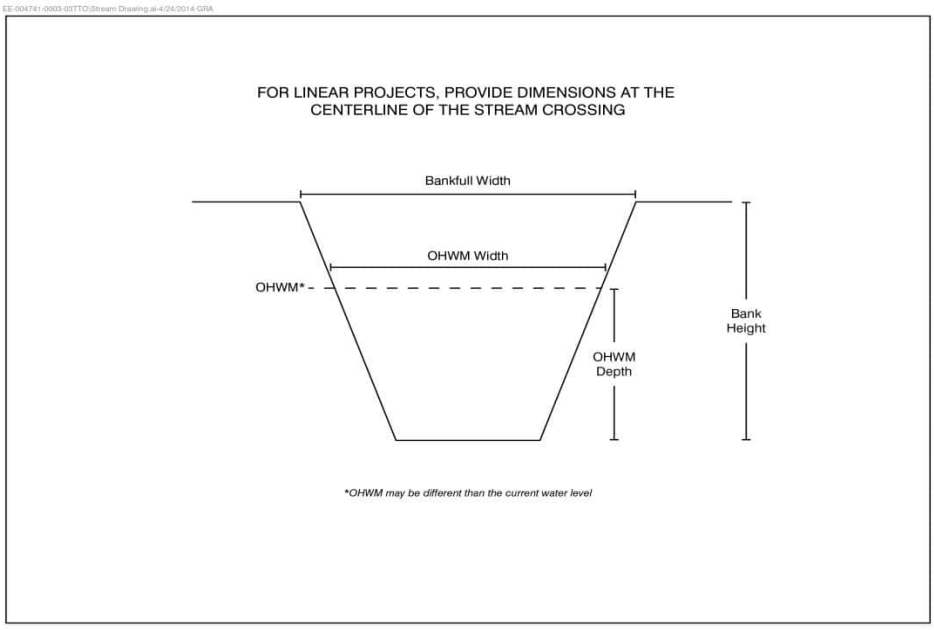
☐ Bridged
☐ Culverts
☐ Riparian Corridor Cleared
☐ Diverted
☐ Drive-through/OHV crossing
☐ Damned
☐ Weir or Check Dam
☐ Other Yes

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 3	W-T01-003, W-T01-007, W-T15-001
Other Streams: 2	WW-T01-002A, WW-T01-002B
Seeps/Springs:	
Drains: 1	DD-T15-001

Comments

Continued as WW-T15-001 at southern extent.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
Floodplain: The relatively flat valley-floor surface that has been constructed, during the present hydrologic regime, by the natural processes of point-bar deposition, lateral channel migration, and vertical accretion of sediments that have been transported beyond the active channel boundaries during periods of flooding.
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Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T01-002 Photo Log



ID:WW-T01-002 Date:08/16/2016 Direction:SE Type:Intermittent Position:Upstream



ID:WW-T01-002 Date:08/16/2016 Direction:SW Type:Intermittent Position:Downstream

STREAM DATA SHEET

Date: 08/16/2016 11:31:07 AM	**Stream ID:** WW-T01-002A	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.31285657	**y:** 40.44225549
Team No: 1	**Observers:** Scott McDonnell Michael Levinson	**Stream Name:** UNT to Tennant Brook	

Photos (direction)

Upstream: WW-T01-002A-Upstream-SE (SE) Downstream: WW-T01-002A-Downstream-NW (NW) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	HUC:	Stream Type
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area	0203010400	☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☐Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No. dry during inspection

OHWM Width (ft)

☑1-5 ☐6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☐0-0.5 ☑0.5-1 ☐1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☑0-5 ☐6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: SW

Flow Type

☐TNW ☐P-RPW ☐S-RPW ☑non-RPW

Sinuosity (bends per 200' stretch)

☑0 ☐1 ☐2 ☐3 ☐3+

Gradient

☑Flat (0.5'/100') ☐Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Erosion Types

☑ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☑Clear, natural line impressed on bank	☑Changes in character of soil	☑Shelving
☐Vegetation matted down, bent, absent	☐Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☑Presence of wrack line	☑Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate

0 % Bedrock | 30 % Gravel
0 % Concrete | 30 %Cobbles
20 % Silt | 20 % Sand
0 % Clay | _____ % Other _____

Number of Pools, Runs, Riffles

0 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
0 runs (fast flowing, low turbulence water)
0 riffles (shallow, fast moving water broken by rocks/boulders)

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 20 left bank; 20 right bank

Aquatic Vegetation

Type

☐None ☐Rooted Floating
☐Rooted Emergent ☐Floating Algae
☐Rooted Submerged ☐Attached Algae
☐Free Floating 0 % of reach

Aquatic Vegetation Species

none

Barriers to Fish Passage? ☑Yes ☐No

Explain: dry most of year

Riparian Corridor

☐None ☐Sapling/Shrub ☑Forested

Canopy Cover

☐Open/full sun ☐Partially Shaded ☑Mostly Shaded ☐Full Shade

Left Bank Corridor Width

☐10-25 ☐26-50 ☐51-75 ☐76-100 ☐101-150 ☑150+

Right Bank Corridor Width

☐10-25 ☐26-50 ☐51-75 ☐76-100 ☐101-150 ☑150+

Riparian Species

cottonwood

Observed Riparian/Terrestrial/Aquatic Organisms

spring peeper in riparian zone

Anthropogenic Effects

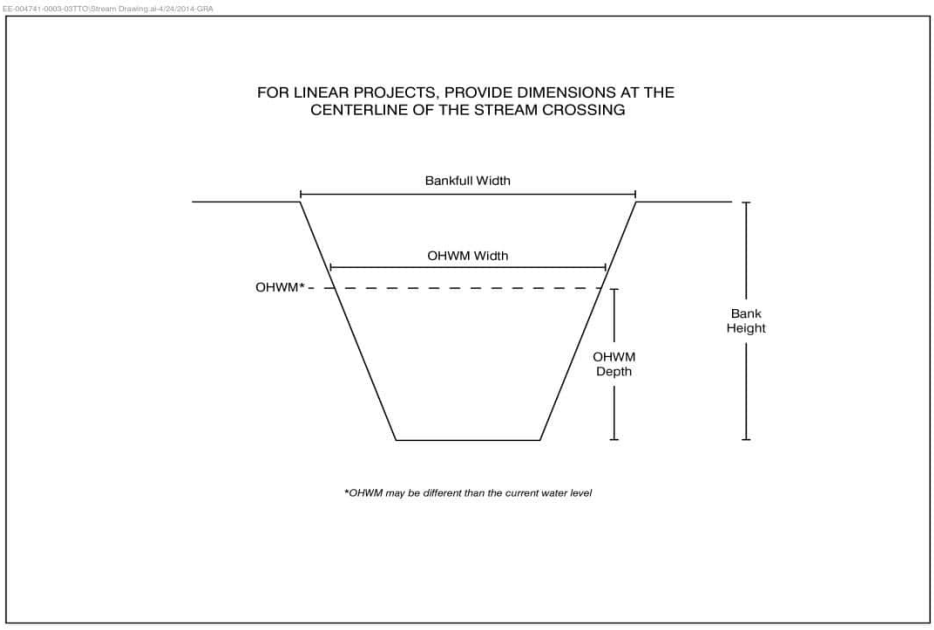
☐Bridged ☐Culverts ☐Riparian Corridor Cleared
☐Diverted ☐Drive-through/OHV crossing ☐Damned
☐Weir or Check Dam ☐Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 1	WT-001-003
Other Streams: 1	WW-T01-002
Seeps/Springs:	
Drains:	

Comments

erosional gully due to concentration of overland flow from adjacent wetland.
Final QA: Dutton 02/17



Definitions:

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Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
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WW-T01-002A Photo Log



ID:WW-T01-002A Date:08/16/2016 Direction:SE Type:Ephemeral Position:Upstream



ID:WW-T01-002A Date:08/16/2016 Direction:NW Type:Ephemeral Position:Downstream

STREAM DATA SHEET

Date: 08/16/2016 12:04:12 PM	**Stream ID:** WW-T01-002B	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.31297616	**y:** 40.44218487
Team No: 1	**Observers:** Scott McDonnell Michael Levinson	**Stream Name:** UNT to Tennent Brook	

Photos (direction)

Upstream: WW-T01-002B-Upstream-SW (SW) Downstream: WW-T01-002B-Downstream-NE (NE) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	HUC:	Stream Type
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area	0203010400	☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☐Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No. none present

OHWM Width (ft)

☑1-5 ☐6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☑0-0.5 ☐0.5-1 ☐1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☑0-5 ☐6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: E

Flow Type

☐TNW ☐P-RPW ☐S-RPW ☑non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☑2 ☐3 ☐3+

Gradient

☐Flat (0.5'/100') ☑Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☐Clear, natural line impressed on bank	☐Changes in character of soil	☐Shelving
☐Vegetation matted down, bent, absent	☐Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☑Yes ☐No

HABITAT INFORMATION

Aquatic Habitat

% Substrate

0 % Bedrock | 20 % Gravel
0 % Concrete | 30 %Cobbles
0 % Silt | 50 % Sand
0 % Clay | _____ % Other _____

Number of Pools, Runs, Riffles

0 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
0 runs (fast flowing, low turbulence water)
0 riffles (shallow, fast moving water broken by rocks/boulders)

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 5 left bank; 5 right bank

Aquatic Vegetation

Type

☑ None
☐ Rooted Emergent
☐ Rooted Submerged
☐ Free Floating
☐ Rooted Floating
☐ Floating Algae
☐ Attached Algae
0 % of reach

Barriers to Fish Passage? ☑ Yes ☐ No

Explain: only holds water during storm events

Aquatic Vegetation Species

no aquatic vegetation as the feature is ephemeral

Riparian Corridor

☐ None ☐ Sapling/Shrub ☑ Forested

Canopy Cover

☐ Open/full sun ☐ Partially Shaded ☐ Mostly Shaded ☑ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☑ 150+

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☑ 150+

Riparian Species

sassafras, sweetgum, red oak, highbush blueberry, grey birch

Observed Riparian/Terrestrial/Aquatic Organisms

redwinged blackbird

Anthropogenic Effects

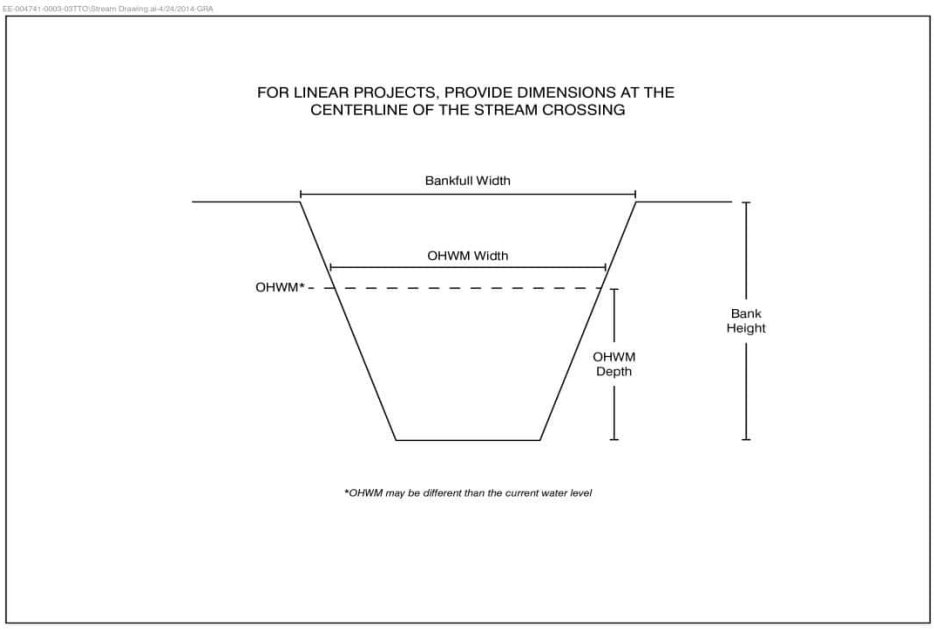
☐ Bridged
☐ Culverts
☑ Riparian Corridor Cleared
☐ Diverted
☐ Drive-through/OHV crossing
☐ Damned
☐ Weir or Check Dam
☐ Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 1	W-T01-007
Other Streams: 2	WW-T01-001, WW-T01-002
Seeps/Springs:	
Drains:	

Comments

centerline running through wetland feature
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
Floodplain: The relatively flat valley-floor surface that has been constructed, during the present hydrologic regime, by the natural processes of point-bar deposition, lateral channel migration, and vertical accretion of sediments that have been transported beyond the active channel boundaries during periods of flooding.
Non-Relatively Permanent Waters (Non-RPW): A tributary that is not a TNW and does not flow year-round or seasonally. Non-RPWs are generally ephemeral streams.
Ordinary High Water Mark (OHWM): The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. At any given site, the OHWM will vary over time and according to external factors.
Perennial-Relatively Permanent Waters (P-RPW): A tributary that is not a TNW and flows year-round.
Seasonal-Relatively Permanent Waters (S-RPW): A tributary that is not a TNW and has continuous flow “seasonally” (typically 3 months). S-RPWs are generally considered to be intermittent.
Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T01-002B Photo Log



ID:WW-T01-002B Date:08/19/2016 Direction:SW Type:Ephemeral Position:Upstream



ID:WW-T01-002B Date:08/19/2016 Direction:NE Type:Ephemeral Position:Downstream

STREAM DATA SHEET

Date: 08/20/2016 3:27:01 PM	**Stream ID:** WW-T01-003	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.28009029	**y:** 40.45169644
Team No: 1	**Observers:** Daniel Laue Thomas Auffenorde	**Stream Name:** UNT to Cheesequake Creek	

Photos (direction)

Upstream: WW-T01-003-Upstream-NW (NW) Downstream: WW-T01-003-Downstream-SE (SE) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area

HUC: 0203010400

Stream Type
☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality
☐Clear ☐Discolored ☐Turbid ☑Oily Film ☐Odor
Other/Comments:
No. poor quality

OHWM Width (ft)
☑1-5 ☐6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)
☑0-0.5 ☐0.5-1 ☐1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☑0-5 ☐6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction:
E

Flow Type
☐TNW ☐P-RPW ☐S-RPW ☑non-RPW

Sinuosity (bends per 200' stretch)
☑0 ☐1 ☐2 ☐3 ☐3+

Gradient
☑Flat (0.5'/100') ☐Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank
Height:
☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+
Slope:
☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank
Height:
☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+
Slope:
☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Left Bank
Percentage of Bank with Evidence of Erosion
☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types
☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation
☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Stabilizing Bank Vegetation Type
☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

Right Bank
Percentage of Bank with Evidence of Erosion
☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types
☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation
☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Stabilizing Bank Vegetation Type
☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☐Clear, natural line impressed on bank	☐Changes in character of soil	☐Shelving
☑Vegetation matted down, bent, absent	☑Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☑Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☑Yes ☐No

HABITAT INFORMATION

Aquatic Habitat

% Substrate

0 % Bedrock | 10 % Gravel
0 % Concrete | 0 %Cobbles
40 % Silt | 0 % Sand
0 % Clay | 50 % Other rip rap

Number of Pools, Runs, Riffles

1 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0.5
0 runs (fast flowing, low turbulence water)
0 riffles (shallow, fast moving water broken by rocks/boulders)

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 2

Linear feet of overhanging root masses along banks: 0 left bank; 0 right bank

Aquatic Vegetation

Type

- [x] None
- [ ] Rooted Emergent
- [ ] Rooted Submerged
- [ ] Free Floating
- [ ] Rooted Floating
- [ ] Floating Algae
- [ ] Attached Algae

0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? [x] Yes [ ] No

Explain: Culverted.

Riparian Corridor

- [ ] None
- [ ] Sapling/Shrub
- [x] Forested

Canopy Cover

- [ ] Open/full sun
- [ ] Partially Shaded
- [x] Mostly Shaded
- [ ] Full Shade

Left Bank Corridor Width

- [x] 10-25
- [ ] 26-50
- [ ] 51-75
- [ ] 76-100
- [ ] 101-150
- [ ] 150+

Right Bank Corridor Width

- [x] 10-25
- [ ] 26-50
- [ ] 51-75
- [ ] 76-100
- [ ] 101-150
- [ ] 150+

Riparian Species

River Birch

Observed Riparian/Terrestrial/Aquatic Organisms

none.

Anthropogenic Effects

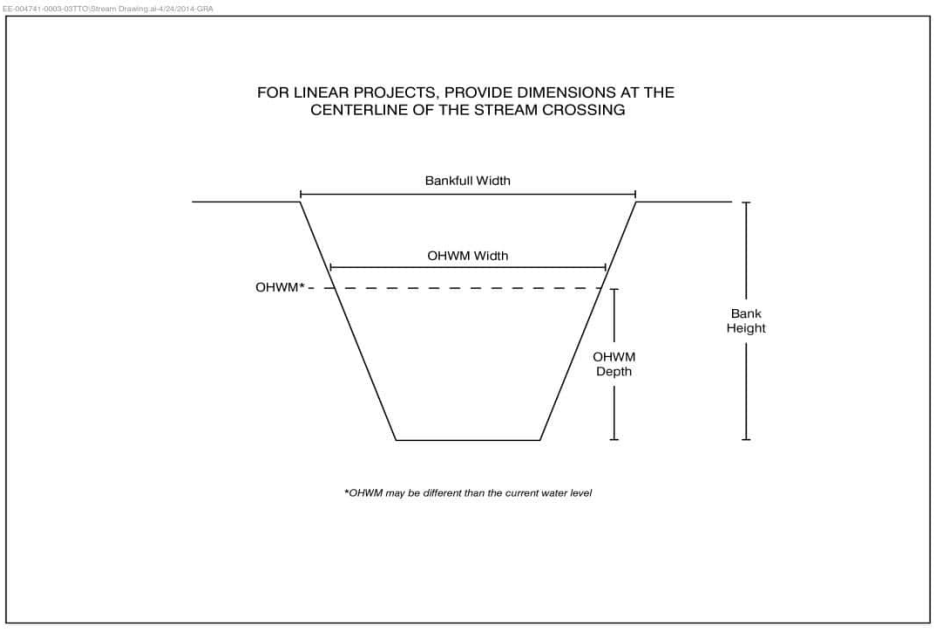
- [ ] Bridged
- [x] Culverts
- [ ] Riparian Corridor Cleared
- [ ] Diverted
- [ ] Drive-through/OHV crossing
- [ ] Damned
- [x] Weir or Check Dam
- [ ] Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 2	W-T01-011, W-T01-013C
Other Streams:	
Seeps/Springs:	
Drains:	

Comments

Culverted ditch/stream draining W-T01-011A basin. stream bed is overlain by geotech fabric and surrounding area is riprap.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
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Seasonal-Relatively Permanent Waters (S-RPW): A tributary that is not a TNW and has continuous flow “seasonally” (typically 3 months). S-RPWs are generally considered to be intermittent.
Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T01-003 Photo Log



ID:WW-T01-003 Date:10/31/2016 Direction:NW Type:Intermittent Position:Upstream



ID:WW-T01-003 Date:10/31/2016 Direction:SE Type:Intermittent Position:Downstream

STREAM DATA SHEET

Date: 08/23/2016 2:53:58 PM	**Stream ID:** WW-T01-004	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.28936177	**y:** 40.44691524
Team No: 1	**Observers:** Thomas Auffenorde Michael Levinson	**Stream Name:** UNT to Cheesequake Creek	

Photos (direction)

Upstream: WW-T01-004-Upstream-W (W) Downstream: WW-T01-004-Downstream-E (E) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	HUC:	Stream Type
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area	0203010400	☐ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No.

OHWM Width (ft)

☐1-5 ☑6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☐0-0.5 ☑0.5-1 ☐1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☐0-5 ☐6-10 ☑11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: E

Flow Type

☐TNW ☑P-RPW ☐S-RPW ☐non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☑1 ☐2 ☐3 ☐3+

Gradient

☐Flat (0.5'/100') ☑Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☑46-60° (2:1) ☐61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☑11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☐26-50 ☑51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☐Herbaceous ☑Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☑Clear, natural line impressed on bank	☑Changes in character of soil	☑Shelving
☑Vegetation matted down, bent, absent	☑Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☑Presence of litter and debris	☐Destruction of terrestrial vegetation
☑Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate

0 % Bedrock | 20 % Gravel
0 % Concrete | 20 %Cobbles
0 % Silt | 50 % Sand
0 % Clay | 10 % Other root mat

Number of Pools, Runs, Riffles

3 pools (deep, low velocity water, smooth surface) , max. depth (ft) 3
2 runs (fast flowing, low turbulence water)
3 riffles (shallow, fast moving water broken by rocks/boulders)

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 10 left bank; 10 right bank

Aquatic Vegetation

Type

☑ None
☐ Rooted Emergent
☐ Rooted Submerged
☐ Free Floating
☐ Rooted Floating
☐ Floating Algae
☐ Attached Algae
0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? ☑ Yes ☐ No

Explain: steep dropoff at top from outfall of culvert

Riparian Corridor

☐ None ☐ Sapling/Shrub ☑ Forested

Canopy Cover

☐ Open/full sun ☐ Partially Shaded ☑ Mostly Shaded ☐ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☑ 150+

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☑ 150+

Riparian Species

red maple, black willow, black gum, pussy willow

Observed Riparian/Terrestrial/Aquatic Organisms

green frogs (many)

Anthropogenic Effects

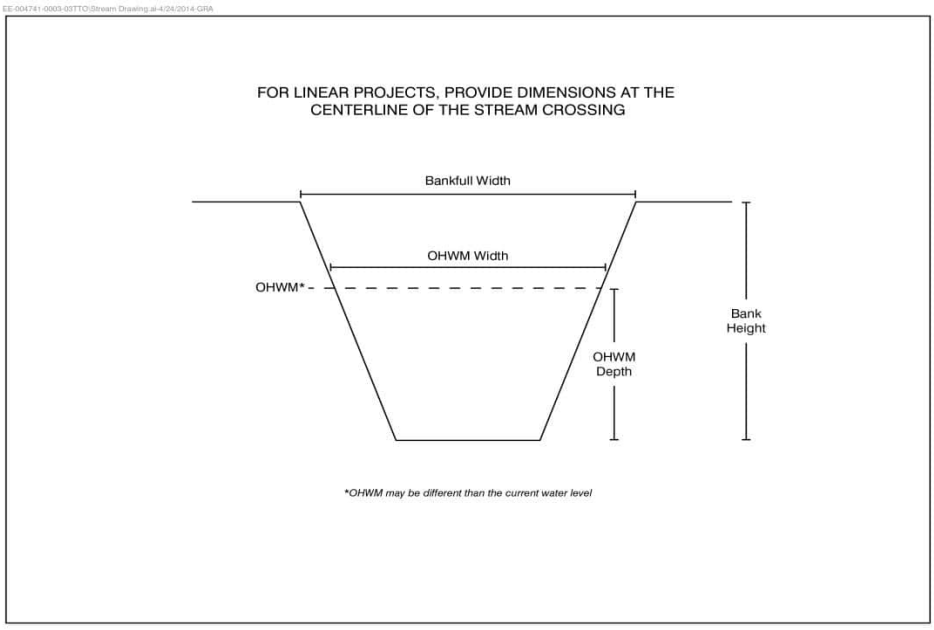
☐ Bridged
☐ Diverted
☐ Weir or Check Dam
☑ Culverts
☑ Drive-through/OHV crossing
☐ Other Yes
☐ Riparian Corridor Cleared
☐ Damned

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 2	W-T01-014, W-T15-004
Other Streams:	
Seeps/Springs:	
Drains: 1	DD-T01-002

Comments

ditched feature within survey corridor. may be a modified natural watercourse based on perennial flow. Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
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Seasonal-Relatively Permanent Waters (S-RPW): A tributary that is not a TNW and has continuous flow “seasonally” (typically 3 months). S-RPWs are generally considered to be intermittent.
Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T01-004 Photo Log



ID:WW-T01-004 Date:08/24/2016 Direction:W Type:Intermittent Position:Upstream



ID:WW-T01-004 Date:08/24/2016 Direction:E Type:Intermittent Position:Downstream

STREAM DATA SHEET

Date: 08/25/2016 3:41:15 AM	**Stream ID:** WW-T07-001	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.27357391	**y:** 40.46009325
Team No: 7	**Observers:** Daniel Laue Evan Sheppard	**Stream Name:** UNT to Cheesequake Creek	

Photos (direction)

Upstream: WW-T07-001-Upstream-W (W) Downstream: WW-T07-001-Downstream-E (E) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area

HUC: 0203010400

Stream Type
☐ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality
☐Clear ☑Discolored ☐Turbid ☐Oily Film ☐Odor
Other/Comments:
No. manganese secretions on water surface.

OHWM Width (ft)
☐1-5 ☐6-10 ☑11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)
☐0-0.5 ☐0.5-1 ☐1-1.5 ☑1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☐0-5 ☐6-10 ☐11-15 ☑16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction:
E

Flow Type
☐TNW ☑P-RPW ☐S-RPW ☐non-RPW

Sinuosity (bends per 200' stretch)
☐0 ☐1 ☑2 ☐3 ☐3+

Gradient
☑Flat (0.5'/100') ☐Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank
Height:
☐1-3 ☑4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+
Slope:
☐0-30° (4:1) ☑31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank
Height:
☐1-3 ☑4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+
Slope:
☐0-30° (4:1) ☑31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Left Bank
Percentage of Bank with Evidence of Erosion
☑0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types
☐ Undercutting ☐Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation
☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Stabilizing Bank Vegetation Type
☐None Present ☑Herbaceous ☑Sapling/Shrub ☑Tree

Right Bank
Percentage of Bank with Evidence of Erosion
☑0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types
☐ Undercutting ☐Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation
☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Stabilizing Bank Vegetation Type
☐None Present ☑Herbaceous ☑Sapling/Shrub ☑Tree

OHWM (Ordinary High Water Mark) Criteria

☐Clear, natural line impressed on bank	☐Changes in character of soil	☐Shelving
☐Vegetation matted down, bent, absent	☐Leaf litter disturbed or washed away	☐Sediment deposition
☑Water staining	☑Presence of litter and debris	☐Destruction of terrestrial vegetation
☑Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☑Yes ☐No

HABITAT INFORMATION

Aquatic Habitat

% Substrate

0 % Bedrock | 0 % Gravel
0 % Concrete | 0 %Cobbles
50 % Silt | 0 % Sand
50 % Clay | _____ % Other _____

Number of Pools, Runs, Riffles

1 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
0 runs (fast flowing, low turbulence water)
0 riffles (shallow, fast moving water broken by rocks/boulders)

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 0 left bank; 0 right bank

Aquatic Vegetation

Type

☐ None ☐ Rooted Floating
☑ Rooted Emergent ☐ Floating Algae
☐ Rooted Submerged ☐ Attached Algae
☐ Free Floating 0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? ☐ Yes ☑ No

Explain:

Riparian Corridor

☑ None ☐ Sapling/Shrub ☐ Forested

Canopy Cover

☐ Open/full sun ☑ Partially Shaded ☐ Mostly Shaded ☐ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Riparian Species

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Observed Riparian/Terrestrial/Aquatic Organisms

fish

Anthropogenic Effects

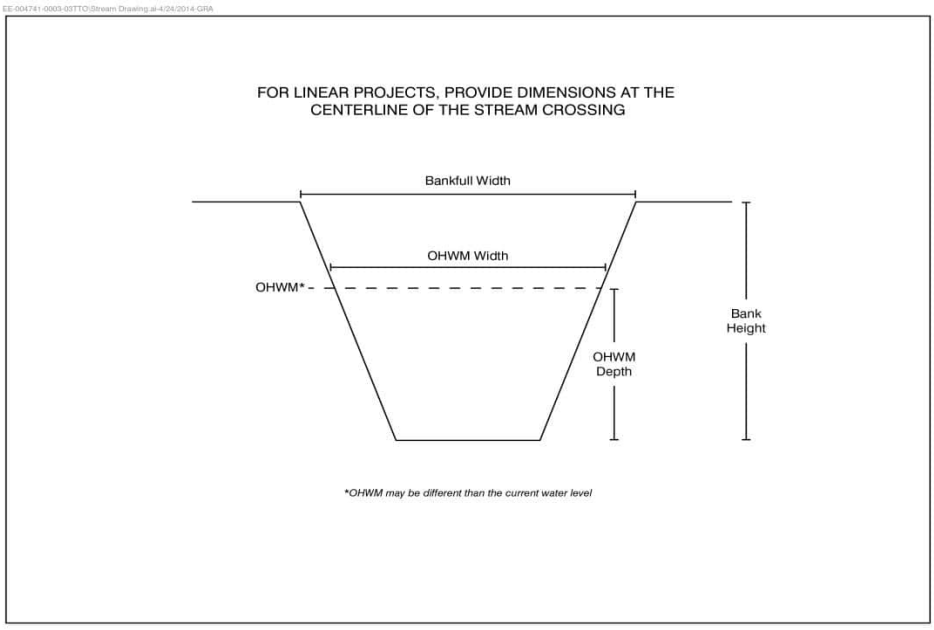
☑ Bridged ☑ Culverts ☐ Riparian Corridor Cleared
☑ Diverted ☐ Drive-through/OHV crossing ☐ Damned
☐ Weir or Check Dam ☐ Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 2	W-T07-003, W-T07-004
Other Streams:	
Seeps/Springs:	
Drains:	

Comments

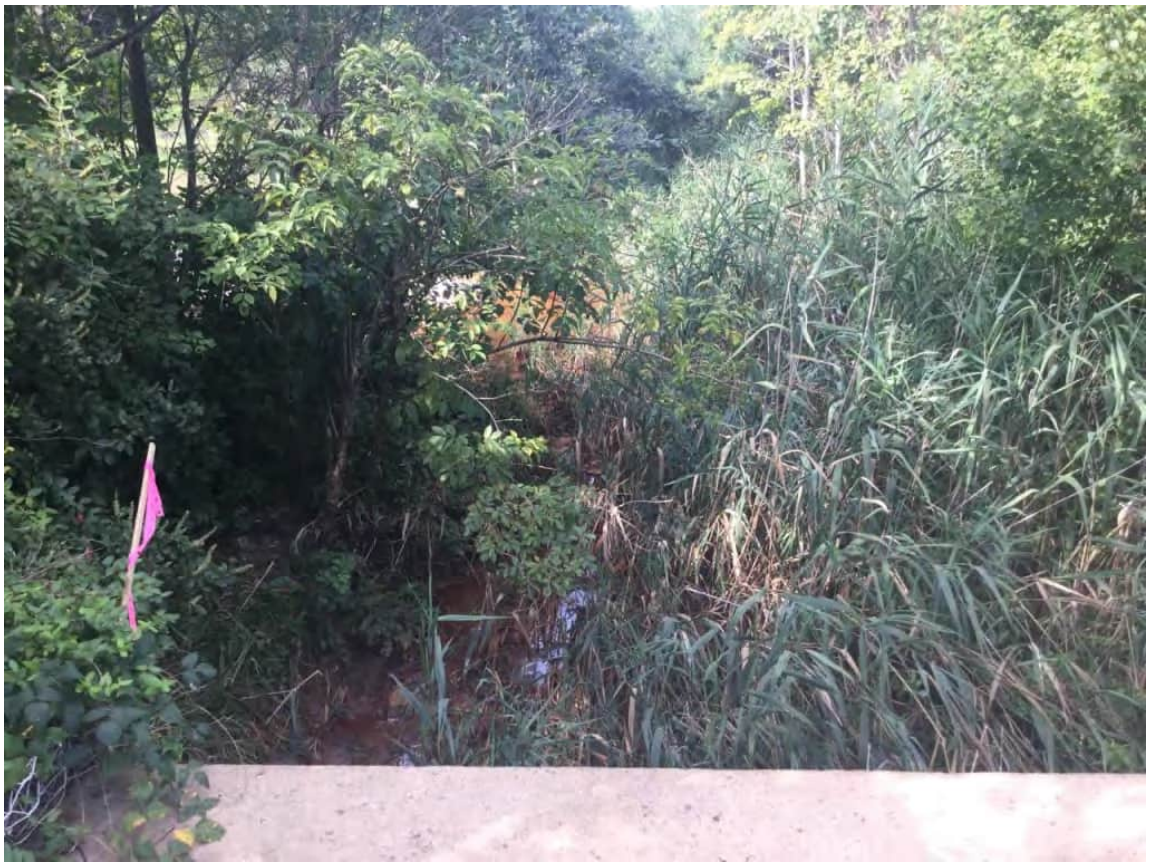
Iron buildup. dotted line stream, no flagging. Excavated wetland ditch. Partially brackish. Culverted under Gondek road.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
Floodplain: The relatively flat valley-floor surface that has been constructed, during the present hydrologic regime, by the natural processes of point-bar deposition, lateral channel migration, and vertical accretion of sediments that have been transported beyond the active channel boundaries during periods of flooding.
Non-Relatively Permanent Waters (Non-RPW): A tributary that is not a TNW and does not flow year-round or seasonally. Non-RPWs are generally ephemeral streams.
Ordinary High Water Mark (OHWM): The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. At any given site, the OHWM will vary over time and according to external factors.
Perennial-Relatively Permanent Waters (P-RPW): A tributary that is not a TNW and flows year-round.
Seasonal-Relatively Permanent Waters (S-RPW): A tributary that is not a TNW and has continuous flow “seasonally” (typically 3 months). S-RPWs are generally considered to be intermittent.
Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T07-001 Photo Log



ID:WW-T07-001 Date:08/25/2016 Direction:W Type:Perennial Position:Upstream



ID:WW-T07-001 Date:08/25/2016 Direction:E Type:Perennial Position:Downstream

STREAM DATA SHEET

Date: 11/04/2016 3:04:52 PM	**Stream ID:** WW-T09-001	**Project:** NESE	
State: NJ	**County:** Somerset	**x:** -74.59685085	**y:** 40.40672056
Team No: 9	**Observers:** .other .other	**Stream Name:** UNT to Carters Brook	

Photos (direction)

Upstream: _____ ( ) Downstream: _____ ( ) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area
☐ROW ☐Access Road ☑Facility ☐ATWS/Staging Area

HUC: 02030105018702

Stream Type
☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality
☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor
Other/Comments:
No.

OHWM Width (ft)
☑1-5 ☐6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)
☑0-0.5 ☐0.5-1 ☐1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☑0-5 ☐6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction:
E

Flow Type
☐TNW ☐P-RPW ☐S-RPW ☑non-RPW

Sinuosity (bends per 200' stretch)
☐0 ☐1 ☐2 ☐3 ☑3+

Gradient
☐Flat (0.5'/100') ☑Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank
Height:
☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+
Slope:
☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank
Height:
☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+
Slope:
☐0-30° (4:1) ☐31-45° (3:1) ☑46-60° (2:1) ☐61-90° (1:1)

Left Bank
Percentage of Bank with Evidence of Erosion
☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Erosion Types
☑ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation
☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Stabilizing Bank Vegetation Type
☐None Present ☑Herbaceous ☑Sapling/Shrub ☐Tree

Right Bank
Percentage of Bank with Evidence of Erosion
☐0 ☐1-10 ☐11-25 ☐26-50 ☑51-75 ☐76-100

Erosion Types
☑ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation
☐0 ☐1-10 ☐11-25 ☐26-50 ☑51-75 ☐76-100

Stabilizing Bank Vegetation Type
☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☐Clear, natural line impressed on bank	☐Changes in character of soil	☑Shelving
☑Vegetation matted down, bent, absent	☑Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☑Yes ☐No

HABITAT INFORMATION

Aquatic Habitat

% Substrate

0 % Bedrock | 40 % Gravel
0 % Concrete | 40 %Cobbles
0 % Silt | 20 % Sand
0 % Clay | _____ % Other _____

Number of Pools, Runs, Riffles

2 pools (deep, low velocity water, smooth surface) , max. depth (ft) 1
2 runs (fast flowing, low turbulence water)
0 riffles (shallow, fast moving water broken by rocks/boulders)

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 1

Linear feet of overhanging root masses along banks: 100 left bank; 120 right bank

Aquatic Vegetation

Type

☑ None
☐ Rooted Emergent
☐ Rooted Submerged
☐ Free Floating
☐ Rooted Floating
☐ Floating Algae
☐ Attached Algae
0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? ☑ Yes ☐ No

Explain: ephemeral stream

Riparian Corridor

☐ None ☐ Sapling/Shrub ☑ Forested

Canopy Cover

☐ Open/full sun ☐ Partially Shaded ☐ Mostly Shaded ☑ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☑ 150+

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☑ 150+

Riparian Species

blue beech; green ash; red oak; Shagbark hickory; red maple.

Observed Riparian/Terrestrial/Aquatic Organisms

Anthropogenic Effects

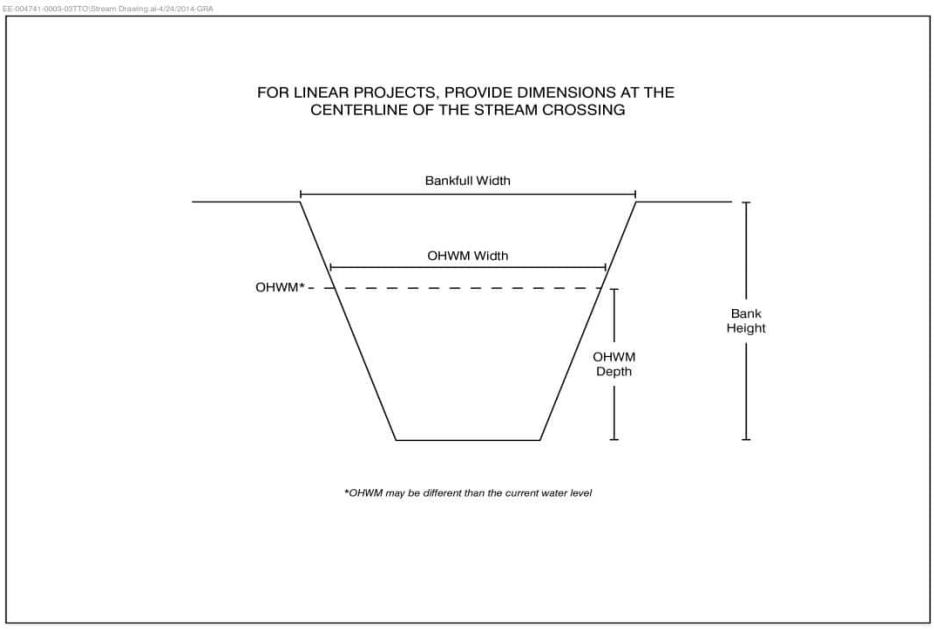
☐ Bridged
☐ Culverts
☐ Riparian Corridor Cleared
☐ Diverted
☐ Drive-through/OHV crossing
☐ Damned
☐ Weir or Check Dam
☐ Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 1	W-T09-001
Other Streams: 1	WW-T09-002
Seeps/Springs:	
Drains:	

Comments

Continued downstream as WW-T09-002.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
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Seasonal-Relatively Permanent Waters (S-RPW): A tributary that is not a TNW and has continuous flow “seasonally” (typically 3 months). S-RPWs are generally considered to be intermittent.
Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T09-001-1 Photo Log



ID:WW-T09-001-1 Date:10/18/2016 Direction:W Type: Position:Upstream



ID:WW-T09-001-1 Date:10/18/2016 Direction:E Type: Position:Downstream

STREAM DATA SHEET

Date: 11/04/2016 3:10:53 PM	**Stream ID:** WW-T09-002	**Project:** NESE	
State: NJ	**County:** Somerset	**x:** -74.59483514	**y:** 40.40415228
Team No: 9	**Observers:** .other .other	**Stream Name:** Carters Brook	

Photos (direction)

Upstream: _____ ( ) Downstream: _____ ( ) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	HUC:	Stream Type
☐ROW ☐Access Road ☑Facility ☐ATWS/Staging Area	02030105018702	☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No.

OHWM Width (ft)

☐1-5 ☑6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☐0-0.5 ☐0.5-1 ☐1-1.5 ☑1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☐0-5 ☐6-10 ☑11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction:

S

Flow Type

☐TNW ☑P-RPW ☐S-RPW ☐non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☐2 ☐3 ☑3+

Gradient

☐Flat (0.5'/100') ☑Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☑61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☑46-60° (2:1) ☐61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Erosion Types

☑ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Stabilizing Bank Vegetation Type

☐None Present ☐Herbaceous ☐Sapling/Shrub ☑Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Erosion Types

☑ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☐Clear, natural line impressed on bank	☐Changes in character of soil	☑Shelving
☑Vegetation matted down, bent, absent	☑Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☑Yes ☐No

HABITAT INFORMATION

Aquatic Habitat

% Substrate				Number of Pools, Runs, Riffles
0	% Bedrock	30	% Gravel	2 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
0	% Concrete	30	%Cobbles	1 runs (fast flowing, low turbulence water)
30	% Silt	10	% Sand	3 riffles (shallow, fast moving water broken by rocks/boulders)
0	% Clay		% Other	

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 2

Linear feet of overhanging root masses along banks: 70 left bank; 50 right bank

Aquatic Vegetation

Type

- [x] None
- [ ] Rooted Floating
- [ ] Rooted Emergent
- [ ] Floating Algae
- [ ] Rooted Submerged
- [ ] Attached Algae
- [ ] Free Floating
- 0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? [ ] Yes [x] No

Explain:

Riparian Corridor

- [ ] None
- [ ] Sapling/Shrub
- [x] Forested

Canopy Cover

- [ ] Open/full sun
- [ ] Partially Shaded
- [x] Mostly Shaded
- [ ] Full Shade

Left Bank Corridor Width

- [ ] 10-25
- [ ] 26-50
- [ ] 51-75
- [ ] 76-100
- [ ] 101-150
- [x] 150+

Right Bank Corridor Width

- [ ] 10-25
- [ ] 26-50
- [ ] 51-75
- [ ] 76-100
- [ ] 101-150
- [x] 150+

Riparian Species

river birch; blue beech; green ash; red oak; shagbark hickory; red maple.

Observed Riparian/Terrestrial/Aquatic Organisms

green frogs; pickerel frogs; crayfish; water striders.

Anthropogenic Effects

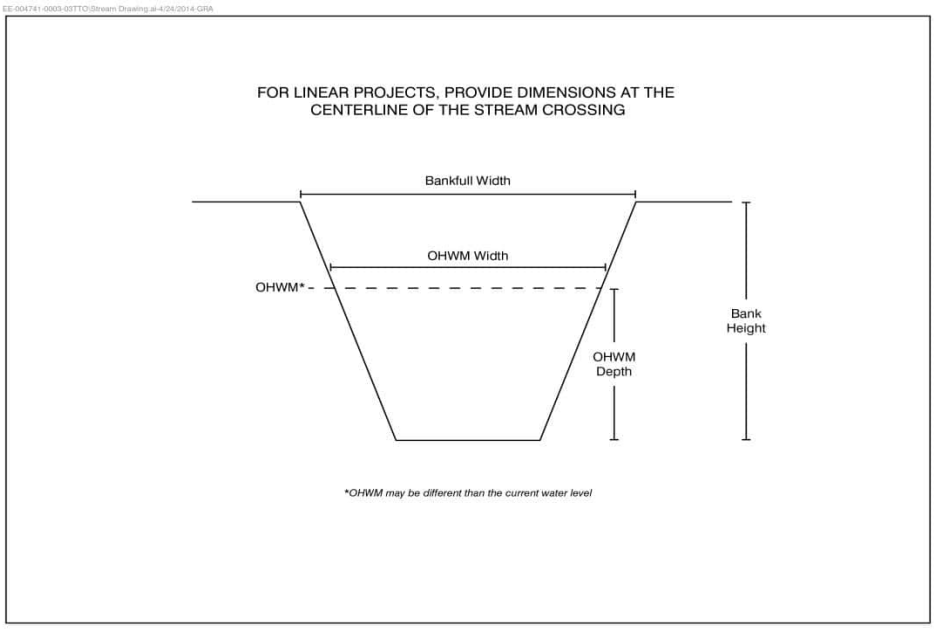
- [ ] Bridged
- [ ] Culverts
- [ ] Riparian Corridor Cleared
- [ ] Diverted
- [ ] Drive-through/OHV crossing
- [ ] Damned
- [ ] Weir or Check Dam
- [ ] Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 1	W-T09-001
Other Streams: 1	WW-T09-001
Seeps/Springs:	
Drains:	

Comments

Stream within forested wetland W-T09-001. Continuation of WW-T09-001 upstream.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
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Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T09-002-1 Photo Log



ID:WW-T09-002-1 Date:10/18/2016 Direction:N Type: Position:Upstream



ID:WW-T09-002-1 Date:10/18/2016 Direction:S Type: Position:Downstream

STREAM DATA SHEET

Date: 12/06/2016 1:42:26 PM	**Stream ID:** WW-T13-001	**Project:** NESE	
State: NJ	**County:** Somerset	**x:** -74.60836904	**y:** 40.40402752
Team No: 13	**Observers:** Jeff Mason Rebecca Dutton	**Stream Name:** UNT to Deleware Raritan Canal	

Photos (direction)

Upstream: WW-T13-001-Upstream-NE (NE) Downstream: WW-T13-001-Downstream-SW (SW) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	HUC:	Stream Type
☐ROW ☐Access Road ☑Facility ☐ATWS/Staging Area	0203010501	☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No.

OHWM Width (ft)

☑1-5 ☐6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☑0-0.5 ☐0.5-1 ☐1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☑0-5 ☐6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: SW

Flow Type

☐TNW ☐P-RPW ☑S-RPW ☐non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☐2 ☑3 ☐3+

Gradient

☐Flat (0.5'/100') ☑Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☑46-60° (2:1) ☐61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☑46-60° (2:1) ☐61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☑Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☑Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☐Clear, natural line impressed on bank	☐Changes in character of soil	☐Shelving
☐Vegetation matted down, bent, absent	☐Leaf litter disturbed or washed away	☐Sediment deposition
☑Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate

0 % Bedrock | 20 % Gravel
0 % Concrete | 10 %Cobbles
40 % Silt | 10 % Sand
20 % Clay | _____ % Other _____

Number of Pools, Runs, Riffles

1 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0.2
3 runs (fast flowing, low turbulence water)
2 riffles (shallow, fast moving water broken by rocks/boulders)

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 0 left bank; 0 right bank

Aquatic Vegetation

Type

☑ None
☐ Rooted Emergent
☐ Rooted Submerged
☐ Free Floating
☐ Rooted Floating
☐ Floating Algae
☐ Attached Algae
0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? ☑ Yes ☐ No

Explain: intermittent stream

Riparian Corridor

☐ None ☐ Sapling/Shrub ☑ Forested

Canopy Cover

☐ Open/full sun ☐ Partially Shaded ☐ Mostly Shaded ☑ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☑ 150+

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☑ 150+

Riparian Species

red maple

Observed Riparian/Terrestrial/Aquatic Organisms

none

Anthropogenic Effects

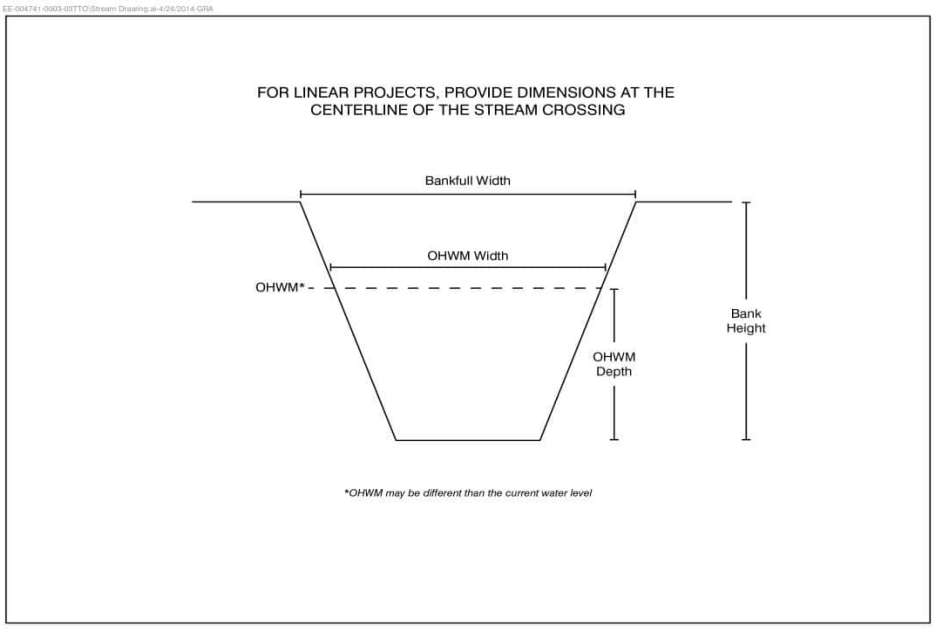
☐ Bridged
☐ Culverts
☐ Riparian Corridor Cleared
☐ Diverted
☐ Drive-through/OHV crossing
☐ Damned
☐ Weir or Check Dam
☐ Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 1	W-T09-002
Other Streams:	
Seeps/Springs:	
Drains:	

Comments

small intermittent stream in forest.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
Floodplain: The relatively flat valley-floor surface that has been constructed, during the present hydrologic regime, by the natural processes of point-bar deposition, lateral channel migration, and vertical accretion of sediments that have been transported beyond the active channel boundaries during periods of flooding.
Non-Relatively Permanent Waters (Non-RPW): A tributary that is not a TNW and does not flow year-round or seasonally. Non-RPWs are generally ephemeral streams.
Ordinary High Water Mark (OHWM): The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. At any given site, the OHWM will vary over time and according to external factors.
Perennial-Relatively Permanent Waters (P-RPW): A tributary that is not a TNW and flows year-round.
Seasonal-Relatively Permanent Waters (S-RPW): A tributary that is not a TNW and has continuous flow “seasonally” (typically 3 months). S-RPWs are generally considered to be intermittent.
Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T13-001 Photo Log



ID:WW-T13-001 Date:12/06/2016 Direction:NE Type:Intermittent Position:Upstream



ID:WW-T13-001 Date:12/06/2016 Direction:SW Type:Intermittent Position:Downstream

STREAM DATA SHEET

Date: 12/06/2016 1:52:59 PM	**Stream ID:** WW-T13-002	**Project:** NESE	
State: NJ	**County:** Somerset	**x:** -74.60859111	**y:** 40.40408191
Team No: 13	**Observers:** Jeff Mason Rebecca Dutton	**Stream Name:** UNT to Deleware Raritan Canal	

Photos (direction)

Upstream: WW-T13-002-Upstream-E (E) Downstream: WW-T13-002-Downstream-W (W) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area
☐ROW ☐Access Road ☑Facility ☐ATWS/Staging Area

HUC: 0203010501

Stream Type
☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality
☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor
Other/Comments:
No.

OHWM Width (ft)
☑1-5 ☐6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)
☐0-0.5 ☑0.5-1 ☐1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☑0-5 ☐6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction:
S

Flow Type
☐TNW ☐P-RPW ☐S-RPW ☑non-RPW

Sinuosity (bends per 200' stretch)
☑0 ☐1 ☐2 ☐3 ☐3+

Gradient
☐Flat (0.5'/100') ☑Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank
Height:
☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+
Slope:
☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank
Height:
☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+
Slope:
☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Left Bank
Percentage of Bank with Evidence of Erosion
☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types
☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation
☐0 ☐1-10 ☐11-25 ☐26-50 ☑51-75 ☐76-100

Stabilizing Bank Vegetation Type
☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

Right Bank
Percentage of Bank with Evidence of Erosion
☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types
☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation
☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type
☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☐Clear, natural line impressed on bank	☐Changes in character of soil	☐Shelving
☐Vegetation matted down, bent, absent	☐Leaf litter disturbed or washed away	☐Sediment deposition
☑Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate				Number of Pools, Runs, Riffles
0	% Bedrock	15	% Gravel	0 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
0	% Concrete	20	%Cobbles	0 runs (fast flowing, low turbulence water)
30	% Silt	10	% Sand	0 riffles (shallow, fast moving water broken by rocks/boulders)
25	% Clay		% Other	

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 0 left bank; 0 right bank

Aquatic Vegetation

Type

- [x] None
- [ ] Rooted Emergent
- [ ] Rooted Submerged
- [ ] Free Floating
- [ ] Rooted Floating
- [ ] Floating Algae
- [ ] Attached Algae
- 0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? [x] Yes [ ] No

Explain: ephemeral stream

Riparian Corridor

- [ ] None
- [ ] Sapling/Shrub
- [x] Forested

Canopy Cover

- [ ] Open/full sun
- [ ] Partially Shaded
- [ ] Mostly Shaded
- [x] Full Shade

Left Bank Corridor Width

- [ ] 10-25
- [ ] 26-50
- [ ] 51-75
- [ ] 76-100
- [ ] 101-150
- [x] 150+

Right Bank Corridor Width

- [ ] 10-25
- [ ] 26-50
- [ ] 51-75
- [ ] 76-100
- [ ] 101-150
- [x] 150+

Riparian Species

Platanus occidentalis, Acer rubrum

Observed Riparian/Terrestrial/Aquatic Organisms

none

Anthropogenic Effects

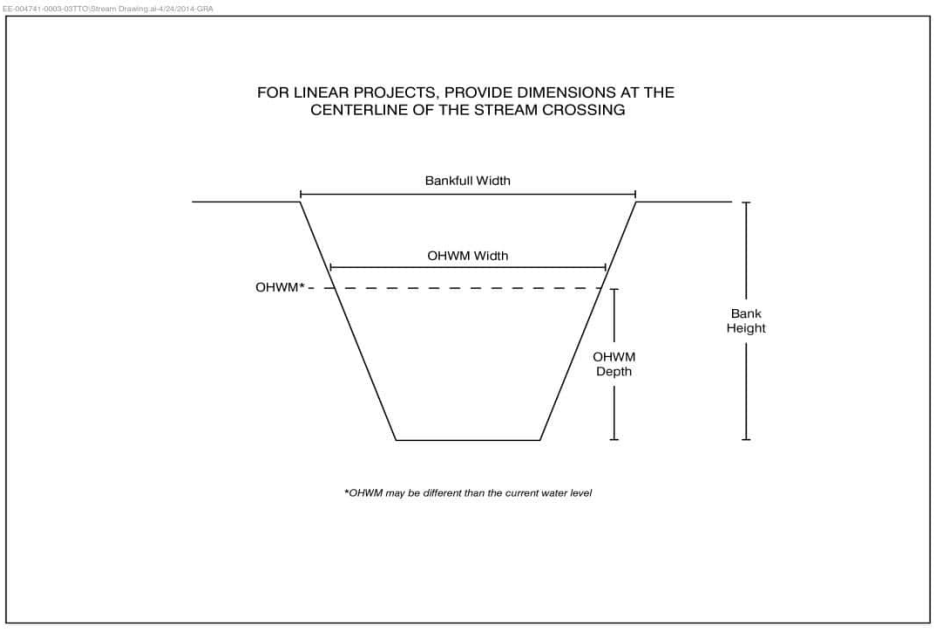
- [ ] Bridged
- [ ] Culverts
- [ ] Riparian Corridor Cleared
- [ ] Diverted
- [ ] Drive-through/OHV crossing
- [ ] Damned
- [ ] Weir or Check Dam
- [ ] Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 1	W-T09-002
Other Streams:	
Seeps/Springs:	
Drains:	

Comments

ephemeral stream in forest.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
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Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T13-002 Photo Log



ID:WW-T13-002 Date:12/06/2016 Direction:E Type:Ephemeral Position:Upstream



ID:WW-T13-002 Date:12/06/2016 Direction:W Type:Ephemeral Position:Downstream

STREAM DATA SHEET

Date: 12/08/2016 11:56:08 AM	**Stream ID:** WW-T15-002	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.30692520	**y:** 40.44393102
Team No: 15	**Observers:** Jeff Mason Rebecca Dutton	**Stream Name:** UNT to Tennent Brook	

Photos (direction)

Upstream: WW-T15-002-Upstream-NE (NE) Downstream: WW-T15-002-Downstream-SW (SW) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	**HUC:**	**Stream Type**
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area	0203010400	☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No.

OHWM Width (ft)

☑1-5 ☐6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☑0-0.5 ☐0.5-1 ☐1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☑0-5 ☐6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: SW

Flow Type

☐TNW ☐P-RPW ☑S-RPW ☐non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☐2 ☐3 ☑3+

Gradient

☐Flat (0.5'/100') ☐Flat-Moderate ☑Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☑31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☑46-60° (2:1) ☐61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☑Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☑0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☑None Present ☐Herbaceous ☐Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☑0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☑None Present ☐Herbaceous ☐Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☑Clear, natural line impressed on bank	☐Changes in character of soil	☐Shelving
☑Vegetation matted down, bent, absent	☐Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☑Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate				Number of Pools, Runs, Riffles
0	% Bedrock	20	% Gravel	0 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
0	% Concrete	10	%Cobbles	4 runs (fast flowing, low turbulence water)
10	% Silt	60	% Sand	1 riffles (shallow, fast moving water broken by rocks/boulders)
0	% Clay		% Other	

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 0 left bank; 0 right bank

Aquatic Vegetation

Type

- [x] None
- [ ] Rooted Emergent
- [ ] Rooted Submerged
- [ ] Free Floating
- [ ] Rooted Floating
- [ ] Floating Algae
- [ ] Attached Algae
- 0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? [x] Yes [ ] No

Explain: intermittent

Riparian Corridor

- [x] None
- [ ] Sapling/Shrub
- [ ] Forested

Canopy Cover

[ ] Open/full sun [x] Partially Shaded [ ] Mostly Shaded [ ] Full Shade

Left Bank Corridor Width

[ ] 10-25 [ ] 26-50 [ ] 51-75 [ ] 76-100 [ ] 101-150 [ ] 150+

Right Bank Corridor Width

[ ] 10-25 [ ] 26-50 [ ] 51-75 [ ] 76-100 [ ] 101-150 [ ] 150+

Riparian Species

Observed Riparian/Terrestrial/Aquatic Organisms

Anthropogenic Effects

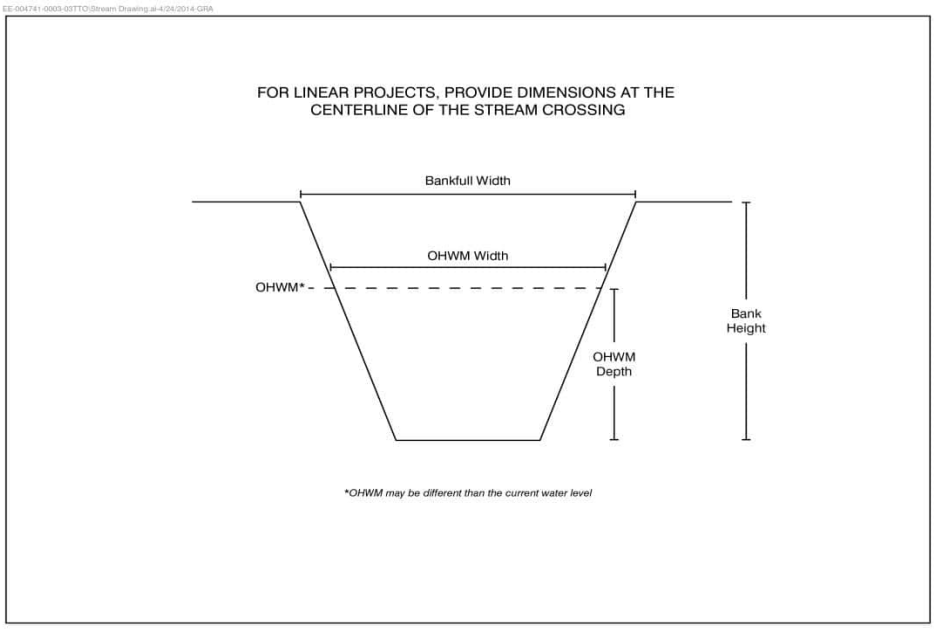
- [ ] Bridged
- [ ] Culverts
- [ ] Riparian Corridor Cleared
- [ ] Diverted
- [ ] Drive-through/OHV crossing
- [ ] Damned
- [ ] Weir or Check Dam
- [ ] Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 1	W-T15-003
Other Streams: 2	WW-T15-002A, WW-T15-004
Seeps/Springs:	
Drains: 1	DD-T15-003

Comments

stream in deeply incised valley that flows from drainage to larger stream.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
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Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T15-002 Photo Log



ID:WW-T15-002 Date:12/10/2016 Direction:NE Type:Intermittent Position:Upstream



ID:WW-T15-002 Date:12/10/2016 Direction:SW Type:Intermittent Position:Downstream

STREAM DATA SHEET

Date: 12/08/2016 12:12:42 PM	**Stream ID:** WW-T15-002A	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.30677439	**y:** 40.44387300
Team No: 15	**Observers:** Jeff Mason Rebecca Dutton	**Stream Name:** UNT to Tennent Brook	

Photos (direction)

Upstream: WW-T15-002A-Upstream-E (E) Downstream: WW-T15-002A-Downstream-W (W) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	HUC:	Stream Type
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area	0203010400	☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No.

OHWM Width (ft)

☑1-5 ☐6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☑0-0.5 ☐0.5-1 ☐1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☑0-5 ☐6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: W

Flow Type

☐TNW ☐P-RPW ☑S-RPW ☐non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☐2 ☑3 ☐3+

Gradient

☐Flat (0.5'/100') ☐Flat-Moderate ☐Moderate (2'/100') ☑Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☑61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☑61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☑11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☑0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☑None Present ☐Herbaceous ☐Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☑11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☑0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☑None Present ☐Herbaceous ☐Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☑Clear, natural line impressed on bank	☐Changes in character of soil	☐Shelving
☐Vegetation matted down, bent, absent	☑Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate

0 % Bedrock | 5 % Gravel
0 % Concrete | 0 %Cobbles
30 % Silt | 60 % Sand
0 % Clay | _____ % Other _____

Number of Pools, Runs, Riffles

0 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
2 runs (fast flowing, low turbulence water)
0 riffles (shallow, fast moving water broken by rocks/boulders)

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 0 left bank; 0 right bank

Aquatic Vegetation

Type

☑ None
☐ Rooted Emergent
☐ Rooted Submerged
☐ Free Floating
☐ Rooted Floating
☐ Floating Algae
☐ Attached Algae
0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? ☑ Yes ☐ No

Explain: intermittent

Riparian Corridor

☑ None ☐ Sapling/Shrub ☐ Forested

Canopy Cover

☐ Open/full sun ☑ Partially Shaded ☐ Mostly Shaded ☐ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Riparian Species

Observed Riparian/Terrestrial/Aquatic Organisms

Anthropogenic Effects

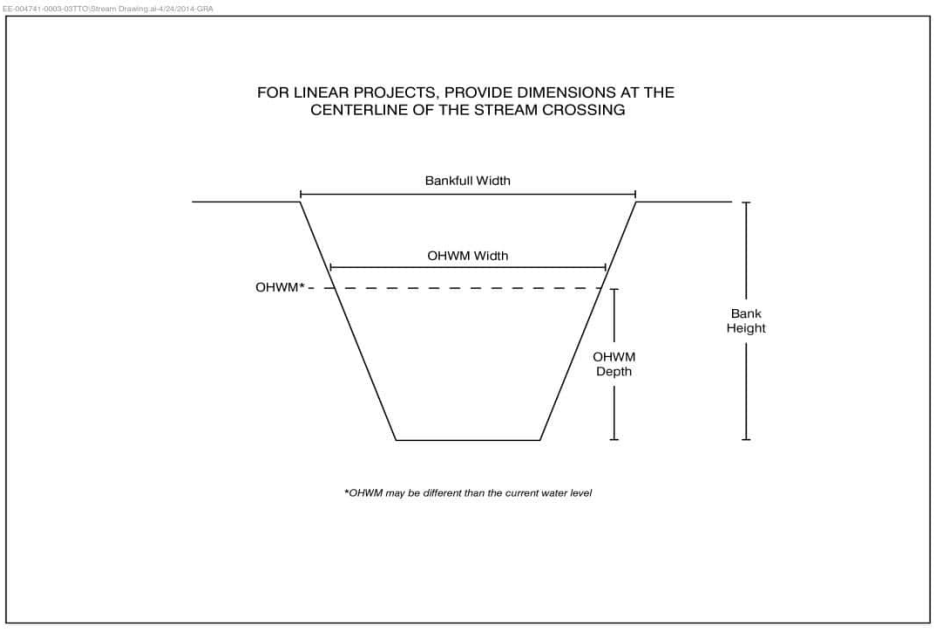
☐ Bridged
☐ Culverts
☐ Riparian Corridor Cleared
☐ Diverted
☐ Drive-through/OHV crossing
☐ Damned
☐ Weir or Check Dam
☐ Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands:	
Other Streams: 1	WW-T15-002
Seeps/Springs:	
Drains: 1	DD-T15-002

Comments

small channel feeding WW-T15-002. deeply incised.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
Floodplain: The relatively flat valley-floor surface that has been constructed, during the present hydrologic regime, by the natural processes of point-bar deposition, lateral channel migration, and vertical accretion of sediments that have been transported beyond the active channel boundaries during periods of flooding.
Non-Relatively Permanent Waters (Non-RPW): A tributary that is not a TNW and does not flow year-round or seasonally. Non-RPWs are generally ephemeral streams.
Ordinary High Water Mark (OHWM): The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. At any given site, the OHWM will vary over time and according to external factors.
Perennial-Relatively Permanent Waters (P-RPW): A tributary that is not a TNW and flows year-round.
Seasonal-Relatively Permanent Waters (S-RPW): A tributary that is not a TNW and has continuous flow “seasonally” (typically 3 months). S-RPWs are generally considered to be intermittent.
Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T15-002A Photo Log



ID:WW-T15-002A Date:12/10/2016 Direction:E Type:Intermittent Position:Upstream



ID:WW-T15-002A Date:12/10/2016 Direction:W Type:Intermittent Position:Downstream

STREAM DATA SHEET

Date: 12/08/2016 12:30:27 PM	**Stream ID:** WW-T15-003	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.30806852	**y:** 40.44304426
Team No: 15	**Observers:** Jeff Mason Rebecca Dutton	**Stream Name:** UNT to Tennent Brook	

Photos (direction)

Upstream: WW-T15-003-Upstream-NW (NW) Downstream: WW-T15-003-Downstream-S (S) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	HUC:	Stream Type
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area	0203010400	☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No.

OHWM Width (ft)

☐1-5 ☑6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☐0-0.5 ☑0.5-1 ☐1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☐0-5 ☑6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: SW

Flow Type

☐TNW ☐P-RPW ☑S-RPW ☐non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☐2 ☐3 ☑3+

Gradient

☐Flat (0.5'/100') ☑Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☑61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☑61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Erosion Types

☑ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☑11-25 ☐26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☐26-50 ☑51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☑Clear, natural line impressed on bank	☐Changes in character of soil	☐Shelving
☑Vegetation matted down, bent, absent	☐Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate		Number of Pools, Runs, Riffles
0 % Bedrock	20 % Gravel	1 pools (deep, low velocity water, smooth surface) , max. depth (ft) 1
0 % Concrete	0 %Cobbles	2 runs (fast flowing, low turbulence water)
15 % Silt	65 % Sand	0 riffles (shallow, fast moving water broken by rocks/boulders)
0 % Clay	____ % Other ____	

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 1

Linear feet of overhanging root masses along banks: 40 left bank; 40 right bank

Aquatic Vegetation

Type

- ☑ None
- ☐ Rooted Emergent
- ☐ Rooted Submerged
- ☐ Free Floating
- ☐ Rooted Floating
- ☐ Floating Algae
- ☐ Attached Algae
- 0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? ☐ Yes ☑ No

Explain:

Riparian Corridor

☑ None ☐ Sapling/Shrub ☐ Forested

Canopy Cover

☐ Open/full sun ☑ Partially Shaded ☐ Mostly Shaded ☐ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Riparian Species

Observed Riparian/Terrestrial/Aquatic Organisms

Anthropogenic Effects

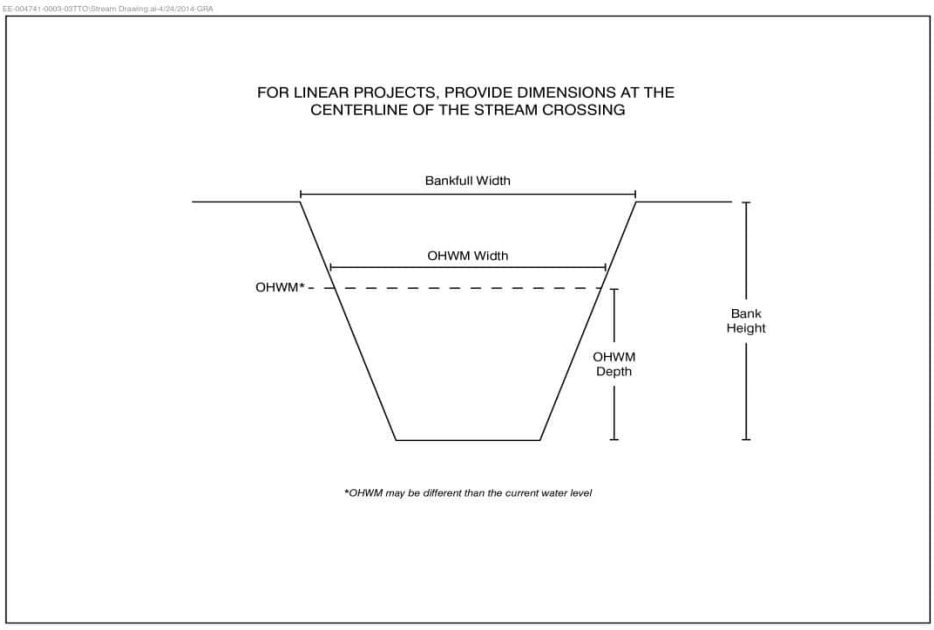
- ☐ Bridged
- ☐ Culverts
- ☐ Riparian Corridor Cleared
- ☐ Diverted
- ☑ Drive-through/OHV crossing
- ☐ Damned
- ☐ Weir or Check Dam
- ☐ Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands:	
Other Streams: 1	WW-T15-004
Seeps/Springs:	
Drains:	

Comments

mapped NHD stream flowing across ROW.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
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Seasonal-Relatively Permanent Waters (S-RPW): A tributary that is not a TNW and has continuous flow “seasonally” (typically 3 months). S-RPWs are generally considered to be intermittent.
Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T15-003 Photo Log



ID:WW-T15-003 Date:12/10/2016 Direction:NW Type:Intermittent Position:Upstream



ID:WW-T15-003 Date:12/10/2016 Direction:S Type:Intermittent Position:Downstream

STREAM DATA SHEET

Date: 12/10/2016 10:26:28 AM	**Stream ID:** WW-T15-004	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.30804151	**y:** 40.44301929
Team No: 15	**Observers:** Jeff Mason Jordan Skrzynski	**Stream Name:** UNT to Tennent Brook	

Photos (direction)

Upstream: _____ ( ) Downstream: _____ ( ) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	HUC:	Stream Type
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area	0203010400	☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No.

OHWM Width (ft)

☐1-5 ☐6-10 ☑11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☐0-0.5 ☐0.5-1 ☑1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☐0-5 ☐6-10 ☐11-15 ☐16-20 ☐21-25 ☑26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: SW

Flow Type

☐TNW ☐P-RPW ☑S-RPW ☐non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☑2 ☐3 ☐3+

Gradient

☑Flat (0.5'/100') ☐Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☑61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☑11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☑Clear, natural line impressed on bank	☑Changes in character of soil	☐Shelving
☑Vegetation matted down, bent, absent	☐Leaf litter disturbed or washed away	☑Sediment deposition
☐Water staining	☑Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate				Number of Pools, Runs, Riffles
0	% Bedrock	20	% Gravel	0 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
0	% Concrete	10	%Cobbles	2 runs (fast flowing, low turbulence water)
5	% Silt	65	% Sand	0 riffles (shallow, fast moving water broken by rocks/boulders)
0	% Clay		% Other	

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 0 left bank; 0 right bank

Aquatic Vegetation

Type

- ☑ None
- ☐ Rooted Emergent
- ☐ Rooted Submerged
- ☐ Free Floating
- ☐ Rooted Floating
- ☐ Floating Algae
- ☐ Attached Algae
- 0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? ☐ Yes ☑ No

Explain:

Riparian Corridor

☑ None ☐ Sapling/Shrub ☐ Forested

Canopy Cover

☑ Open/full sun ☐ Partially Shaded ☐ Mostly Shaded ☐ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Riparian Species

Observed Riparian/Terrestrial/Aquatic Organisms

Anthropogenic Effects

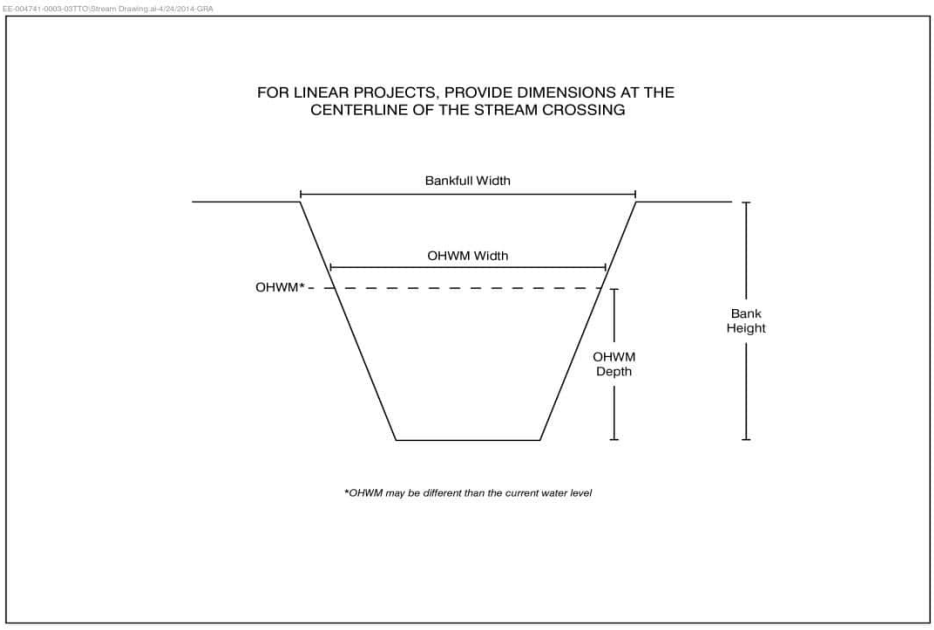
- ☐ Bridged
- ☐ Culverts
- ☐ Riparian Corridor Cleared
- ☐ Diverted
- ☑ Drive-through/OHV crossing
- ☐ Damned
- ☐ Weir or Check Dam
- ☐ Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 1	W-T15-003
Other Streams: 5	WW-T15-002, WW-T15-003, WW-T15-004A, WW-T15-004B, WW-T15-005
Seeps/Springs:	
Drains:	

Comments

stream in valley along existing ROW.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
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WW-T15-004 Photo Log



ID:WW-T15-004 Date:12/10/2016 Direction:NE Type:Intermittent Position:Upstream



ID:WW-T15-004 Date:12/10/2016 Direction:SW Type:Intermittent Position:Downstream

STREAM DATA SHEET

Date: 12/10/2016 11:43:54 AM	**Stream ID:** WW-T15-004A	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.30611831	**y:** 40.44378957
Team No: 15	**Observers:** Jeff Mason Jordan Skrzynski	**Stream Name:** UNT to Tennent Brook	

Photos (direction)

Upstream: WW-T15-004A-Upstream-NE (NE) Downstream: WW-T15-004A-Downstream-SW (SW) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area

HUC: 0203010400

Stream Type
☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality
☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor
Other/Comments:
No.

OHWM Width (ft)
☐1-5 ☑6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)
☐0-0.5 ☐0.5-1 ☑1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☐0-5 ☑6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: SW

Flow Type
☐TNW ☐P-RPW ☑S-RPW ☐non-RPW

Sinuosity (bends per 200' stretch)
☐0 ☐1 ☐2 ☐3 ☑3+

Gradient
☐Flat (0.5'/100') ☑Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:
☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:
☐0-30° (4:1) ☑31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank

Height:
☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:
☐0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☑61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion
☐0 ☐1-10 ☐11-25 ☐26-50 ☑51-75 ☐76-100

Erosion Types
☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation
☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type
☐None Present ☑Herbaceous ☑Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion
☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Erosion Types
☑ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation
☑0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

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☑Clear, natural line impressed on bank	☐Changes in character of soil	☐Shelving
☑Vegetation matted down, bent, absent	☑Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☑Presence of litter and debris	☑Destruction of terrestrial vegetation
☐Presence of wrack line	☑Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate				Number of Pools, Runs, Riffles
0	% Bedrock	20	% Gravel	0 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
0	% Concrete	5	%Cobbles	0 runs (fast flowing, low turbulence water)
15	% Silt	55	% Sand	0 riffles (shallow, fast moving water broken by rocks/boulders)
5	% Clay		% Other	

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 0 left bank; 0 right bank

Aquatic Vegetation

Type

- ☑ None
- ☐ Rooted Emergent
- ☐ Rooted Submerged
- ☐ Free Floating
- ☐ Rooted Floating
- ☐ Floating Algae
- ☐ Attached Algae
- 0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? ☑ Yes ☐ No

Explain: intermittent

Riparian Corridor

☑ None ☐ Sapling/Shrub ☐ Forested

Canopy Cover

☑ Open/full sun ☐ Partially Shaded ☐ Mostly Shaded ☐ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☐ 150+

Riparian Species

Observed Riparian/Terrestrial/Aquatic Organisms

Anthropogenic Effects

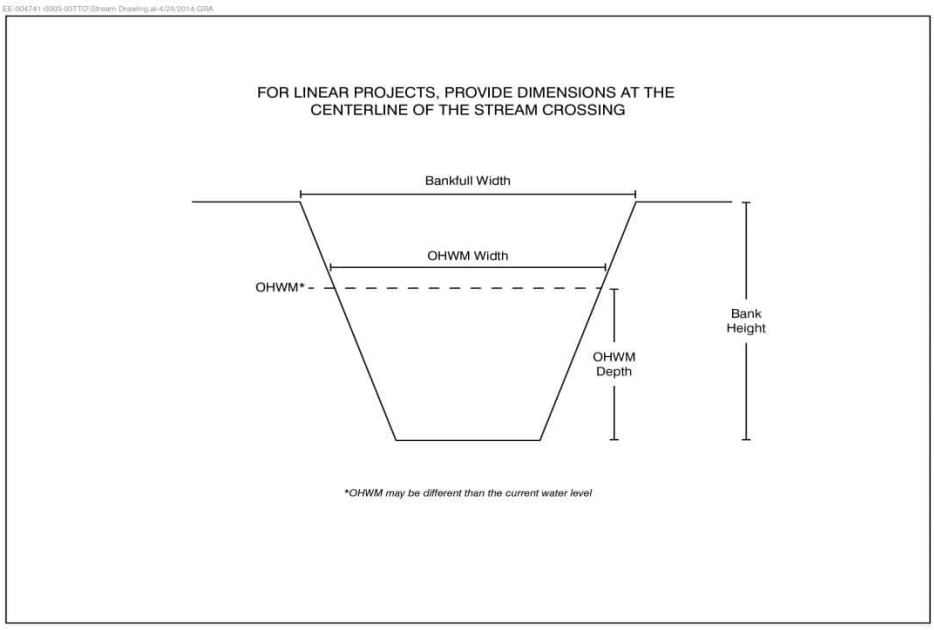
- ☐ Bridged
- ☐ Culverts
- ☐ Riparian Corridor Cleared
- ☐ Diverted
- ☐ Drive-through/OHV crossing
- ☐ Damned
- ☐ Weir or Check Dam
- ☐ Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 1	W-T15-003
Other Streams: 2	WW-T15-004, WW-T15-004B
Seeps/Springs:	
Drains:	

Comments

continuation of WW-T15-004 where characteristics are very different from other section.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
Floodplain: The relatively flat valley-floor surface that has been constructed, during the present hydrologic regime, by the natural processes of point-bar deposition, lateral channel migration, and vertical accretion of sediments that have been transported beyond the active channel boundaries during periods of flooding.
Non-Relatively Permanent Waters (Non-RPW): A tributary that is not a TNW and does not flow year-round or seasonally. Non-RPWs are generally ephemeral streams.
Ordinary High Water Mark (OHWM): The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. At any given site, the OHWM will vary over time and according to external factors.
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Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T15-004A Photo Log



ID:WW-T15-004A Date:12/10/2016 Direction:NE Type:Intermittent Position:Upstream



ID:WW-T15-004A Date:12/10/2016 Direction:SW Type:Intermittent Position:Downstream

STREAM DATA SHEET

Date: 12/11/2016 10:08:17 AM	**Stream ID:** WW-T15-004B	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.30454043	**y:** 40.44491268
Team No: 15	**Observers:** Jeff Mason Jordan Skrzynski	**Stream Name:** UNT to Tennent Brook	

Photos (direction)

Upstream: WW-T15-004B-Upstream-N (N) Downstream: WW-T15-004B-Downstream-S (S) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	**HUC:**	**Stream Type**
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area	0203010400	☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No. some foam

OHWM Width (ft)

☐1-5 ☐6-10 ☑11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☐0-0.5 ☐0.5-1 ☑1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☐0-5 ☐6-10 ☐11-15 ☐16-20 ☐21-25 ☑26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: S

Flow Type

☐TNW ☐P-RPW ☑S-RPW ☐non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☐2 ☐3 ☑3+

Gradient

☐Flat (0.5'/100') ☑Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☑61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☑Sapling/Shrub ☑Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Erosion Types

☑ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☐Herbaceous ☑Sapling/Shrub ☑Tree

OHWM (Ordinary High Water Mark) Criteria

☑Clear, natural line impressed on bank	☐Changes in character of soil	☐Shelving
☑Vegetation matted down, bent, absent	☑Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☑Presence of wrack line	☑Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate				Number of Pools, Runs, Riffles
0	% Bedrock	5	% Gravel	1 pools (deep, low velocity water, smooth surface) , max. depth (ft) 1
0	% Concrete	0	%Cobbles	3 runs (fast flowing, low turbulence water)
0	% Silt	95	% Sand	2 riffles (shallow, fast moving water broken by rocks/boulders)
0	% Clay		% Other	

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 1

Linear feet of overhanging root masses along banks: 0 left bank; 159 right bank

Aquatic Vegetation

Type

- [x] None
- [ ] Rooted Emergent
- [ ] Rooted Submerged
- [ ] Free Floating
- [ ] Rooted Floating
- [ ] Floating Algae
- [ ] Attached Algae

0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? [ ] Yes [x] No

Explain:

Riparian Corridor

- [x] None
- [ ] Sapling/Shrub
- [ ] Forested

Canopy Cover

- [ ] Open/full sun
- [ ] Partially Shaded
- [x] Mostly Shaded
- [ ] Full Shade

Left Bank Corridor Width

- [ ] 10-25
- [ ] 26-50
- [ ] 51-75
- [ ] 76-100
- [ ] 101-150
- [ ] 150+

Right Bank Corridor Width

- [ ] 10-25
- [ ] 26-50
- [ ] 51-75
- [ ] 76-100
- [ ] 101-150
- [ ] 150+

Riparian Species

Observed Riparian/Terrestrial/Aquatic Organisms

Anthropogenic Effects

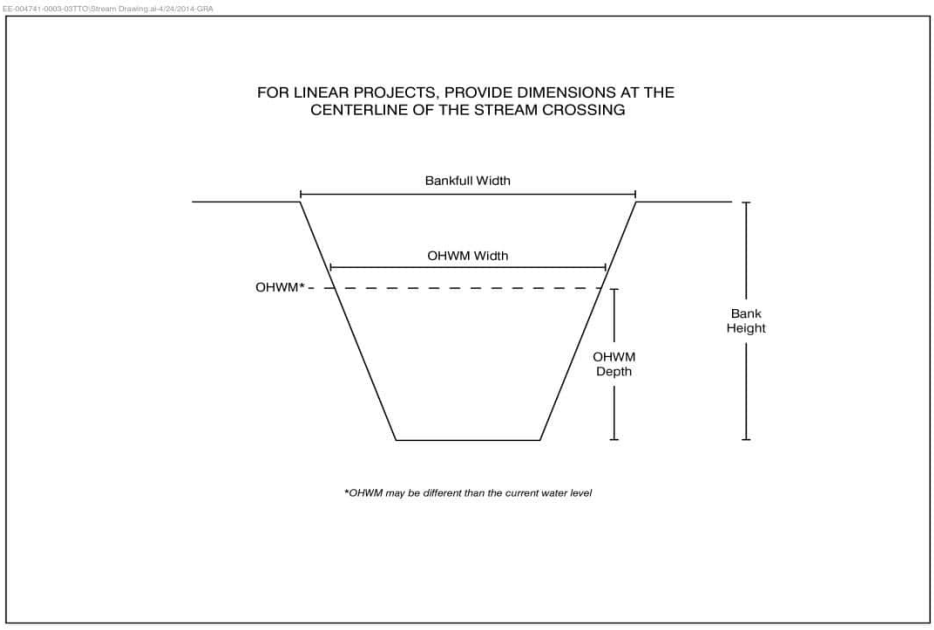
- [ ] Bridged
- [ ] Culverts
- [ ] Riparian Corridor Cleared
- [ ] Diverted
- [ ] Drive-through/OHV crossing
- [ ] Damned
- [ ] Weir or Check Dam
- [ ] Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 1	W-T15-003
Other Streams: 2	WW-T15-004A, WW-T15-005
Seeps/Springs:	
Drains:	

Comments

Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
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Seasonal-Relatively Permanent Waters (S-RPW): A tributary that is not a TNW and has continuous flow “seasonally” (typically 3 months). S-RPWs are generally considered to be intermittent.
Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T15-004B Photo Log



ID:WW-T15-004B Date:12/10/2016 Direction:N Type:Intermittent Position:Upstream



ID:WW-T15-004B Date:12/10/2016 Direction:S Type:Intermittent Position:Downstream

STREAM DATA SHEET

Date: 12/11/2016 11:01:20 AM	**Stream ID:** WW-T15-005	**Project:** NESE	
State: NJ	**County:** Middlesex	**x:** -74.30414136	**y:** 40.44489048
Team No: 15	**Observers:** Jeff Mason Jordan Skrzynski	**Stream Name:** UNT to Tennent Brook	

Photos (direction)

Upstream: WW-T15-005-Upstream-NE (NE) Downstream: WW-T15-005-Downstream-SW (SW) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	HUC:	Stream Type
☑ROW ☐Access Road ☐Facility ☐ATWS/Staging Area	0203010400	☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

No.

OHWM Width (ft)

☑1-5 ☐6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☑0-0.5 ☐0.5-1 ☐1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☑0-5 ☐6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: SW

Flow Type

☐TNW ☐P-RPW ☐S-RPW ☑non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☐2 ☐3 ☑3+

Gradient

☐Flat (0.5'/100') ☑Flat-Moderate ☐Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☑0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☐61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☑1-10 ☐11-25 ☐26-50 ☐51-75 ☐76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☐Sapling/Shrub ☐Tree

OHWM (Ordinary High Water Mark) Criteria

☑Clear, natural line impressed on bank	☐Changes in character of soil	☐Shelving
☑Vegetation matted down, bent, absent	☑Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate				Number of Pools, Runs, Riffles
0	% Bedrock	25	% Gravel	0 pools (deep, low velocity water, smooth surface) , max. depth (ft) 0
0	% Concrete	0	%Cobbles	0 runs (fast flowing, low turbulence water)
15	% Silt	60	% Sand	0 riffles (shallow, fast moving water broken by rocks/boulders)
0	% Clay		% Other	

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 0

Linear feet of overhanging root masses along banks: 0 left bank; 0 right bank

Aquatic Vegetation

Type

- [x] None
- [ ] Rooted Emergent
- [ ] Rooted Submerged
- [ ] Free Floating
- [ ] Rooted Floating
- [ ] Floating Algae
- [ ] Attached Algae
- 0 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? [x] Yes [ ] No

Explain: ephemeral stream

Riparian Corridor

- [x] None
- [ ] Sapling/Shrub
- [ ] Forested

Canopy Cover

- [x] Open/full sun
- [ ] Partially Shaded
- [ ] Mostly Shaded
- [ ] Full Shade

Left Bank Corridor Width

[ ] 10-25 [ ] 26-50 [ ] 51-75 [ ] 76-100 [ ] 101-150 [ ] 150+

Right Bank Corridor Width

[ ] 10-25 [ ] 26-50 [ ] 51-75 [ ] 76-100 [ ] 101-150 [ ] 150+

Riparian Species

Observed Riparian/Terrestrial/Aquatic Organisms

Anthropogenic Effects

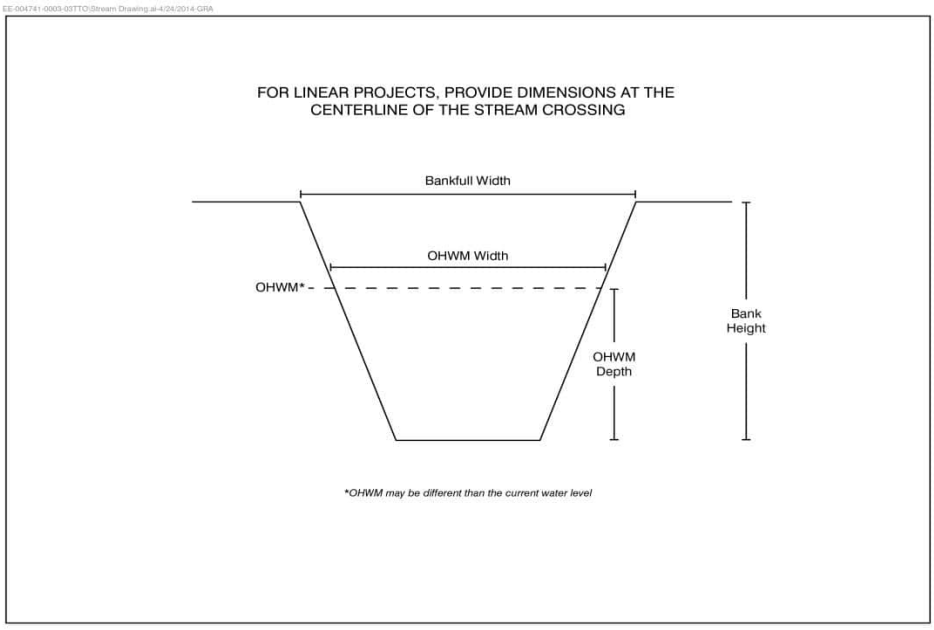
- [ ] Bridged
- [ ] Culverts
- [ ] Riparian Corridor Cleared
- [ ] Diverted
- [ ] Drive-through/OHV crossing
- [ ] Damned
- [ ] Weir or Check Dam
- [ ] Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands: 2	W-T15-002, W-T15-003
Other Streams: 1	WW-T15-004C
Seeps/Springs:	
Drains:	

Comments

small stream within wetland W-T15-003.
Final QA: Dutton 02/17



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
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WW-T15-005 Photo Log



ID:WW-T15-005 Date:12/10/2016 Direction:NE Type:Ephemeral Position:Upstream



ID:WW-T15-005 Date:12/10/2016 Direction:SW Type:Ephemeral Position:Downstream

STREAM DATA SHEET

Date: 04/18/2017 12:07:41 PM	**Stream ID:** WW-T19-001	**Project:** NESE	
State: NJ	**County:** Somerset	**x:** -74.61008015	**y:** 40.40415470
Team No: 19	**Observers:** Evan Sheppard Rebecca Dutton	**Stream Name:** UNT to Deleware Raritan Canal	

Photos (direction)

Upstream: _____ ( ) Downstream: _____ ( ) Bank (L or R) to Bank (L or R) _____ ( )

Survey Area	HUC:	Stream Type
☐ROW ☑Access Road ☐Facility ☐ATWS/Staging Area	0203010503	☑ Natural ☐ Ditch/Canal/Other

CURRENT HYDROLOGIC CONDITIONS

Water Quality

☑Clear ☐Discolored ☐Turbid ☐Oily Film ☐Odor

Other/Comments:

OHWM Width (ft)

☑1-5 ☐6-10 ☐11-15 ☐16-25 ☐26-50 ☐51-75 ☐76+

OHWM Depth (ft)

☐0-0.5 ☐0.5-1 ☑1-1.5 ☐1.5-2 ☐2-3 ☐3-5 ☐5-10 ☐10+

PHYSICAL CHARACTERISITCS

****Right vs. Left bank from the perspective of someone facing downstream**

Bankfull Width (ft): ☐0-5 ☑6-10 ☐11-15 ☐16-20 ☐21-25 ☐26-30 ☐31-40 ☐41-50 ☐51-75 ☐76-100 ☐100+

Stream Flow Direction: SE

Flow Type

☐TNW ☑P-RPW ☐S-RPW ☐non-RPW

Sinuosity (bends per 200' stretch)

☐0 ☐1 ☐2 ☑3 ☐3+

Gradient

☐Flat (0.5'/100') ☐Flat-Moderate ☑Moderate (2'/100') ☐Moderate-Severe ☐Severe (10'/100')

Left Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☑61-90° (1:1)

Right Bank

Height:

☑1-3 ☐4-6 ☐7-9 ☐10-12 ☐13-15 ☐16-20 ☐21-30 ☐30+

Slope:

☐0-30° (4:1) ☐31-45° (3:1) ☐46-60° (2:1) ☑61-90° (1:1)

Left Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☐11-25 ☑26-50 ☐51-75 ☐76-100

Stabilizing Bank Vegetation Type

☐None Present ☑Herbaceous ☑Sapling/Shrub ☐Tree

Right Bank

Percentage of Bank with Evidence of Erosion

☐0 ☐1-10 ☐11-25 ☐26-50 ☐51-75 ☑76-100

Erosion Types

☐ Undercutting ☑Sloughing ☐Livestock/Wildlife Impacts

Percentage of Bank with Stabilizing Vegetation

☐0 ☐1-10 ☑11-25 ☐26-50 ☐51-75 ☐76-100

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☐None Present ☑Herbaceous ☑Sapling/Shrub ☐Tree

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☑Clear, natural line impressed on bank	☐Changes in character of soil	☐Shelving
☑Vegetation matted down, bent, absent	☑Leaf litter disturbed or washed away	☐Sediment deposition
☐Water staining	☐Presence of litter and debris	☐Destruction of terrestrial vegetation
☐Presence of wrack line	☐Sediment sorting	☐Scour
☐Abrupt change in plan community	☐Other (list) _____	Discontinuous OHWM? ☐Yes ☑No

HABITAT INFORMATION

Aquatic Habitat

% Substrate

0 % Bedrock | 20 % Gravel
0 % Concrete | 10 %Cobbles
50 % Silt | 0 % Sand
20 % Clay | _____ % Other _____

Number of Pools, Runs, Riffles

4 pools (deep, low velocity water, smooth surface) , max. depth (ft) 1.5
3 runs (fast flowing, low turbulence water)
3 riffles (shallow, fast moving water broken by rocks/boulders)

Woody Debris and Root Masses

No. of woody debris > 6" diameter within OHWM 2

Linear feet of overhanging root masses along banks: 20 left bank; 20 right bank

Aquatic Vegetation

Type

☐ None ☐ Rooted Floating
☐ Rooted Emergent ☐ Floating Algae
☐ Rooted Submerged ☑ Attached Algae
☐ Free Floating 10 % of reach

Aquatic Vegetation Species

Barriers to Fish Passage? ☐ Yes ☑ No

Explain:

Riparian Corridor

☐ None ☐ Sapling/Shrub ☑ Forested

Canopy Cover

☐ Open/full sun ☐ Partially Shaded ☑ Mostly Shaded ☐ Full Shade

Left Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☐ 76-100 ☐ 101-150 ☑ 150+

Right Bank Corridor Width

☐ 10-25 ☐ 26-50 ☐ 51-75 ☑ 76-100 ☐ 101-150 ☐ 150+

Riparian Species

Quercus rubra, Liriodendron tulipifera, Acer rubrum

Observed Riparian/Terrestrial/Aquatic Organisms

Anthropogenic Effects

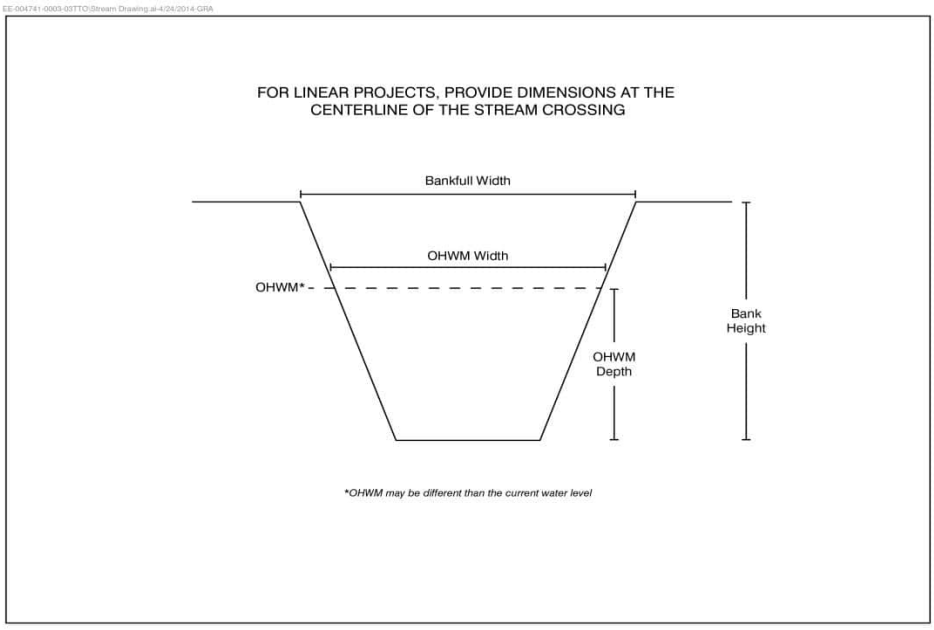
☐ Bridged ☑ Culverts ☐ Riparian Corridor Cleared
☐ Diverted ☐ Drive-through/OHV crossing ☐ Damned
☐ Weir or Check Dam ☐ Other

No. of Associated Features and Feature IDs

Number	Feature ID
Ponds:	
Wetlands:	
Other Streams:	
Seeps/Springs:	
Drains:	

Comments

from culvert at road into forest. deeply incised part way through, and as continues outside survey area. Sheppard final QA 5/16/2017



Definitions:

Active Channel: The natural waterway that contains all stream flows at and below the bankfull discharge.
Bankfull Stage: The elevation of the water surface when rising water completely fills the active channel and first begins to spill onto the local floodplain.
Floodplain: The relatively flat valley-floor surface that has been constructed, during the present hydrologic regime, by the natural processes of point-bar deposition, lateral channel migration, and vertical accretion of sediments that have been transported beyond the active channel boundaries during periods of flooding.
Non-Relatively Permanent Waters (Non-RPW): A tributary that is not a TNW and does not flow year-round or seasonally. Non-RPWs are generally ephemeral streams.
Ordinary High Water Mark (OHWM): The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. At any given site, the OHWM will vary over time and according to external factors.
Perennial-Relatively Permanent Waters (P-RPW): A tributary that is not a TNW and flows year-round.
Seasonal-Relatively Permanent Waters (S-RPW): A tributary that is not a TNW and has continuous flow “seasonally” (typically 3 months). S-RPWs are generally considered to be intermittent.
Thalweg: An imaginary line, drawn in a flow-parallel orientation, which joins the deepest points of a stream channel.
Traditionally Navigable Waters (TNW): Any water body that is subject to the ebb and flow of the tide and/or the water body is presently used, or has been used in the past, or may be susceptible for use (with or without reasonable improvements) to transport interstate or foreign commerce. Generally TNW’s are perennial rivers which have flow in them year-round.

WW-T19-001 Photo Log



ID:WW-T19-001 Date:04/18/2017 Direction:SW Type:Perennial Position:Upstream



ID:WW-T19-001 Date:04/18/2017 Direction:SE Type:Perennial Position:Across

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC

NORTHEAST SUPPLY ENHANCEMENT PROJECT

2025 DATA SHEETS



TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

NORTHEAST SUPPLY ENHANCEMENT PROJECT

Compressor **S**tation **20**6
Freshwater **W**etlands **D**ata **F**orms

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CS206 City/County: / Somerset Sampling Date: 04/23/2025
Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T10-003A-1
Investigator(s): Dana Flynn, Deborah Carlin Section, Township, Range: 1808-000050002-000250000-00000
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): _____
Subregion (LRR or MLRA): LRR S, MLRA 148 Lat: 40.402989 Long: -74.600129 Datum: NAD83
Soil Map Unit Name: Keyport silt loam, 0 to 2 percent slopes HGM Class: Depressional Field Cowardin classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks) NWI Cowardin classification: UPL
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____
Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No _____**
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on 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)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✔ No _____ Depth (inches): 0.5
Water Table Present? Yes _____ No ✔ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes ✔ No _____ Depth (inches): 0

Wetland Hydrology Present? Yes ✔ 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: W-T10-003A-1

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Sapling/Shrub Stratum (Plot size: 15 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Herb Stratum (Plot size: 5 ft. rad.)			
1. Onoclea sensibilis	15	N	FACW
2. Impatiens capensis	10	N	FACW
3. Microstegium vimineum	10	N	FAC
4. Claytonia virginica	3	N	FAC
5. Scirpus cyperinus	50	Y	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	88 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Woody Vine Stratum (Plot size: 30 ft. rad.)			
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: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ✔ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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 or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

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

SOIL Sampling Point: W-T10-003A-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
0-8	10YR 5/2	80	10YR 4/6	20	C	PL	LC	Silt loam
8-16	10YR 5/2	60	10YR 5/8	10	C	M	LC	Clay loam
8-16			10YR 6/3	30	C	M		
16-20	10YR 5/1	60	10YR 5/8	20	C	M	LC	Clay
16-20			10YR 5/4	20	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ 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 DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CS206 City/County: / Somerset Sampling Date: 04/23/2025
Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T10-003C-2
Investigator(s): Dana Flynn, Deborah Carlin Section, Township, Range: 1808-000050002-000250000-00000
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): ____
Subregion (LRR or MLRA): LRR S, MLRA 148 Lat: 40.402884 Long: -74.600086 Datum: NAD83
Soil Map Unit Name: Keyport silt loam, 0 to 2 percent slopes HGM Class: Depressional Field Cowardin classification: PFO
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks) NWI Cowardin classification: UPL
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____
Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	

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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on 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)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✔ No ____ Depth (inches): 3
Water Table Present? Yes ✔ No ____ Depth (inches): 3
Saturation Present? (includes capillary fringe) Yes ✔ No ____ Depth (inches): 0

Wetland Hydrology Present? Yes ✔ 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: W-T10-003C-2

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Liquidambar styraciflua	60	Y	FAC
2. Salix nigra	10	N	OBL
3. Acer rubrum	20	Y	FAC
4.			
5.			
6.			
7.			
	90 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Sapling/Shrub Stratum (Plot size: 15 ft. rad.)			
1. Rosa multiflora	40	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	40 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Herb Stratum (Plot size: 5 ft. rad.)			
1. Onoclea sensibilis	3	N	FACW
2. Scirpus cyperinus	5	Y	FACW
3. Poa palustris	3	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	11 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Woody Vine Stratum (Plot size: 30 ft. rad.)			
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: 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 ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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 or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ____

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

SOIL Sampling Point: W-T10-003C-2

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
0-3	10YR 4/2	90	10YR 4/3	10	C	PL	LC	Silt loam
3-16	2.5Y 6/1	70	10YR 5/8	30	C	M	LC	Clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ 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 DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CS206 City/County: / Somerset Sampling Date: 04/23/2025
Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T10-003
Investigator(s): Dana Flynn, Deborah Carlin Section, Township, Range: 1808-000050002-000250000-00000
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): ____
Subregion (LRR or MLRA): LRR S, MLRA 148 Lat: 40.402798 Long: -74.599966 Datum: NAD83
Soil Map Unit Name: Keyport silt loam, 0 to 2 percent slopes HGM Class: N/A Field Cowardin classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks) NWI Cowardin classification: UPL
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____
Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on 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)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ 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: U-T10-003

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Liquidambar styraciflua	80	Y	FAC
2. Acer rubrum	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
	100 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Sapling/Shrub Stratum (Plot size: 15 ft. rad.)			
1. Ligustrum vulgare	25	Y	FACU
2. Viburnum prunifolium	5	N	FACU
3. Rosa multiflora	40	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
	70 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Herb Stratum (Plot size: 5 ft. rad.)			
1. Viburnum dentatum	1	N	FAC
2. Claytonia virginica	25	Y	FAC
3. Lonicera japonica	2	N	FACU
4. Celastrus orbiculatus	5	N	FACU
5. Microstegium vimineum	5	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	38 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Woody Vine Stratum (Plot size: 30 ft. rad.)			
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: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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 or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ____

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

SOIL Sampling Point: U-T10-003

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
0-9	2.5Y 4/3	95	10YR 3/3	5	C	M	LC	Silt loam
9-18	10YR 5/6	85	10YR 4/2	15	C	M	LC	Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ 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 DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CS206 City/County: / Somerset Sampling Date: 04/22/2025
Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T10-001C-2
Investigator(s): Dana Flynn, Deborah Carlin Section, Township, Range: 1808-000050002-000250000-00000
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Flat Slope (%):
Subregion (LRR or MLRA): LRR S, MLRA 148 Lat: 40.401365 Long: -74.596137 Datum: NAD83
Soil Map Unit Name: Keyport silt loam, 0 to 2 percent slopes HGM Class: Mineral soil flats Field Cowardin classification: PFO
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ___ (If no, explain in Remarks) NWI Cowardin classification: PFO1Dd
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ___
Are Vegetation N, Soil N, or Hydrology N 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 ___	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ___**
Hydric Soil Present?	Yes ✔	No ___	
Wetland Hydrology Present?	Yes ✔	No ___	

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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on 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)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No ✔	Depth (inches): ___
Water Table Present?	Yes ___	No ✔	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No ✔	Depth (inches): ___

Wetland Hydrology Present? **Yes ✔** **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: W-T10-001C-2

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	85	Y	FAC
2. Liquidambar styraciflua	15	N	FAC
3.			
4.			
5.			
6.			
7.			
	100 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Sapling/Shrub Stratum (Plot size: 15 ft. rad.)			
1. Rosa multiflora	85	Y	FACU
2. Lindera benzoin	10	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	95 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Herb Stratum (Plot size: 5 ft. rad.)			
1. Onoclea sensibilis	10	Y	FACW
2. Lindera benzoin	5	Y	FAC
3. Arisaema triphyllum	3	N	FACW
4. Claytonia virginica	3	N	FAC
5. Erythronium rostratum	5	Y	UPL
6. Impatiens capensis	2	N	FACW
7.			
8.			
9.			
10.			
11.			
	28 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Woody Vine Stratum (Plot size: 30 ft. rad.)			
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: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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 or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ____

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

SOIL Sampling Point: W-T10-001C-2

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
0-9	10YR 3/2	97	10YR 4/6	3	C	PL	LC	Silt loam
9-12	10YR 5/1	60	10YR 4/6	10	C	PL	LC	Clay loam
9-12			10YR 4/2	30	D	M		
12-18	2.5Y 6/1	60	10YR 4/6	30	C	M	LC	Clay loam
12-18			10YR 3/2	10	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ 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 DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CS206 City/County: / Somerset Sampling Date: 04/22/2025
Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T10-001-2
Investigator(s): Dana Flynn, Deborah Carlin Section, Township, Range: 1808-000050002-000250000-00000
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Convex Slope (%): 1
Subregion (LRR or MLRA): LRR S, MLRA 148 Lat: 40.401524 Long: -74.596311 Datum: NAD83
Soil Map Unit Name: Keyport silt loam, 0 to 2 percent slopes HGM Class: N/A Field Cowardin classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks) NWI Cowardin classification: PFO1Dd
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____
Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on 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)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ✔ Depth (inches): ____
Water Table Present? Yes ____ No ✔ Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes ____ No ✔ Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **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: U-T10-001-2

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Carya ovata	60	Y	FACU
2. Liquidambar styraciflua	30	Y	FAC
3. Liriodendron tulipifera	10	N	FACU
4. Ailanthus altissima	5	N	FACU
5.			
6.			
7.			
	105	= Total Cover	
50% of total cover:		20% of total cover:	

Sapling/Shrub Stratum (Plot size: 15 ft. rad.)			
1. Rosa multiflora	25	Y	FACU
2. Ligustrum vulgare	15	Y	FACU
3. Viburnum dentatum	5	N	FAC
4. Cornus racemosa	5	N	FAC
5.			
6.			
7.			
8.			
9.			
	50	= Total Cover	
50% of total cover:		20% of total cover:	

Herb Stratum (Plot size: 5 ft. rad.)			
1. Ligustrum vulgare	5	N	FACU
2. Rosa multiflora	15	Y	FACU
3. Rubus phoenicolasius	15	Y	FACU
4. Claytonia virginica	10	Y	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	45	= Total Cover	
50% of total cover:		20% of total cover:	

Woody Vine Stratum (Plot size: 30 ft. rad.)			
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: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 29 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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 or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** ✔

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

SOIL Sampling Point: U-T10-001-2

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
0-10	10YR 3/3	100					LC	Silt loam
10-14	10YR 4/3	70	10YR 5/4	30	C	M	LC	Clay loam
14-18	10YR 5/4	80	10YR 3/3	20	C	M	LC	Clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ 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 DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CS206 City/County: / Somerset Sampling Date: 04/22/2025
Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T10-001C-1
Investigator(s): Dana Flynn, Deborah Carlin Section, Township, Range: 1808-000050002-000250000-00000
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): ____
Subregion (LRR or MLRA): LRR S, MLRA 148 Lat: 40.402261 Long: -74.595257 Datum: NAD83
Soil Map Unit Name: Neshaminy silt loam, 2 to 6 percent slopes HGM Class: Mineral soil flats Field Cowardin classification: PFO
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks) NWI Cowardin classification: PFO1Dd
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____
Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	

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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on 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)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✔ No ____ Depth (inches): 0.5
Water Table Present? Yes ✔ No ____ Depth (inches): 6
Saturation Present? (includes capillary fringe) Yes ✔ No ____ Depth (inches): 0

Wetland Hydrology Present? Yes ✔ 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: W-T10-001C-1

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Liquidambar styraciflua	20	Y	FAC
2. Carya ovata	25	Y	FACU
3. Acer rubrum	30	Y	FAC
4.			
5.			
6.			
7.			
	75 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Sapling/Shrub Stratum (Plot size: 15 ft. rad.)			
1. Lindera benzoin	85	Y	FAC
2. Rosa multiflora	40	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	125 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Herb Stratum (Plot size: 5 ft. rad.)			
1. Symplocarpus foetidus	35	Y	OBL
2. Impatiens capensis	15	Y	FACW
3. Viburnum dentatum	5	N	FAC
4. Persicaria pensylvanica	10	N	FACW
5. Smilax rotundifolia	15	Y	FAC
6. Rosa multiflora	5	N	FACU
7. Onoclea sensibilis	3	N	FACW
8.			
9.			
10.			
11.			
	88 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Woody Vine Stratum (Plot size: 30 ft. rad.)			
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: 6 (A)

Total Number of Dominant Species Across All Strata: 8 (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 ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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 or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ____

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

SOIL Sampling Point: W-T10-001C-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
0-8	10YR 4/1	88	2.5Y 5/4	2	C	M	LC	Silt loam
0-8			7.5YR 4/6	10	C	PL		
8-18	10YR 5/1	55	10YR 4/6	30	C	M	LC	Silt loam
			10YR 3/1	15	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ 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 DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CS206 City/County: / Somerset Sampling Date: 04/22/2025
Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T10-001-1
Investigator(s): Dana Flynn, Deborah Carlin Section, Township, Range: 1808-000050002-000250000-00000
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Convex Slope (%): ____
Subregion (LRR or MLRA): LRR S, MLRA 148 Lat: 40.402308 Long: -74.595442 Datum: NAD83
Soil Map Unit Name: Neshaminy silt loam, 2 to 6 percent slopes HGM Class: N/A Field Cowardin classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks) NWI Cowardin classification: PFO1Dd
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____
Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on 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)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **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: U-T10-001-1

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Carya ovata	40	Y	FACU
2. Liriodendron tulipifera	30	Y	FACU
3. Acer rubrum	15	N	FAC
4. Quercus rubra	10	N	FACU
5.			
6.			
7.			
	95 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Sapling/Shrub Stratum (Plot size: 15 ft. rad.)			
1. Viburnum dentatum	30	Y	FAC
2. Rosa multiflora	20	Y	FACU
3. Viburnum prunifolium	30	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
	80 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Herb Stratum (Plot size: 5 ft. rad.)			
1. Lindera benzoin	2	N	FAC
2. Rosa multiflora	15	N	FACU
3. Erythronium rostratum	70	Y	UPL
4. Celastrus orbiculatus	3	N	FACU
5. Smilax rotundifolia	3	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	93 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Woody Vine Stratum (Plot size: 30 ft. rad.)			
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: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 17 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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 or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

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

SOIL Sampling Point: U-T10-001-1

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
0-5	10YR 3/3	100					LC	Silt loam
5-12	10YR 3/3	60	10YR 4/6	40	C	M	LC	Silt loam
12-18	10YR 4/6	85	10YR 3/2	15	C	M	LC	Silt loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ 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 DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CS206 City/County: / Somerset Sampling Date: 04/22/2025
Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T10-001A-2
Investigator(s): Dana Flynn, Deborah Carlin Section, Township, Range: 1808-000050002-000250000-00000
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): ____
Subregion (LRR or MLRA): LRR S, MLRA 148 Lat: 40.40176 Long: -74.594937 Datum: NAD83
Soil Map Unit Name: Elkton silt loam, 0 to 2 percent slopes HGM Class: Mineral soil flats Field Cowardin classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks) NWI Cowardin classification: PEM1C
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____
Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	

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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on 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)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✔ No ____ Depth (inches): 1
Water Table Present? Yes ✔ No ____ Depth (inches): 0
Saturation Present? (includes capillary fringe) Yes ✔ No ____ Depth (inches): 0

Wetland Hydrology Present? Yes ✔ 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: W-T10-001A-2

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: ____	20% of total cover: ____		
Sapling/Shrub Stratum (Plot size: 15 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: ____	20% of total cover: ____		
Herb Stratum (Plot size: 5 ft. rad.)			
1. Phragmites australis	90	Y	FACW
2. Onoclea sensibilis	75	Y	FACW
3. Impatiens capensis	1	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	166 = Total Cover		
50% of total cover: ____	20% of total cover: ____		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
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 ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ✔ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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 or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ___

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

SOIL Sampling Point: W-T10-001A-2

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
0-8	10YR 4/1	80	7.5YR 5/8	20	C	PL	LC	
8-16	5Y 6/1	70	7.5YR 5/8	30	C	M	LC	Clay 5Y 6/1 should be Gley1 6

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ✔ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ 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 DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CS206 City/County: / Somerset Sampling Date: 04/22/2025
Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T10-001A-1
Investigator(s): Dana Flynn, Deborah Carlin Section, Township, Range: 1808-000050002-000250000-00000
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): ____
Subregion (LRR or MLRA): LRR S, MLRA 148 Lat: 40.404035 Long: -74.595488 Datum: NAD83
Soil Map Unit Name: Neshaminy silt loam, 2 to 6 percent slopes HGM Class: Mineral soil flats Field Cowardin classification: PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks) NWI Cowardin classification: UPL
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____
Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** **Yes ✔** **No ____**
Hydric Soil Present?	Yes ✔	No ____	
Wetland Hydrology Present?	Yes ✔	No ____	

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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on 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)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✔ No ____ Depth (inches): 1
Water Table Present? Yes ✔ No ____ Depth (inches): 1
Saturation Present? (includes capillary fringe) Yes ✔ No ____ Depth (inches): 0

Wetland Hydrology Present? **Yes ✔** **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: W-T10-001A-1

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Sapling/Shrub Stratum (Plot size: 15 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Herb Stratum (Plot size: 5 ft. rad.)			
1. Typha latifolia	40	Y	OBL
2. Microstegium vimineum	25	Y	FAC
3. Juncus effusus	5	N	FACW
4. Carex stricta	5	N	OBL
5. Phalaris arundinacea	2	N	FACW
6. Scirpus cyperinus	10	N	FACW
7. Impatiens capensis	1	N	FACW
8. Lythrum salicaria	10	N	FACW
9.			
10.			
11.			
	98 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Woody Vine Stratum (Plot size: 30 ft. rad.)			
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 ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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 or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✔ **No** ____

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

SOIL Sampling Point: W-T10-001A-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	10YR 4/1	80	7.5YR 5/8	20	C	PL	LC	
6-16	7.5YR 5/1	63	7.5YR 4/6	5	C	PL	LC	
6-16			7.5YR 4/1	2	C	M		
6-16			7.5YR 4/4	30	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✔ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ 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 DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: CS206 City/County: / Somerset Sampling Date: 04/22/2025
Applicant/Owner: Williams TranCo State: NJ Sampling Point: UVP-T10-001
Investigator(s): Dana Flynn, Deborah Carlin Section, Township, Range: 1808-000050002-000250000-00000
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): ____
Subregion (LRR or MLRA): LRR S, MLRA 148 Lat: 40.404643 Long: -74.59677 Datum: NAD83
Soil Map Unit Name: Neshaminy silt loam, 2 to 6 percent slopes HGM Class: N/A Field Cowardin classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ (If no, explain in Remarks) NWI Cowardin classification: UPL
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____
Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

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)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on 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)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **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: UVP-T10-001

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Sapling/Shrub Stratum (Plot size: 15 ft. rad.)			
1. Elaeagnus angustifolia	30	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	30 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Herb Stratum (Plot size: 5 ft. rad.)			
1. Artemisia vulgaris	20	Y	UPL
2. Claytonia virginica	20	Y	FAC
3. Rosa multiflora	5	N	FACU
4. Microstegium vimineum	15	Y	FAC
5. Dichanthelium clandestinum	5	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	65 = Total Cover		
50% of total cover: ____ 20% of total cover: ____			
Woody Vine Stratum (Plot size: 30 ft. rad.)			
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: 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 ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

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 or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

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

SOIL Sampling Point: UVP-T10-001

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
0-8	10YR 4/4	98	7.5YR 5/4	2	C	M	LC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked 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)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ 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: Fill Material

Depth (inches): 8

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:



TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

NORTHEAST SUPPLY ENHANCEMENT PROJECT

Madison **L**oop
Freshwater **W**etlands **D**ata **F**orms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/16/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T01-008

Investigator(s): Nick Mallory, Sameer Neve Section, Township, Range: 1215_5001_13.18_QFARM

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Convex Slope (%): 1

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.442434 Long: -74.315274 Datum: NAD83

Soil Map Unit Name: Sassafras loam, 2 to 5 percent slopes HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ____	No ✔	

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 ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-008

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Robinia pseudoacacia	30	Y	UPL
2.			
3.			
4.			
5.			
6.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Sapling Stratum (Plot size: 30 ft. rad.)			
1. Robinia pseudoacacia	30	Y	UPL
2.			
3.			
4.			
5.			
6.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Artemisia vulgaris	100	Y	UPL
2. Lonicera canadensis	5	N	FACU
3. Potentilla indica	5	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	110 = Total Cover		
50% of total cover: 55	20% of total cover: 22		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (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	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-008

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
0-8	10YR 4/3	100					LC	
8-18	10YR 5/4	10					S	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/16/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T01-006

Investigator(s): Nick Mallory, Sameer Neve Section, Township, Range: 1215_5001_13.18_QFARM

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.442245 Long: -74.314007 Datum: NAD83

Soil Map Unit Name: Pits, sand and gravel HGM Class: Field Cowardin Classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-006

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Liquidambar styraciflua	5	N	FAC
2. Acer rubrum	40	Y	FAC
3.			
4.			
5.			
6.			
	45 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Polygonum cuspidatum	95	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1. Lonicera canadensis	10	Y	FACU
2.			
3.			
4.			
5.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		

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	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-006

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
0-2	10YR 2/2	100					LC	
2-18	10YR 4/4	100					LC	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/16/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T01-006

Investigator(s): Nick Mallory, Sameer Neve Section, Township, Range: 1215_5001_13.18_QFARM

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.442295 Long: -74.31396 Datum: NAD83

Soil Map Unit Name: Pits, sand and gravel HGM Class: Field Cowardin Classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

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 ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-006

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	30	Y	FAC
2.			
3.			
4.			
5.			
6.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Sapling Stratum (Plot size: 30 ft. rad.)			
1. Liquidambar styraciflua	30	Y	FAC
2.			
3.			
4.			
5.			
6.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Juncus effusus	5	Y	OBL
2. Alliaria petiolata	5	Y	FACU
3. Microstegium vimineum	15	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-006

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
0-4	10YR 3/2	100					LC	
4-14	10YR 4/2	80	10YR 4/6	20	C	M	LC	
14-18	10YR 2/1	100					S	Gravely sand, appears to be c

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/16/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: WNM001

Investigator(s): Nick Mallory, Sameer Neve Section, Township, Range: 1215_5001_13.14_QFARM

Landform (hillslope, terrace, etc.): Low Hill Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.44241 Long: -74.313231 Datum: NAD83

Soil Map Unit Name: Pits, sand and gravel HGM Class: Field Cowardin Classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

Remarks:

Wetland is previously delineated as two, W-T01-003 & 007

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 ____	Depth (inches): 1
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Drainage patterns leading down slope toward tributary

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WNM001

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	70	Y	FAC
2. Nyssa sylvatica	10	N	FAC
3.			
4.			
5.			
6.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		
Sapling Stratum (Plot size: 30 ft. rad.)			
1. Liquidambar styraciflua	5	Y	FAC
2. Nyssa sylvatica	5	Y	FAC
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Parathelypteris noveboracensis	50	Y	FAC
2. Osmundastrum cinnamomeum	25	Y	FACW
3. Onoclea sensibilis	30	Y	FACW
4. Clethra alnifolia	5	N	FACW
5. Carex blanda	5	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	115 = Total Cover		
50% of total cover: 57.5	20% of total cover: 23		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WNM001

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	10YR 2/2	100					MLC	
6-16	10YR 4/2	80	10YR 4/6	20	C	M	LC	>10% fine sand mostly clay
16-18	10YR 2/1	100					MLC	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/16/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T01-003-1

Investigator(s): Nick Mallory, Sameer Neve Section, Township, Range: 1215_5001_13.14_QFARM

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Flat Slope (%): 3

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.4424 Long: -74.313329 Datum: NAD83

Soil Map Unit Name: Pits, sand and gravel HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T01-003-1

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Nyssa sylvatica	20	Y	FAC
2. Acer rubrum	20	Y	FAC
3. Betula populifolia	10	N	FAC
4. Quercus alba	20	Y	FACU
5.			
6.			
	70 = Total Cover		
50% of total cover: 35	20% of total cover: 14		
Sapling Stratum (Plot size: 30 ft. rad.)			
1. Quercus alba	5	Y	FACU
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Shrub Stratum (Plot size: 30 ft. rad.)			
1. Vaccinium angustifolium	10	Y	FACU
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Potentilla indica	2	N	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	2 = Total Cover		
50% of total cover: 1	20% of total cover: 0.4		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T01-003-1

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
0-2	10YR 3/2	100					LC	Root material
2-18	10YR 5/4	80	7.5YR 4/4	20			LC	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/14/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T01-003

Investigator(s): Nick Mallory, Sameer Neve Section, Township, Range: 1215_5001_13.14_QFARM

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.442433 Long: -74.312755 Datum: NAD83

Soil Map Unit Name: Pits, sand and gravel HGM Class: Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Previously delineated as W-T01-003, phrag in maintaining section outside LOD but non hydric soils

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T01-003

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Catalpa speciosa	60	Y	FACU
2. Liquidambar styraciflua	5	N	FAC
3.			
4.			
5.			
6.			
	65	= Total Cover	
50% of total cover: 32.5	20% of total cover: 13		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0	= Total Cover	
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0	= Total Cover	
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Rosa multiflora	25	Y	FACU
2. Artemisia vulgaris	35	Y	UPL
3. Rubus phoenicolasius	15	N	FACU
4. Phragmites australis	5	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80	= Total Cover	
50% of total cover: 40	20% of total cover: 16		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (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	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T01-003

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
0-5	10YR 3/3	100					LC	
6-18	10YR 5/4	100					S	Fine 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): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/14/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T01-009

Investigator(s): Nick Mallory, Sameer Neve Section, Township, Range: 1215_5001_13.14_QFARM

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1-2

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.442836 Long: -74.310252 Datum: NAD83

Soil Map Unit Name: Pits, sand and gravel HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

Remarks:

Shallow clay layer holding water, wetland exists within right of way, possibly disturbed soils in the past

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 ____	Depth (inches): 4
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-009

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	5	Y	FAC
2. Betula populifolia	2	N	FAC
3.			
4.			
5.			
6.			
	7 = Total Cover		
50% of total cover: 3.5	20% of total cover: 1.4		
Sapling Stratum (Plot size: 30 ft. rad.)			
1. Sassafras albidum	2	N	FACU
2. Liquidambar styraciflua	5	Y	FAC
3.			
4.			
5.			
6.			
	7 = Total Cover		
50% of total cover: 3.5	20% of total cover: 1.4		
Shrub Stratum (Plot size: 30 ft. rad.)			
1. Salix nigra	20	Y	OBL
2.			
3.			
4.			
5.			
6.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Salix eriocephala	50	Y	FACW
2. Juncus effusus	10	N	OBL
3. Onoclea sensibilis	35	Y	FACW
4. Phragmites australis	5	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-009

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	10YR 5/2	70	7.5YR 4/6	30	C	PL	LC	
6-18	10YR 6/6	100					S	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/14/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T01-009

Investigator(s): Nick Mallory, Sameer Neve Section, Township, Range: 1215_5001_13.14_QFARM

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.442793 Long: -74.31035 Datum: NAD83

Soil Map Unit Name: Pits, sand and gravel HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T01-009

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Sassafras albidum	15	Y	FACU
2. Acer rubrum	15	Y	FAC
3. Betula populifolia	20	Y	FAC
4.			
5.			
6.			
	50 = Total Cover		
50% of total cover: 25	20% of total cover: 10		
Sapling Stratum (Plot size: 30 ft. rad.)			
1. Quercus alba	20	Y	FACU
2. Fagus grandifolia	20	Y	FACU
3.			
4.			
5.			
6.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		
Shrub Stratum (Plot size: 30 ft. rad.)			
1. Prunus serotina	5	Y	FACU
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Toxicodendron radicans	20	Y	FAC
2. Artemisia vulgaris	10	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1. Parthenocissus quinquefolia	5	Y	FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 9 (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	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T01-009

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
0-1	10YR 3/3	100					LC	Root material
1-6	10YR 5/6	100					LC	
6-18	10YR 5/8	100					LC	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/20/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T01-010

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1215_5001_13.23_QFARM

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Flat Slope (%): 00

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.442877 Long: -74.309126 Datum: NAD83

Soil Map Unit Name: Pits, sand and gravel HGM Class: Field Cowardin Classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

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 ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-010

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	50	Y	FAC
2. Catalpa speciosa	20	Y	FACU
3.			
4.			
5.			
6.			
	70 = Total Cover		
50% of total cover: 35	20% of total cover: 14		
Sapling Stratum (Plot size: 30 ft. rad.)			
1. Liquidambar styraciflua	30	Y	FAC
2.			
3.			
4.			
5.			
6.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Microstegium vimineum	20	Y	FAC
2. Onoclea sensibilis	20	Y	FACW
3. Rubus argutus	5	N	FAC
4. Toxicodendron radicans	5	N	FAC
5. Rosa multiflora	5	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	55 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-010

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
0-8	10YR 5/6	100		0			LC	
8-18	10YR 5/1	100		0			LC	Thick clay

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/20/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T01-010

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1215_5001_13.23_QFARM

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Convex Slope (%): 1

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.442953 Long: -74.30912 Datum: NAD83

Soil Map Unit Name: Pits, sand and gravel HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T01-010

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1. Liquidambar styraciflua	5	Y	FAC
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Solidago canadensis	40	Y	FACU
2. Lonicera canadensis	10	N	FACU
3. Artemisia vulgaris	10	N	UPL
4. Potentilla indica	5	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	65 = Total Cover		
50% of total cover: 32.5	20% of total cover: 13		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1. Parthenocissus quinquefolia	5	Y	FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

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	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T01-010

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
0-2	10YR 3/3	100					LC	
2-28	10YR 5/8	100					S	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/20/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T15-003

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1215_5000_4_QFARM

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.444495 Long: -74.30486 Datum: NAD83

Soil Map Unit Name: Pits, sand and gravel HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

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 ____	Depth (inches): 1
Water Table Present?	Yes ✔	No ____	Depth (inches): 10
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 6

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Lots of flowing drainage patterns

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T15-003

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1. Betula nigra	5	Y	FACW
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Shrub Stratum (Plot size: 30 ft. rad.)			
1. Salix nigra	5	Y	OBL
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Symplocarpus foetidus	25	Y	OBL
2. Phragmites australis	80	Y	FACW
3. Clethra alnifolia	10	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	115 = Total Cover		
50% of total cover: 57.5	20% of total cover: 23		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T15-003

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
0-6	10YR 4/2	90	7.5YR 4/6	10	C	PL	LC	
6-14	10YR 3/2	100					S	Root material
14-18	10YR 3/1	100					S	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/20/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T15-003

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1215_5000_4_QFARM

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Convex Slope (%): 2-3

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.444521 Long: -74.304993 Datum: NAD83

Soil Map Unit Name: Pits, sand and gravel HGM Class: N/A Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T15-003

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	30	Y	FAC
2. Ilex opaca	5	N	FAC
3. Nyssa sylvatica	15	Y	FAC
4.			
5.			
6.			
	50 = Total Cover		
50% of total cover: 25	20% of total cover: 10		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Clethra alnifolia	60	Y	FACW
2. Vaccinium angustifolium	10	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70 = Total Cover		
50% of total cover: 35	20% of total cover: 14		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1. Smilax rotundifolia	45	Y	FAC
2.			
3.			
4.			
5.			
	45 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T15-003

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
0-1	10R 3/2	100					LC	Organic, root material
1-8	10YR 4/4	100					LC	
8-14	10YR 4/3	97	10YR 5/8	3			LC	
14-18	10R 6/2	80	10YR 6/8	20			LC	

[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:

Wet soils deeper

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/20/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: UVP-T15-002

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1215_5000_4_QFARM

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Concave Slope (%): O0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.445126 Long: -74.303104 Datum: NAD83

Soil Map Unit Name: Pits, sand and gravel HGM Class: N/A Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: UVP-T15-002

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Apocynum cannabinum	85	Y	FACU
2. Amorpha fruticosa	70	Y	FACW
3. Microstegium vimineum	20	N	FAC
4. Potentilla simplex	5	N	FACU
5. Rosa multiflora	5	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	185 = Total Cover		
50% of total cover: 92.5	20% of total cover: 37		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: UVP-T15-002

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
0-18	7.5YR 4/6	100					S	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/20/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: UVP-T15-004

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1215_4185_10

Landform (hillslope, terrace, etc.): Flood Plain Local relief (concave, convex, none): Convex Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.446867 Long: -74.289958 Datum: NAD83

Soil Map Unit Name: Psamments, 0 to 3 percent slopes HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes ✔	No _____	Depth (inches): 16
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: UVP-T15-004

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Polygonum cuspidatum, Japanese knotwee	100	Y	UPL
2. Rosa multiflora	5	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	105 = Total Cover		
50% of total cover: 52.5	20% of total cover: 21		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: UVP-T15-004

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
0-16	10YR 2/1	100					S	
16-18	10YR 5/2	95	10YR 5/2	5			S	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/20/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T01-014

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1215_4185_28.11

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.44804 Long: -74.287049 Datum: NAD83

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

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 ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 8
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-014

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Juncus effusus	30	Y	OBL
2. Schoenoplectus pungens	50	Y	OBL
3. Carex lurida	10	N	OBL
4. Carex vulpinoidea	10	N	FACW
5. Phragmites australis	5	N	FACW
6. Equisetum fluviatile	10	N	OBL
7. Sisyrinchium angustifolium	5	N	FACW
8. Solidago rugosa	10	N	FAC
9.			
10.			
11.			
	130 = Total Cover		
50% of total cover: 65	20% of total cover: 26		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-014

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
0-6	10YR 4/2	90	7.5YR 4/6	10	C	PL	S	
6-12	10YR 4/2	100					S	
12-18	10YR 5/4	100					S	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/20/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T01-004

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1215_4185_28.11

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): _____

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.448144 Long: -74.28706 Datum: NAD83

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T01-004

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Shrub Stratum (Plot size: 30 ft. rad.)			
1. Robinia pseudoacacia	5	Y	UPL
2. Japanese knotweed	20	Y	UPL
3.			
4.			
5.			
6.			
	25 = Total Cover		

50% of total cover: 12.5 20% of total cover: 5

Herb Stratum (Plot size: 30 ft. rad.)			
1. Alliaria petiolata	5	N	FACU
2. Artemisia vulgaris	35	Y	UPL
3. Solidago canadensis	20	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60 = Total Cover		

50% of total cover: 30 20% of total cover: 12

Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (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	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T01-004

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
0-6	10YR 3/3	109					S	

[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: Other

Depth (inches): 6

Hydric Soil Present? Yes _____ No ✔

Remarks:

Gravel, rocky

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T01-011

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_449_13.01

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.452002 Long: -74.280352 Datum: NAD83

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✔
Hydric Soil Present?	Yes ____	No ✔	
Wetland Hydrology Present?	Yes ✔	No ____	

Remarks:

Previously delineated at wetlands, however area is semi maintained Stormwater basin

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 ____	Depth (inches): 3
Water Table Present?	Yes ✔	No ____	Depth (inches): 10
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-011

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Juncus tenuis	40	Y	FAC
2. Turf grasses	40	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

__ 3 - Prevalence 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 Five 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, and 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 __

Remarks: (If observed, list morphological adaptations below).

Previously delineated as a wetland, however it is a semi maintained Stormwater basin

SOIL

Sampling Point: W-T01-011

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
0-6	10YR 4/1	98	7.5YR 4/6	2	C	M	LC	
6-18	10YR 5/4	100					S	Looks like play sand / fill 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): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T01-011

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_449_13.01

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.452814 Long: -74.279745 Datum: NAD83

Soil Map Unit Name: Evesboro sand, 10 to 15 percent slopes HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T01-011

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Poa pratensis	95	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T01-011

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
0-18	10YR 4/4	98	10YR 6/8	2	C	M	LC	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: UVP-T07-003

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_449_13.01

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.454636 Long: -74.278447 Datum: NAD83

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: N/A Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: UVP-T07-003

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Shrub Stratum (Plot size: 30 ft. rad.)			
1. Rubus allegheniensis	15	Y	UPL
2.			
3.			
4.			
5.			
6.			
	15 = Total Cover		

50% of total cover: 7.5 20% of total cover: 3

Herb Stratum (Plot size: 30 ft. rad.)			
1. Phragmites australis	60	Y	FACW
2. Panicum brachyanthum	50	Y	FAC
3. Oclemena acuminata	15	N	UPL
4. Solidago canadensis	35	Y	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	160 = Total Cover		

50% of total cover: 80 20% of total cover: 32

Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

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	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: UVP-T07-003

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	10YR 4/3	95	10YR 5/8	5	C	M	LC	
6-18	10YR 4/3	80	10YR 4/6	20	C	M	LC	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T07-003

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_451_1.08

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.459966 Long: -74.27426 Datum: NAD83

Soil Map Unit Name: Downer loamy sand, 0 to 5 percent slopes, Northern Coastal Plain HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔ No _____	
Wetland Hydrology Present?	Yes ✔ No _____	

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 _____	Depth (inches): 1
Water Table Present?	Yes ✔	No _____	Depth (inches): 2
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T07-003

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1. Clethra alnifolia	10	Y	FACW
2.			
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Juncus effusus	25	Y	OBL
2. Onoclea sensibilis	60	Y	FACW
3. Phragmites australis	5	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T07-003

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	10YR 5/3	95	10YR 5/8	5	C	M	LC	
6-16	10YR 6/1	70	10YR 6/8	30	C	M	LC	
16-18	10YR 7/1	10	10YR 6/8	90	C	M	S	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T07-004

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_454_1

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.460411 Long: -74.273142 Datum: NAD83

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: E2EM1Pd

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

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 ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 16
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 8

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T07-004

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Herb Stratum (Plot size: 30 ft. rad.)			
1. Phragmites australis	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T07-004

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
0-1	10YR 2/1	100					LC	
1-6	10YR 6/2	90	10YR 6/8	10	C	M	LC	Root material
6-12	10YR 6/2	80	10YR 5/8	20	C	M	LC	
12-18	10YR 4/1	90	10YR 5/8	10	C	M	S	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T07-004-1

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_454_1

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.460312 Long: -74.273315 Datum: NAD83

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: N/A Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: E2EM1Pd

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T07-004-1

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	5	Y	FAC
2. Betula populifolia	5	Y	FAC
3.			
4.			
5.			
6.			
	10 = Total Cover		
50% of total cover: 5	20% of total cover: 2		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1. Rubus allegheniensis	20	Y	UPL
2. Autumn olive	10	Y	FACU
3.			
4.			
5.			
6.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Toxicodendron radicans	60	Y	FAC
2. Phragmites australis	30	Y	FACW
3. Solidago canadensis	30	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	120 = Total Cover		
50% of total cover: 60	20% of total cover: 24		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T07-004-1

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 Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	100					LC	
4-18	10YR 5/3	100					S	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T07-004

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_454_1

Landform (hillslope, terrace, etc.): Coastal Plain Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.461352 Long: -74.271199 Datum: NAD83

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: E2EM1Pd

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

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 ____	Depth (inches): 3
Water Table Present?	Yes ✔	No ____	Depth (inches): 6
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T07-004

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Spartina alterniflora	40	Y	OBL
2. Phragmites australis	30	Y	FACW
3. Spartina patens	60	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	130 = Total Cover		
50% of total cover: 65	20% of total cover: 26		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ✔ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T07-004

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	10YR 4/1	90	10YR 4/6	10	C	PL	MLC	
6-18	10YR 3/1	95	10YR 5/6	5	C	PL	M	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T07-004-2

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_454_1

Landform (hillslope, terrace, etc.): Levee Local relief (concave, convex, none): Convex Slope (%): _____

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.461336 Long: -74.271105 Datum: NAD83

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: N/A Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: E2EM1Pd

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Upland point taken on berm approximately 15-20ft above salt marsh

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T07-004-2

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Phragmites australis	80	Y	FACW
2. Japanese knotweed	80	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	160 = Total Cover		
50% of total cover: 80	20% of total cover: 32		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1. Toxicodendron radicans	10	Y	FAC
2. Lonicera canadensis	30	Y	FACU
3.			
4.			
5.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		

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	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T07-004-2

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
0-10	10YR 3/3	100					LC	
10-18	10YR 4/2	98	10YR 6/8	2	C	M		

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T07-004

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_454_1

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.461585 Long: -74.270971 Datum: NAD83

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: PSS1R

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

Remarks:

Phrag dominated depression between two berms

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 ____	Depth (inches): 3
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T07-004

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Herb Stratum (Plot size: 30 ft. rad.)			
1. Phragmites australis	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		

50% of total cover: 50 20% of total cover: 20

Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

✔ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T07-004

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	10YR 4/1	90	10YR 6/6	10	C	M	LC	With sand
6-18	-	90	10YR 5/8	10	C	M	LC	Glen 1 - 4/5gy, Concentrati

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T07-004-3

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_454_1

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Convex Slope (%): _____

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.461606 Long: -74.270874 Datum: NAD83

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: N/A Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: PSS1R

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T07-004-3

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Artemisia vulgaris	40	Y	UPL
2. Phragmites australis	40	Y	FACW
3. Japanese knotweed	30	N	UPL
4. Cirsium discolor	10	N	UPL
5. Poa pratensis	40	Y	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	160 = Total Cover		
50% of total cover: 80	20% of total cover: 32		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T07-004-3

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
0-4	10YR 3/3	100					LC	

[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: Fill Material

Depth (inches): 4

Hydric Soil Present? Yes _____ No ✔

Remarks:

Gravel and stone at 4in

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: WNM004

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_538_13

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Convex Slope (%): 2

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.461943 Long: -74.269692 Datum: NAD83

Soil Map Unit Name: Psamments, 0 to 3 percent slopes HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil Y, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

Remarks:

Wetland extends up slope from OHWM

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 ✔	Depth (inches): ____
Water Table Present?	Yes ____	No ✔	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✔	Depth (inches): ____

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WNM004

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Phragmites australis	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ✔ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WNM004

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
0-4	10YR 3/1	100					MLC	
4-8	10YR 4/1	95	10YR 5/4	5	C	M	LC	Gravely material from boat ya

[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: Fill Material

Depth (inches): 8

Hydric Soil Present? Yes ✔ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T01-017

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_538_9.02

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Flat Slope (%): 0-1

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.462545 Long: -74.268063 Datum: NAD83

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No ____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No ____

Are Vegetation N, Soil N, or Hydrology N 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 ____	**Is the Sampled Area within a Wetland?** Yes ✔ No ____
Hydric Soil Present?	Yes ✔ No ____	
Wetland Hydrology Present?	Yes ✔ No ____	

Remarks:

4ft retaining wall appears to be holding water from draining, causing a Phrag dominant wetlands with depressions and standing water.

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 ____	Depth (inches): 3
Water Table Present?	Yes ✔	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-017

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

Shrub Stratum (Plot size: 30 ft. rad.)			
1. Salix nigra	20	Y	OBL
2.			
3.			
4.			
5.			
6.			
	20 = Total Cover		

50% of total cover: 10 20% of total cover: 4

Herb Stratum (Plot size: 30 ft. rad.)			
1. Phragmites australis	100	Y	FACW
2. Toxicodendron radicans	40	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	140 = Total Cover		

50% of total cover: 70 20% of total cover: 28

Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0 20% of total cover: 0

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	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-017

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
0-3	10YR 6/1	100					LC	Root material
3-18	10YR 7/1	95	10YR 7/8	5	C	M	LC	

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: W-T01-17

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_538_9.02

Landform (hillslope, terrace, etc.): Estuarine Fringe Local relief (concave, convex, none): Concave Slope (%): _____

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.462778 Long: -74.266979 Datum: NAD83

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: Field Cowardin Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation N, Soil N, or Hydrology N 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 _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

Unable to access wetland due to extremely steep slope and very dense greenbrier on slope. Wetland is dominated by Phrag and is a tidally influenced coastal wetland.

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes ✔ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Visually hydrology noted

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: W-T01-17

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Phragmites australis	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

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 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ✔ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ___ 3 - Prevalence 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 Five 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, and 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 ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: W-T01-17

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
								Unable to take soils due to ac

[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 DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Madison Loop City/County: / Middlesex Sampling Date: 05/21/2025

Applicant/Owner: Williams TranCo State: NJ Sampling Point: U-T01-017

Investigator(s): Nick Mallory, Becca McDonough Section, Township, Range: 1219_538_9.02

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 40.46288 Long: -74.26691 Datum: NAD83

Soil Map Unit Name: Pawcatuck-Transquaking complex, 0 to 2 percent slopes, very frequently flooded HGM Class: N/A Field Cowardin Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✔ If no, explain in Remarks NWI Cowardin Classification: UPL

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✔

Are Vegetation N, Soil N, or Hydrology N 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

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 ✔	Depth (inches): _____
Water Table Present?	Yes _____	No ✔	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✔	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: U-T01-017

Tree Stratum (Plot size: 30 ft. rad.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Nyssa sylvatica	10	Y	FAC
2. Acer saccharinum	10	Y	FAC
3. Quercus rubra	20	Y	FACU
4.			
5.			
6.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		
Sapling Stratum (Plot size: 30 ft. rad.)			
1. Quercus rubra	5	Y	FACU
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		
Shrub Stratum (Plot size: 30 ft. rad.)			
1. Rubus allegheniensis	20	Y	UPL
2.			
3.			
4.			
5.			
6.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size: 30 ft. rad.)			
1. Rosa multiflora	20	Y	FACU
2. Toxicodendron radicans	60	Y	FAC
3. Solidago canadensis	20	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 30 ft. rad.)			
1. Lonicera canadensis	30	Y	FACU
2. Smilax rotundifolia	20	Y	FAC
3.			
4.			
5.			
	50 = Total Cover		
50% of total cover: 25	20% of total cover: 10		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence 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 Five 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, and 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 ✔

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: U-T01-017

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
0-4	10YR 3/2	100					LC	
4-6	10YR 7/1	95	10YR 4/6	5	C	M	LC	
6-14	10YR 3/2	95	10YR 5/8	5	C	M	LC	
14-18	10YR 5/4	100					S	

[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: